The Changing Academy – The Changing Academic Profession in International Comparative Perspective 9

Jung Cheol Shin
Akira Arimoto
William K. Cummings
Ulrich Teichler *Editors*

Teaching and Research in Contemporary Higher Education

Systems, Activities and Rewards

Springer

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Scope of the series

As the landscape of higher education has in recent years undergone significant changes, so correspondingly have the backgrounds, specializations, expectations and work roles of academic staff. The Academy is expected to be more professional in teaching, more productive in research and more entrepreneurial in everything. Some of the changes involved have raised questions about the attractiveness of an academic career for today's graduates. At the same time, knowledge has come to be identified as the most vital resource of contemporary societies.

The Changing Academy series examines the nature and extent of the changes experienced by the academic profession in recent years. It explores both the reasons for and the consequences of these changes. It considers the implications of the changes for the attractiveness of the academic profession as a career and for the ability of the academic community to contribute to the further development of knowledge societies and the attainment of national goals. It makes comparisons on these matters between different national higher education systems, institutional types, disciplines and generations of academics, drawing initially on available data-sets and qualitative research studies with special emphasis on the recent twenty nation survey of the Changing Academic Profession. Among the themes featured will be:

1. Relevance of the Academy's Work
2. Internationalization of the Academy
3. Current Governance and Management, particularly as perceived by the Academy
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Preface

This book discusses how teaching and research have been weighted differently in academia in 18 countries and one region, Hong Kong SAR, based on an international comparative study entitled Changing Academic Profession (CAP), which commenced in 2006. Since the establishment of Berlin University in 1810, there has been controversy on teaching and research as the primary functions of universities and academics. The controversy increased when Johns Hopkins University was established in 1876 with only graduate programs and, more recently, with the release of the Carnegie Foundation report *Scholarship Reconsidered* by Ernest L. Boyer in 1990. Since 1990, higher education scholars and policymakers began to pay attention to the details of teaching and research activities, a kind of "black box" because only individual academics know how they conduct teaching and research in their own contexts.

As an effort to open the "black box," the Carnegie Foundation initiated the first international comparative studies on academic profession in 1992 in which 12 countries participated. Since then, there have been significant changes in governance and management, finance, and research systems as well as changes in the demographics of academics. This book discusses and analyzes how academics conduct their teaching and research in their own contexts. In addition, the book pays attention to recent changes in governance and management and, specifically, to the new public management in place in many countries and how managerialism affects academics' teaching and research activities. Finally, this book seeks to address the issue of the teaching and research nexus, a controversial topic in higher education research, using comparative data.

With the growth of technology-based industrial development in the knowledge economy, the balance between teaching and research has been increasingly moving toward research in the advanced higher education systems. The strong emphasis on research has shifted academics' interest within education and has led to complaints from students in many countries including the USA. This issue was brought to a head by Ernest L. Boyer in his *Scholarship Reconsidered* (1990), where he

proposed discovery, teaching, application, and synthesis as the four dimensions of academic scholarship. In his book, Boyer emphasized the other three dimensions as being equal with discovery, which is original research. The book led to a major discussion of the different dimensions of academic scholarship in the USA. Follow-up discussions have been promoted by Glassick, Huber, and Maeroff in their *Scholarship Assessed* (1997) and in *Faculty Priorities Reconsidered* by O'Meara and Rice (2005). According to these studies, US higher education is leaning toward a balance between teaching and research.

On the other hand, in many countries, higher education systems including some emerging systems have been moving rapidly toward research in the 1990s and 2000s, thanks to the advent of global rankings. These countries began to emphasize research in their resource allocation and prioritize research in faculty hiring and promotion, thus aggressively attracting research-productive academics. As a result of these policy changes, academics now tend to prefer research, allocate more time to research, and as a result dedicate less time to teaching activities. These changes raise a question about what is a university. Is a university a center for research or for teaching? Is the phenomenon occurring in countries sensitive to global rankings or is this a global phenomenon in the twenty-first century? The CAP survey was designed to address these issues. It includes wide-ranging and detailed data on academic teaching, research, and service activities as well as data on respondents' academic training and demographics.

This book discusses these issues using empirical evidence. Specifically, the focus is on how teaching and research are defined in each higher education system, how teaching and research are preferred and conducted by academics, and how academics are rewarded by their institution. Further, the CAP data enable the authors to address two interesting topics of comparative study. The first topic is the similarities and differences across different higher education systems in formulating and defining teaching and research. The second topic is the policy initiatives of each government to encourage their academics to shift their priority between teaching and research or to balance the two.

This book consists of three main parts. Part I sets out a theoretical basis for the teaching and research analysis. In Chap. 2, Akira Arimoto introduces theory and research on the nexus between teaching and research. In Chap. 3, William K. Cummings discusses how the patterns of research productivity differ across participating countries and what the determinants of academic productivity across the participating countries in fact are. In Chap. 4, Futao Huang discusses how teaching activities differ across different higher education systems. The other chapters are case studies of each higher education system. The case studies are presented in three groups according to the relative emphasis on teaching or research. Part II deals with the countries with a strong research tradition (e.g., Germany, Italy, the Netherlands, Finland, Portugal, and Korea), Part III looks at the countries with a strong teaching tradition (e.g., Mexico, Brazil, Argentina, Malaysia, and South Africa), and Part IV discusses the countries with a balance between teaching and research (e.g., USA, UK, Canada, and Australia).

Each case study also provides a descriptive analysis of the academic activities by country. This analysis includes teaching and research environments, teaching and research methods, teaching and research contents, and academic productivity. Providing details of the academic activities will enable readers to better understand the reality of teaching and research in each country as it transforms academia in the twenty-first century.

Finally, we offer thanks to Seungjung Kim, a Ph.D. candidate at Seoul National University. We could not have completed the project without her help.

Jung Cheol Shin
Akira Arimoto
William K. Cummings
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Contents

1 Teaching and Research in Contemporary Higher Education: An Overview 1
William K. Cummings and Jung Cheol Shin

Part I Theoretical Basis

2 The Teaching and Research Nexus in the Third Wave Age 15
Akira Arimoto

3 The Research Role in Comparative Perspective 35
William K. Cummings

4 Teaching and Curriculum Development Across Countries 45
Futao Huang

Part II Research Focused Systems

5 Teaching and Research in Germany: The Notions of University Professors 61
Ulrich Teichler

6 Teaching and Research at Italian Universities: Continuities and Changes 89
Michele Rostan

7 The Changing Balance of Teaching and Research in the Dutch Binary Higher Education System 113
Egbert de Weert and Harry van der Kaap

8 The Scholarly Question in Finland: To Teach or Not to Teach 135
Timo Aarrevaara, Ian R. Dobson, and Liisa Postareff

9 Teaching and Research: Perspectives from Portugal 153
Rui Santiago, Sofia Branco Sousa, Teresa Carvalho, Maria de Lurdes Machado-Taylor, and Diana Dias

10 Teaching and Research of Korean Academics Across Career Stages 177
Jung Cheol Shin, Jisun Jung, and Yangson Kim

Part III Teaching Focused Systems

11 The Divergent Worlds of Teaching and Research Among Mexican Faculty: Tendencies and Implications 199
Jesús Francisco Galaz-Fontes, Jorge G. Martínez-Stack, Etty H. Estévez-Nénninger, Laura Elena Padilla-González, Manuel Gil-Antón, Juan José Sevilla-García, and José Luis Arcos-Vega

12 Research and Teaching in a Diverse Institutional Environment: Converging Values and Diverging Practices in Brazil 221
Simon Schwartzman and Elizabeth Balbachevsky

13 Current Challenges Facing the Academic Profession in Argentina: Tensions Between Teaching and Research 237
Mercedes Leal and Mónica Marquina

14 Teaching and Research in Malaysian Public Universities: Synergistic or Antagonistic? 255
Norzaini Azman, Vincent Pang, Morshidi Sirat, and Aida Suraya Md Yunus

15 From Teachers to Perfect Humboldtian Persons to Academic Superpersons: The Teaching and Research Activities of the South African Academic Profession 277
Charl C. Wolhuter

Part IV Teaching and Research Balanced Systems

16 The Balance Between Teaching and Research in the Work Life of American Academics 299
Martin Finkelstein

17 Teaching and Research in English Higher Education: The Fragmentation, Diversification and Reorganisation of Academic Work, 1992–2007 319
William Locke

18 Teaching, Research, and the Canadian Professoriate 335
Glen A. Jones, Bryan Gopaul, Julian Weinrib, Amy Scott Metcalfe, Donald Fisher, Yves Gingras, and Kjell Rubenson

19 Australian Academics, Teaching and Research: History, Vexed Issues and Potential Changes 357
Peter James Bentley, Leo Goedegebuure, and V. Lynn Meek

Part V Concluding Observations

20 Teaching and Research Across Higher Education Systems: Typology and Implications 381
Jung Cheol Shin and William K. Cummings

21 Teaching and Research: A Vulnerable Linkage? 395
Ulrich Teichler and Akira Arimoto

Index 403

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Chapter 1
Teaching and Research in Contemporary Higher Education: An Overview

William K. Cummings and Jung Cheol Shin

1.1 International Differences in the Teaching-Research Balance

With the growth of technology-based industrial development, the balance between teaching and research has moved toward research in many higher education systems. The strong emphasis on research has shifted academics' interest within education and has led to complaints from students in many countries. These countries put more weight on research in their resource allocation, prioritize research in faculty hiring and promotion, and aggressively attract research-productive academics. As a result of these policy changes, academics now tend to prefer research, allocate more time to research, and as a result dedicate less time to teaching activities, especially in research-focused universities. These changes raise a question about what is a university. Is a university a center for research or for teaching? Is the phenomenon occurring in countries sensitive to global rankings or is this a global phenomena in the twenty-first century?

The Carnegie Fund proposed an international survey in the late 1980s that finally came to fruition in 1991–1992. This survey known as The 1992 Carnegie International Survey of the Academic Profession both highlighted many problems facing academic systems around the world as well as the overall satisfaction of academics with their professional work and their occupational choice. A follow-up international survey, designed by international research teams, was administrated in 19 countries in 2007 (or 2008 in some countries). This second comparative study is

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Table 1.1 Research preference and the share of research hours (1992–2007)

	Research preference		Share of research hours	
Country	1992	2007	1992	2007
Germany	65.8	62.5	39.7	34.7
Japan	72.5	71.7	38.8	31.9
Netherlands	75.2	55.9	–	23.7
Korea	55.7	68.0	32.6	33.6
Mexico	34.8	42.7	22.8	19.8
Brazil	38.0	47.8	22.0	21.3
USA	50.8	44.1	30.2	24.7
UK	55.6	66.8	24.4	26.1
Australia	52.0	69.6	26.1	29.1
Hong Kong SAR	54.1	63.1	25.7	27.8
Average	55.5	59.2	26.2	27.3

Notes: Research preference is the percent of academics in the country that indicate either a preference for research or a leaning to research when asked "regarding your own preferences, do your interests lie primarily in teaching or in research?" The share of research hours is the share of research hours in the total faculty workloads in the session including research, teaching, service, and administrative activities

called the *Changing Academic Profession* (CAP) to emphasize the comparison between academics in 1992 and academics in 2007.

The early 1990s was possibly a pivotal period in the relation of academic systems to their respective national contexts. Since then at least in the more economically advanced societies, policymakers have tended to stress the private as contrasted with the public benefits of higher education. And thus has emerged the new market ideology for higher education to compete with a historical faith in its public benefit. Accompanying this new perspective has been increasing pressure on academics to engage in academic capitalism, that is, to reorient their research agendas to the knowledge needs of the commercial sector. Accompanying this new discourse is more pressure on higher education to become efficient and accountable.

Meanwhile around the world we find an amazing trend of higher educational expansion which necessarily leads to the increase in the size of the academy, especially in the emerging nations, and to an increased flow of academics to new employment opportunities opening up in nations other than their own. Who then are the contemporary academics, why have they joined, what do they value, how comfortable are they with the changing definition of the role of the academy in modern society, and what are their expectations for the governance and management of the institutions where they are finding employment?

The two research initiatives enabled researchers and policymakers to understand academic work life. In addition, we can compare the differences in academic scholarship between 1992 and 2007 because many survey items in the 1992 and 2007 surveys are the same or similar. In this book, our special focus is on how teaching and research are defined in each higher education system, how teaching and research are preferred and conducted by academics, and how academics are rewarded by their institution. As an example, Table 1.1 shows two core focuses of this book: how academics'

preference on research (or teaching) and their workloads on research (or teaching) have changed between the Carnegie survey of 1992 and our CAP survey of 2007.

The two surveys show interesting trends between the relatively well-established higher education systems and the emerging systems. The established higher education systems (e.g., USA, Germany, and Japan) moved toward a balance between teaching and research, while the other systems moved toward research. The USA and the Netherlands show impressive changes toward teaching (the USA) or from research toward teaching (the Netherlands). The changes related to academics and policy efforts to emphasize balancing between different types of academic scholarships since the 1990s when Boyer (1990) proposed the issue in his book *Scholarship Reconsidered*. Follow-up discussions have been promoted by Glassick, Huber, and Maeroff in their *Scholarship Assessed* (1997) and in *Faculty Priorities Reconsidered* by O'Meara and Rice (2005). According to these studies, US higher education is leaning toward a balance between teaching and research.

On the other hand, noticeable changes leaning toward research were identified in relatively recently emerged higher education systems such as Korea, Australia, and Hong Kong. These countries also have increased their time on research in their total share of working hours. Interestingly, two Latin American countries did not increase their share of research hours, while their research preference has been noticeably increased between the two surveys. An exception of these trends is the UK where research preference and research hours have been impressively increased between the two surveys though the UK is a well-established system. The trend of emphasizing research has been reported in many emerging higher education systems (e.g., Mexico and Brazil). These changes are related to institutional competition caused by global ranking and knowledge society.

1.2 The Knowledge Explosion and the Diversification of Organizational Models

The early modern universities and colleges were largely self-governing church-established institutions with a primary focus on training members of the clergy in such fields as theology and law. Most institutions were small and residential, and often the faculty were themselves clerics. Essentially the same collegial procedures that were used to select senior officers in the clerical hierarchy were applied in the selection of academic officers. Thus, the heads of the early universities and colleges emerged from the ranks of the professoriate and were essentially selected by their colleagues.

From these common origins, several distinctive organizational models emerged—some more focused on research and others more focused on teaching or service. A major driving force behind these changes was the recognition that academic research often revealed new approaches for solving practical challenges such as new ways to grow agricultural crops, to smelt steel, to build motor vehicles, and even to package and deliver explosives. Given the increasing relevance of academic research,

academic leaders searched for organizational reforms that could enhance the research productivity of academics.

At the institutional level, Ben-David (1977) highlights the differences between the English model that was teaching oriented, the German model that was research-oriented, and the US model that stressed service. Ben-David argues that each of these models has its strengths and weaknesses with the German model arguably superior in the fostering of basic research and the US model enjoying an advantage in applied research. Whereas in the German model there was a tendency to assign responsibility for all research in a particular discipline to a lone senior professor who commanded an institute staffed by numerous junior researchers, in the US case universities tended to establish departments composed of several equal-rank academics exploring a common field. In France, separate organizations were established to respectively foster teaching (grandes écoles) and to foster research (institutes) in designated fields.

1.2.1 The Global Stratification of Academic Systems

The systems described by Ben-David were the pioneers, achieving much in terms of scholarly products—for example, a disproportionate number of Nobel prizes have been received by members of their respective academies. And arguably they have been looked to as the best places in the world to pursue advanced academic study. So with the increasing international recognition of the importance of knowledge, there has been a tendency for these systems to dominate in research and training and for others to follow.

Some have described this stratification using the world-system language of the core, semi-periphery, and periphery. As new nations launched their own academic systems, they tended to look to the core for the setting of standards and the training of personnel. They dreamed of catching up, but they faced the stubborn reality that the journey is long. Hence, it is meaningful to think of higher education systems in terms of relative ascendancy. On the one hand are the established systems, and on the other are those that are emerging, trying to catch up. In both groups, there is much internal variation. Still as a starting point, it is a useful division and will be employed as one analytical approach in this book.

One of the salient differentiating characteristics of academic systems is their ability/willingness to train their faculty. Core systems tend to believe they are on top of the world's body of knowledge and hence qualified to train the next generation of academics, while peripheral systems lack this confidence and tend either to recruit faculty from the core institutions or to send their best students to the core systems for advanced training. Thus, many of the faculty of peripheral systems have been trained in the universities of the core countries.

While this core-periphery distinction persists, in recent years several of the core systems have experienced difficulty in motivating young people to consider the academic profession as their chosen path. For example, in the science and engineering

disciplines, many of the core systems are unable to attract indigenous students and thus have welcomed increasing number of students from peripheral systems to their graduate student ranks. And the best and brightest of these international students have moved up to become members of the new generation of academics in the core systems. Meanwhile the quality of facilities and faculty in several of the former peripheral systems has rapidly upgraded to the point where these systems favorably compete with the core.

Among the 19 higher education systems in the CAP survey, the core systems are the systems that established earlier stage of modern higher education systems and have a strong influence on other higher education systems. According to Ben-David, the *core systems* are German, French, English, and the American systems. From a wider view, the core systems can be expanded to Russia, Spain, and Japan (Cummings 2004). The Russian higher education system has strong influence on former communist countries, Spain on Latin American countries, and Japanese higher education systems on East Asian higher education. The *semi-core systems* are the higher education systems that imported the modern university ideas from the core systems, and their higher education has virtually caught up with the core systems. The *periphery systems* are the developing higher education systems with the influences from core and or semi-core systems. According to this typology, the 19 CAP participating countries are classified into the core (Germany, USA, UK, and Japan), semi-core (Canada, Australia, Korea, Italy, Norway, the Netherlands, Finland, Portugal, and Hong Kong SAR), and periphery (China, Mexico, Brazil, Argentina, Malaysia, and South Africa).

The core higher education systems show high research orientation, but relatively less than semi-core higher education systems, as shown in Table 1.2. Although the ratio with holding PhD degree among academics is higher in the core systems, the research productivity which is measured by publication and international conference presentations is higher in the semi-core systems than the core systems. This fact implies that the semi-core higher education systems emphasize research to catch up with core systems. Among the semi-core systems, Canada and Korea show quite distinctive features from their peers in the semi-core group or even the core systems in their research productivity and the ratio of PhD degree holdings. Compared to the core and semi-core systems, the periphery systems are still teaching focused and low on research productivity.

1.2.2 Expansion and Diversification of Purpose

Ben-David's analysis focused on the premier institutions of the respective systems where the focus on research was paramount. However, concurrent with the rise in the salience of academic research was the transformation of the modern economy toward increasing efficiency in the industrial and service sectors. With the shift in the economy was a corresponding shift in the employment structure toward an increasing emphasis on data and people-oriented jobs, requiring higher levels of education.

Table 1.2 Research preference and share of research hours by center and periphery

Core/periphery	Countries	Preference	Share of research hours	PhD ratio	Productivity
Core	Germany	62.5	34.7	64	15.2
	Japan	71.7	31.9	74	18.1
	USA	44.1	24.7	77	12.9
	UK	66.8	26.1	73	12.7
	Average	61.3	29.4	72	14.7
Semi-core	Italy	76.7	37.7	45	21.8
	Netherlands	55.9	23.7	37	13.7
	Finland	65.3	38.0	41	12.0
	Norway	83.0	39.4	53	11.7
	Portugal	53.3	29.4	40	14.0
	Korea	68.0	33.6	97	24.5
	Canada	67.6	31.2	92	17.8
	Australia	69.6	29.1	73	15.9
	HK SAR	63.1	27.8	79	20.2
	Average	66.9	32.2	62	16.8
Periphery	Mexico	42.7	19.8	29	9.6
	Brazil	47.8	21.3	57	13.7
	Argentina	57.1	37.0	20	13.5
	China	46.9	29.9	25	13.0
	Malaysia	47.4	18.0	39	14.9
	South Africa	46.9	20.0	52	8.4
	Average	48.1	24.3	37	12.2

Notes: (a) The PhD ratio is the academics who hold PhD degrees among the surveyees
(b) The productivity is the research productivity combined of book (book publication and book editing), article (published in academic book or journal and in newspaper and magazine), conference presentation, and research report and monograph for funded project during the 3 years between 2004 and 2006

Martin Trow (1973) observed for the USA that the demand for secondary level graduates began to accelerate by the turn of the twentieth century and peaked in 1940s; subsequently the demand for college graduates accelerated leading to the shift from elite to mass higher education. The increase in the demand for higher education was accompanied by the founding of an ever-expanding number of medium and small higher educational institutions whose primary focus was on teaching rather than research.

Representative of this trend was the explosion of junior and community colleges where the mission focus was exclusively on teaching. This diversification of institutional missions was captured in the Carnegie classification of institutions of higher education and subsequently in UNESCO's distinction between tertiary type A (bachelor and postgraduate emphasis) and type B institutions (less than bachelors).

While the USA led in the expansion of tertiary education and its provision to an ever-increasing proportion of the age cohort, other national systems were soon to follow—especially in East Asia and Western Europe. By the turn of the twenty-first century, Finland, Canada, and Korea had surpassed the USA in their enrollment

Table 1.3 Research preference and share of research hours by research university

	Research university		Average nationwide	
Countries	Preference	Share of research hours	Preference	Share of research hours
Germany	71.9	39.0	62.5	34.7
Japan	89.7	38.7	71.7	31.9
NL	77.7	32.4	55.9	23.7
Finland	78.5	45.6	65.3	38.0
Norway	83.0	39.7	83.0	39.4
Korea	80.4	39.2	68.0	33.6
Mexico	59.0	29.9	42.7	19.8
Brazil	57.9	30.2	47.8	21.3
China	67.5	44.7	46.9	29.9
USA	61.1	35.6	44.1	24.7
UK	79.0	31.8	66.8	26.1
Canada	72.2	31.9	67.6	31.2
Australia	79.5	35.4	69.6	29.1
Average	73.6	36.5	60.5	31.5

Notes: The research universities are based on the classification of each country: Australia (government eight university), Brazil (public federal university), Canada (medical doctoral university), China (national public university), Finland (higher education institute or research institute), Germany (university), Japan (national research university), Korea (seven research group 1 university by Shin (2009)), Mexico (universities), the Netherlands (university), Norway (university), the UK (Russell group), and the USA (Carnegie Research Intensive)

rates, and many other countries were approaching US levels. Particularly impressive in terms of their rates of expansion are those nations often referred to as newly industrializing countries or emerging nations, a distinction we make in this volume.

The teaching and research orientation differ by institutional missions, for example, academics in a research-focused university have stronger research preference and use more time to conduct research than teaching. This is consistent across all the CAP participating countries. As shown in Table 1.3, the academics in research-focused universities show quite higher research preference than their peers in other types of universities, and they spend quite larger share of their time on their research than their colleges in other types of university.

1.3 The Inevitable Tensions Between Academic and Organizational Priorities

Over time the universities and colleges of modernizing societies came to grow in scale and to recognize new specialties, especially in the sciences and social sciences. With the increasing specialization of academic life, individual academics came to identify with the health of their specialization more than with the health of the institutions employing them. For the academics, disciplinary health came to be

seen in terms of number of faculty and the quality of facilities rather than in terms of the number of students or the financial viability of their subunits. So long as a field was rising in popularity, disciplinary and university health were in harmony. But such harmony was not always achieved, leading to tensions between those responsible for the respective levels.

An additional dimension of tension was between the intellectual convictions of particular professors in the university and the convictions of those outside. In view of the religious origins of many higher educational institutions, particularly controversial was the clash over religious issues such as creation vs. evolution, the right to life vs. choice, and more specialized theological interpretations. In the medical field, controversies could naturally emerge over the efficacy of treatments, particularly where commercial firms had a stake in the outcome. When such controversies emerged, university authorities often encountered pressure to censure the responsible academics. But the academics could rightly protest that they were merely elaborating the latest discoveries in the ever-moving frontiers of knowledge. What were the rules that should mitigate these tensions?

1.3.1 Patterns of System Coordination

Arguably, one outcome of these tensions was the transformation of the governance and management of higher education with different arrangements emerging in different national settings. In all nations, the expansion of higher education was accompanied by the growing interest of diverse stakeholders, including notably the state and the corporate sector, in higher educational decision making. But the way particular nations integrated these pressures varied.

In the case of Russia (and later the Soviet Union) and France, the state moved in to assume major responsibilities for the finance and administration of higher educational institutions; with the increased role of the state, many of these disputes were resolved by high-level officials appointed by the government rather than the academy.

In contrast, according to Clark (1983) was a more decentralized form of coordination exemplified by Italy and Germany where much authority was invested in prominent academics who came to enjoy a near oligarchic control over academic life. While the state's support of higher education was not exceptionally generous, the state's intrusion into academic matters was relatively modest.

And finally the USA (and the UK) evolved a third pattern where individual institutions were controlled by boards of trustees (and in the case of public institutions, the trustees often coordinated with state departments of education) who, in their plans, significantly deferred to market signals. Especially in the USA, the national and local governments have followed the market ideology and have sharply cut back their direct support of higher educational institutions. Accompanying the decline of public funding has been the emergence of a market ideology of revenue generation and allocation leading to increases in student tuition, to the intrusion of commercialism into the research labs of the leading

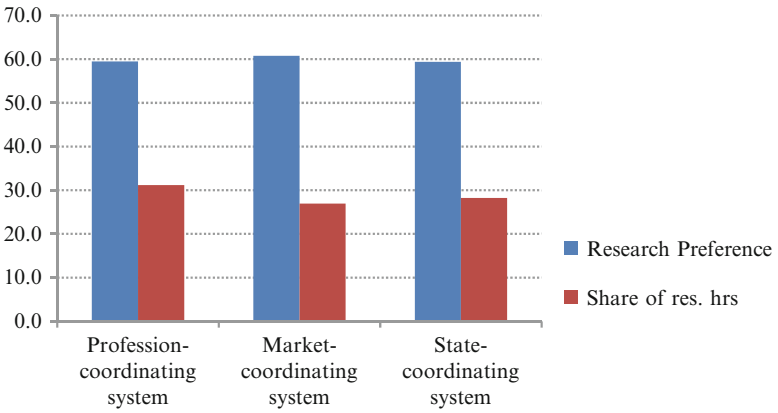

Fig. 1.1 Research preference and share of research hours by coordinating principle (Notes: The Netherlands is in the market-coordinating system because the systems have moved toward strong market principle since the 1990s. South Africa is classified in the profession-coordinating systems. Details of research preference and the share of time on research in each country are reported in Table 1.2)

universities, and to the offering of tenuous employment contracts for an increasing proportion of the academic community.

Of course, none of these types are pure, but rather are meant to be suggestive of the core principles guiding decision making. Clark sees other systems as being approximations of these three patterns. Therefore, it is quite difficult to apply Clark typology for the classification of CAP participating countries. Instead, Shin and Harman (2009) suggested the concept of coordination by profession, market, and state; then they classified CAP participating countries by the three coordinating models. According to Shin and Harman, the profession-coordinating models are continental European systems (Germany, Italy, Norway, Finland, and the Netherlands) and Latin American systems (Mexico, Brazil, Portugal, Argentina), the market models are Anglo-American systems (the USA, the UK, Canada, and Australia), and the state models are mainly Asian countries (Japan, Korea, China, Malaysia, and Hong Kong SAR).

According to the typology of Shin and Harman, the research orientation of academics does not evidence a difference across the three coordinating systems (Fig. 1.1). Academic research preferences in these three systems are around 60 %, and their use of time for research is between 27 % and 31 %. This is quite interesting to interpret. There are significant gaps in the research orientation between higher education systems in the core and periphery and between research universities and others. Interestingly enough, however, the differences in coordination principles (profession, market, and state) do not produce differences in their research orientation. This requires further investigation. One interpretation is that each type of coordination model includes quite different ranges of systems in each category. For example, Norway which is the highest in research preference is in the same profession model with Mexico which is the lowest in that. Or arguably, the coordination principle may not relate to research orientation, while the center and periphery does.

1.3.2 The Emergence of Organizations to Protect the Academic Profession

Comparing the three patterns of coordination, it can be argued that academics in the USA were the most vulnerable. They neither enjoyed the independent power of their Italian counterparts nor the protection of the regulation characteristic of state-coordinated pattern. Indeed by the turn of the twentieth century, there was an alarming frequency of cases where US academics lost their jobs due to the arbitrary whims of trustees or university presidents. Many of these unfortunate situations were debated in the newly formed academic societies such as the American Psychological Association, and not infrequently these societies issued statements condemning the responsible institutions. But these protests from disciplinary associations were viewed as self-interested whining and failed to have much impact.

After several years of such futile efforts, several of the concerned academic societies decided to form a multi-society body which ultimately became known as the American Association of University Professors to create a more solid platform for devising standards of academic behavior and for opposing instances where correct behavior was treated with arbitrary disdain by university and college authorities. The AAUP was formed in 1915 and has continued ever since to stand up for the protection of the academic freedom of US academics. It is worth stressing the creation of this association for it represents an important example of the way the concept of an overarching academic profession continues to inspire collective action in academia, even as the nature of disciplinary development has resulted in the increasing fragmentation of the knowledge that academics focus on.

Over time organizations like the AAUP have emerged in many other systems. For example, the Association of National University Professors and the Association of Private University Professors were established in Japan in 1946 to promote the material interests of professors as well as to protect their academic freedom. A common factor in the emergence of such associations is the expanding scale of higher education. With the expansion of national systems, the stakeholders also increased as did the diversity of views on the proper role of higher education. Tensions multiplied as did the frequency of troubling cases. And thus emerged the motivation to form associations focused on protecting the interests of academics and the academy.

1.4 Organization of the Book

This book focuses on how teaching and research are defined in each higher education system, how teaching and research are preferred and conducted by academics, and how academics are rewarded by their institution. Further, the CAP data enable the authors to address two interesting topics of comparative study. The first topic is the similarities and differences across different higher education systems in formulating and defining teaching and research. The second topic is the policy initiatives

of each government to encourage their academics to shift their priority between teaching and research or to balance between the two. The focus of the analysis includes:

- How academics weigh teaching and research differently
- How academics use their time differently in relation to teaching and research
- How academics perceive the teaching and research nexus
- How each higher education system rewards teaching and research differently

This book consists of three main parts. Part 1 sets out a theoretical basis for the teaching and research analysis. Chapter 2 focuses on the teaching and research nexus. In Chap. 2, Arimoto Akira introduces theory and research on the nexus between teaching and research. Since Boyer's proposal, there has been a serious academic discussion on the nexus between the two. In Chap. 3, William K. Cummings discusses how the patterns of research productivity differ across participating countries and what the determinants of academic productivity across the participating countries in fact are. This chapter is the basis for understanding how each country differs in its research systems and what policy approaches have been initiated in each country to enhance their research productivity. In Chap. 4, Futao Huang discusses how teaching activities differ across different higher education systems. Special attentions are on similarities and differences of teaching methods, contents, and class sizes across systems.

The rest of the book consists of case studies of each higher education system. The case studies reflect the three categories (research-focused systems, teaching-research balanced systems, and teaching-focused systems) according to their relative emphasis on teaching and research. The assignment of particular cases is based on our understanding of historical patterns of development of the respective cases combined with a review of recent policy initiatives. Part 2 deals with the countries with a strong research tradition, past and present (e.g., Germany, Italy, the Netherlands, Norway, Portugal, and Korea), Part 3 looks at the countries with a strong teaching tradition (e.g., Mexico, Brazil, Argentina, Malaysia, and South Africa), and Part 4 are the countries that seek to achieve a more or less even balance between teaching and research (e.g., USA, UK, Canada, and Australia).

In each case study, chapter authors focus on the following four points:

1. The historical development of higher education in terms of teaching and research
2. Policy initiatives to balance or to emphasize either teaching or research
3. Faculty personnel systems (e.g., tenure and promotion procedures, evaluations)
4. Teaching and research activities

Each case study also provides a descriptive analysis of the academic activities by country. This analysis includes teaching and research environments, teaching and research methods, teaching and research contents, and academic productivity. Providing details of the academic activities will enable readers to better understand the reality of teaching and research in each country as it transforms academia in the twenty-first century.

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Part I
Theoretical Basis

Chapter 2
The Teaching and Research Nexus in the Third Wave Age

Akira Arimoto

2.1 Introduction

The role of the academic profession as well as academia changes over time according to its changing conditions. The academic profession fundamentally changes its characteristics whenever the role of academia changes, mostly in relationship to social changes, since the former conducts its academic work in relation to the demands of the latter. Such changes can be categorized in three different forms, and in this chapter, they are described as "waves." There have been three major waves in relation to such changes, from the medieval (premodern university) to modern university and again to the future university (postmodern university). These changes have been made in response to how society has changed over time, from agricultural to industrial and most recently to knowledge-based society.

The prototype of the premodern university emerged around the twelfth century as the university of the Middle Ages and lasted for about six centuries, and during this period, the university focused on academic teaching, while the modern university, which was created in the nineteenth century, focused on academic research in addition to teaching. While these forms of activities have existed for a significant period of the history of universities, the future university emerged in the third wave with its focus on student learning (or study).

Figure 2.1 shows how the frameworks of the university's characteristics and concepts have changed over these transitions. Corresponding to this, the academic profession has also changed its characteristics. The academics in the premodern university focused on teaching activities, whereas in the modern university a form of "research" was introduced in addition to teaching, and thus the identity and

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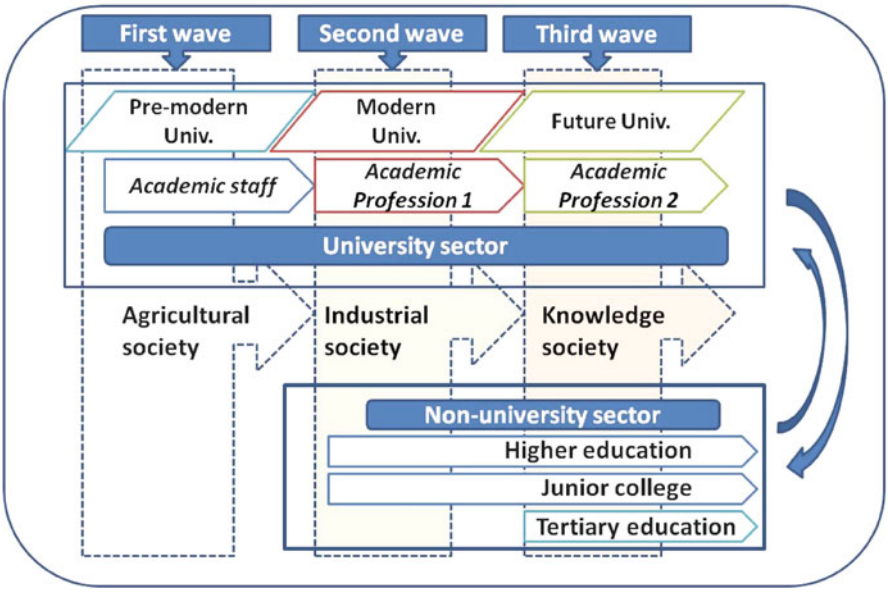


Fig. 2.1 Transform of university and academic profession

the social expectation of academics was expanded as researchers with their own specialized disciplines in addition to their former role as a "teacher." Although the university sector was institutionalized as a social institution for the first time in the first wave in the West, especially in Europe, the nonuniversity sector, which was usually called higher education and short-cycle higher education like the junior college, was institutionalized for the first time in the second wave in the West, especially in the USA.

Historically, the university sector was considered to include those institutions with a research and teaching orientation through graduate school, while the nonuniversity sector consisted of higher education and tertiary education institutions with a teaching and learning (or study) orientation. Since the institutionalization of the modern university with the intense development of a research function, premodern academics with the identity of "teachers" were forced to shift to a new identity, as "academic profession 1" which indicates their dual role as researcher and teacher at the same time. However, in the emerging third wave, the "academic profession 1" is expected to shift to another phase, which is the "academic profession 2" with more focus and attention paid to students as learners, particularly at the undergraduate level.

In this context, the nonuniversity sector, especially tertiary education which is becoming increasingly responsible for the universality of higher education, is seen to be competing with the university sector in terms of teaching as the student population is becoming increasingly massified and diverse.

Based on these frameworks, this chapter will discuss four issues: first, the necessity of a teaching and research nexus; second, the R-T-S nexus in the third wave; third, conflicts between ideals and reality: the Carnegie and CAP surveys; and fourth, the perspective of the twenty-first century's university. In the analysis of these problems, the author utilized the previous studies related to the Carnegie 1992 survey and the CAP 2007(partly including 2008) survey (Altbach 1996; Arimoto and Ehara 1996; Arimoto 2008, 2011; Kogan and Teichler 2007; RIHE 2008, 2009).

2.2 The Necessity of the Teaching and Research Nexus

2.2.1 Effects of the Knowledge Society

The third wave corresponds to the knowledge society (or knowledge-based society), which has created ambiguous lines between the university and society. As shown in Fig. 2.2, the university functioned through discovery, dissemination, service, and administration based on knowledge before society at large shifted from an information-based society to a knowledge society. In this sense, the university was "a knowledge society 1," while the latter is "a knowledge society 2" (Arimoto 2007, 2009a, p. 4). Continuity of the two societies is clearly shown by the compatible existence in recent years of all the functions such as research (discovery of knowledge), teaching (dissemination of knowledge), and learning (understanding of knowledge) in the two societies. As far as knowledge is concerned, knowledge is usefully working in both university and society at this stage. In this context, it is useful to acknowledge how the nature of knowledge is transformed as Gibbons and

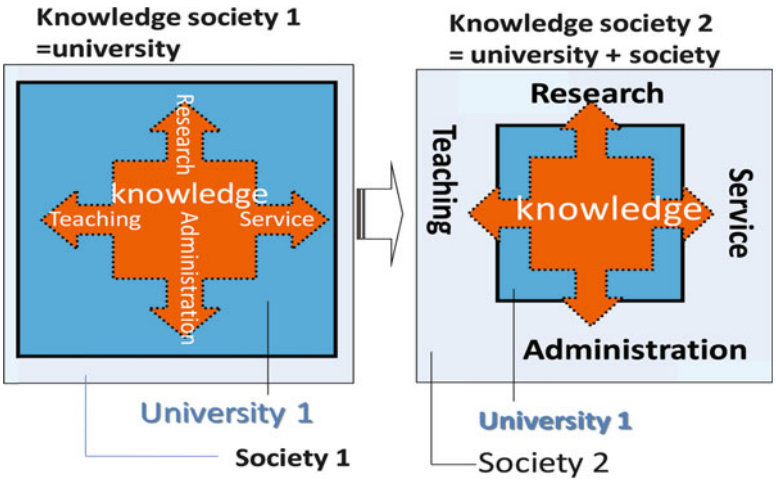


Fig. 2.2 Development from knowledge society 1 to knowledge society 2

Table 2.1 Degree of affiliations (%)

	Discipline	Department	Institution
1. Very important	60.4	34.2	33.1
2. Important	28.2	37.1	32.3
3. Half and half	8.4	19.7	23
4. Not important	2	6.5	8.3
5. Not at all important	1.1	2.5	3.2

others have discussed: how knowledge itself has been transformed from Mode 1, or pure knowledge, which was useful only to the university, to Mode 2, or applied and development knowledge, which is useful to society as well as to the university (Gibbons et al. 1994). In the emerging knowledge society, it is inevitable for both the university and society at large to concentrate on research, teaching, and learning activities for survival reasons, because all of these have acquired an increased social significance.

2.2.2 Logic of Academic Discipline

Knowledge plays an indispensable role in academic work in that the university is an organization developing various kinds of activities such as research, teaching, service, and management and administration on the basis of knowledge (Clark 1983). Academic discipline is considered to be advanced knowledge among various kinds of knowledge. In the modern university, academic staff who usually specialize in specific disciplines, such as physics, mathematics, biology, sociology, economics, psychology, and history, form their own kind of groups and organizations in order to pursue research, teaching, and service and for further development of these activities (Becher and Parry 2007; Parry 2007). In this context, academics' identity cannot be easily formed without a relationship to academic disciplines. In fact, academics' conformity to the academic disciplines in which they specialize is fairly high as shown in the results of the CAP survey. The following results show the most important factors that respondents have indicated when it comes to their identity formation, which are academic discipline (60.4 %), department (34.2 %), and institution (33.1 %) (Table 2.1) (Arimoto 2010, p. 6).

The functions of knowledge mainly consist of understanding, discovery, dissemination, application, and control and at the same time correspond to the university activities of learning, research, teaching, service, and administration and management, respectively. Within an individual discipline working in a basic academic unit such as chair, department, and institute, each of these functions is manifestly and latently institutionalized. In this context, the university is an institution dealing with knowledge, and conducting academic work integrates the functions of knowledge. Academics are basically given the role of pursuing this kind of academic work in the modern university.

Within these kinds of academic work, the role of research developed rapidly after the introduction of the graduate school system in the late nineteenth century. As a result, research universities with graduate school systems started to encourage academics to conduct research. Study of "academic productivity," a concept derived from that of "scientific productivity" originally used by Robert K. Merton as a technical term in his sociology of science, was inevitable, because the main role of the academic research enterprise is to raise academic productivity, while the main role of the research enterprise in the scientific community is to raise scientific productivity (Shinbori 1973; Arimoto 1987, 1981, 2007, 2009b). The concept of academic productivity is increasingly adaptable to various phenomena such as Center of Learning, COC, and university ranking (Arimoto 1996; Ben-David 1977; MEXT-NISTEP 2007; Shin et al. 2011). This testifies to the state of strong research that has been promoted in the modern university.

Competition for high research productivity naturally implies high academic productivity including both research and teaching since research and teaching are thought to be two vehicles indispensable in academic work. Accordingly, a research-teaching nexus (R-T nexus) is inevitable in the modern universities, especially in the research universities. In addition, as teaching is related not only to the research but also to the teaching and learning process, and so learning is also inevitably integral to an increase in academic productivity in the modern universities, especially in the non-research universities. It is interesting to underline that this logic is adaptable not only to a research university but also to a non-research university to a considerable degree. As a result, a research-teaching-learning nexus (R-T-S nexus) is necessary in higher education in the twenty-first century including both the research and non-research university, and also quality assurance of its attainment is necessary (Clark 1997; Nicholls 2005; Arimoto 2006).

2.2.3 Mechanism of Academic Work and the Teaching and Learning Nexus

An academic is thought to be a researcher and teacher at the same time in the modern university, and this categorization is widely accepted. However, even in the nineteenth century, an academic's work required students to demonstrate the ability to recite a textbook in the classroom, rather than focusing on teaching incorporating the findings of new research (Ushiogi 1986, 2008). After research was accepted into the university, providing students with expertise based on research became part of the teaching and learning process. In this sense, an attempt to integrate research and teaching has become fundamentally necessary in the modern university. In other words, academic staffs are no longer regarded as simply school teachers but learned scholars, and teachers are regarded as scientists and researchers.

University teachers basically teach students in the classroom on the basis of research conducted in the laboratory, the library, and the office. Teaching through research was the original meaning of the Humboldtian model of integration between

research and teaching (Ushiogi 2008). Academic staff differ from teachers in the elementary and secondary schools in that they do not conduct research. “At the higher level, the teacher does not exist for the sake of the student: both teacher and student have their justification in the common pursuit of knowledge” (Von Humboldt 1910[1970], p. 249).

Recently, there have been increasing numbers of academic staff who conduct teaching without research in academia which suggests that the traditional integration between research and teaching is diminishing. Those who teach university students without involvement in research may not be regarded by some as university teachers, although they may well be proficient as teachers. Similarly, university students differ from school students, because they need to learn on the basis of research to the extent that they will be taught by teacher’s teaching through research. Strictly speaking, students have to study not merely learn when they are taught on the basis of research, though they learn by themselves when they are not taught by such a method. In this context, teaching-study (T-S nexus) is realized instead of teaching-learning (T-L nexus) in the modern university. In this new process, students are expected to study and prove their creative thinking ability rather than receiving knowledge from their teachers.

2.3 R-T-S Nexus in the Age of Third Wave

2.3.1 Problems of Third Wave Age

The progression from the medieval university to the future university through the modern university was a response to a great deal of social change. In other words, a response to these individual developmental stages is referred to as simple reproduction, creative reproduction, and super-creative reproduction. The third wave is intrinsic to the knowledge society and featuring super-creative reproduction. It is characterized by a society of uncertainty which has a less predictable future due to its complexity compared to the level of simplicity and certainty that previous societies had.

Academics at the elite stage of higher education development in the previous societies in the first and second waves were able to teach students in more homogeneous forms, especially with their social background having predictable future careers. Academics in the third wave are no longer in a position to offer their students direct stepping stones to their future careers because of the uncertain nature of current society. And at the same time, students themselves are apt to be super-diversified socially, economically, and culturally compared to the previous wave. It is becoming increasingly more difficult to predict students’ future careers, since each individual super-diversified student has his/her own differentiated life course and objective.

In the third wave, uncertainty as well as complexity is likely to increase steadily for both society and student. We are now currently facing an age of “educational paradox” where academics must teach students about their future but at the same

time they must not teach students about them. Students' study rather than learning as mentioned previously is necessary if they are to deal with this unpredictable future. Accordingly, academic reform which focuses on academic scholarship is inevitable. For the first time in the history of the university, the concept of teaching and research nexus, or teaching through research, should be introduced into the classroom.

The great effect of the Middle Ages and premodern university with their focus on teaching was well recognized when the modern university was established as an effort to reform the old tradition. One can easily recognize that in the late nineteenth century; American universities clung to the traditional type of teaching orientation. For example, Harvard University did not widely introduce research into teaching until the introduction of the elective system in the late nineteenth century, although it succeeded the tradition of teaching as derived from the Middle Ages university. "The forty-year campaign for the elective system waged between 1869 and 1909 by Charles William Eliot, president of Harvard University, is legendary. Through Eliot's efforts, Harvard abolished all course requirements except English composition by 1897" (Harper and Jackson 2011, p. 111).

Until that time, academic staff who taught many subjects at the same time were not considered researchers specialized in a specific discipline, but as directors of classroom teaching activity, with a managerial role for students' textbook recitation. As Roger Geiger describes the nineteenth-century college in the USA, they were "institutions that conveyed only textbook knowledge to mostly adolescent boys" (Geiger 2000, p. 1). Academics are not expected to research a specific discipline and also to teach students on the basis of their major specialty. However, American universities shifted to recruit Ph.D. holders who graduated from German universities or their equivalent, with a greater emphasis on research than on teaching in their academic work. Research orientation has been encouraged more and more after 1876 when Johns Hopkins University was institutionalized as a "home of science" together with the establishment of a graduate school for the first time in the history of higher education (Olson and Voss 1979).

It is true to say that a research paradigm has prevailed in the modern universities since they were institutionalized in Germany in the nineteenth century, even though the teaching and research nexus was proposed by the Humboldtian ideal in the early twentieth century (Humboldt 1910).

In the twentieth century, the university was compelled to transform itself from the elite stage to the massification stage when there were pressures caused by unprecedented increases in student numbers. Universities and colleges all across the world plunged into the massification stage of higher education beginning in the 1960s, and shifted from the massification stage to the universalization stage in the 2000s, when students shifted focus from diversification to super-diversification. The traditional teacher-centered teaching has been forced to shift to student-centered teaching and to pay greater attention to student's initiative-oriented learning (or study). In the unpredictable age with increasing level of uncertainty, the enhancement of a student's learning ability and achievement is a basic problem to be resolved by academics given that a student now designs a learning plan to build

his/her lifelong career. In this context, an individual student has deferent future, even if he/she belongs to the same cohort group. Accordingly, a new type of education, especially teaching inside and outside of classrooms and of enhancing the individual student's learning (or study), is to be encouraged in terms of life course perspective rather than life cycle perspective. The third wave, in which the knowledge society proceeds as a core social trend not only in universities but also in society as a whole, inevitably places great importance on the discovery of knowledge. As a result, research is apt to increase more significantly than teaching and learning (or study). In this context, a perspective of pursuing R-T-S nexus (research-teaching-study nexus) is considered to be indispensable in the twenty-first century.

2.3.2 Logic of R-T-S Nexus as a Mission of the Academic Profession

In the third wave age, the student's status in universities and colleges moves up gradually, so that the function of student's learning (or study) increases in university and society as well. Considering that teaching and research were consecutively prevailed in university through elite stage and mass stage of higher education, learning is expected to become prevailed in the third wave at universal stage.

In the twenty-first century when we emphasize importance of learning, integration of teaching and learning seems to have become difficult to achieve perhaps because of the pressure of the research paradigm in present university system, and integrated research, teaching, and learning may be even more difficult to realize. Some scholars have discussed the problem of the reconsideration of scholarship as introduced by Earnest Boyer's *Scholarship Reconsidered* and Charles Glassick's *Scholarship Assessed* and the problem of the R-T-S nexus (Boyer 1990; Glassick et al. 1997; Humboldt 1910; Clark 1997; Nicholls 2005).

A university teacher regardless of his/her own specialty mutually interacts with students by way of the curriculum. A student studies by means of accomplishing the educational tasks that the teacher prescribes as part of the teaching and learning (study) process; at the same time, students exercise their own initiative in augmenting their learning.

Given this situation, if we think about how a fruitful outcome of the teaching and learning process can be obtained, it seems to be necessary to seek a harmonious relationship of the teacher's intention for teaching and the student's intention for learning. In other words, the most effective output will be realized when teacher integrates his/her teaching intention through research, and from the student's perspective, the learning outcome should come from his/her research activities.

As Table 2.2 shows, four categories can conceptually be created from a combination of teachers' and students' intentions and expectations: Type A (teacher+, student+), Type B (teacher+, student–), Type C (teacher–, student+), and Type D (teacher–, student–).

Table 2.2 Typology of relationship between teacher and student

Type	Teacher	Student	university
A	+	+	classic
B	+	−	remedial
C	−	+	discipline
D	−	−	influence

Type A is thought to be decreasingly accessible in today's universities and colleges, although it theoretically represents the standard traditional type of the teaching and learning process. On the other hand, Types B, C, and D, though they are deviant types, seem to be more acceptable in many universities and colleges. Even so, Type D exists only conceptually and remains unavailable in practice. Among these four types, Types A and B which have teacher's positive intention (+) are raised inside academia, while Types C and D which have teacher's negative intention (−) are likely to be raised outside of academia.

Type B in particular is likely to become more popular among all types at a time when the emerging universal stage of higher education has inevitably created a situation of super-diversification of students with less enthusiasm and ability for study and learning. This is evident in the fact that a series of new approaches for these students, such as remedial education, first-year education, and career education, are thought to be appropriate to their needs which are negatively working for university's expectation. If we are to send these students to a knowledge society, or even an inquiring society, before and after their graduation from universities and colleges, it is clear that the R-T-S nexus becomes more important so as to obtain these students' academic achievements by transforming their intentions from negative to positive.

2.4 Conflicts Between Ideal and Reality: Carnegie and CAP Surveys

2.4.1 1992 Survey

The Carnegie International Survey on the Academic Profession was conducted in 1992 by 14 participating countries (in reality, 13 countries, Australia, Brazil, Chile, Germany, Israel, Japan, Korea [Republic of Korea], the Netherlands, Mexico, Russia, Sweden, the UK, the USA, and the region of Hong Kong) (Altbach 1996). Based on the Carnegie survey, an analysis of academics' orientation to research and teaching identified three types: a research orientation, a research and teaching orientation, and a teaching orientation (Arimoto and Ehara 1996). The first type, designated a German model, stresses research more than teaching and is found in countries such as the Netherlands, Japan, Germany, Sweden, and

South Korea. The second type, designated an Anglo-Saxon model, stresses research and teaching evenly and occurred in such countries as the UK, the USA, Australia, and Hong Kong. The third type, designated a Latin American model, stresses teaching more than research and is found in countries such as Argentina, Chile, and Brazil.

The Anglo-Saxon model seems to most closely approach the Humboldtian ideal in the sense that it seems to conform to the pattern of integrated research and teaching. On the other hand, the German model, with its strong emphasis on research, tends to pay too much attention to academic staff as researchers and too little to students as learners. In contrast, the Latin American model puts more weight on teaching and on their students, with less on research and the academic staff.

2.4.2 2007 Survey

The Changing Academic Profession (CAP) survey took place in 2007–2008 with the participation of 19 countries (in reality, 18 countries, Argentina, Australia, Brazil, Canada, China, Finland, Germany, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, Norway, Portugal, South Africa, the UK, and the USA, and one region, Hong Kong) (Arimoto 2008).

Figure 2.3, which is based on academics' responses to the question "regarding your own preferences, do your interests lie primarily in teaching or in research?" shows different preferences for the participating countries, with high-low percentage representing academic's preference on research. Research orientation is highest in Norway (83 %), followed by Italy, Japan, Australia, and Korea, while teaching orientation is highest in Mexico (57 %), and followed by the USA, South Africa, China, and Malaysia. The total average proportion for research orientation is 60 % and that for teaching orientation is 40 %. Research orientation is higher than teaching orientation by 20 % among all participating countries. If we compare this result with that of seven countries such as Brazil, Hong Kong, Japan, Korea, Mexico, the UK, and the USA in the Carnegie survey, it provides useful data for a comparison of the trend between the two surveys, with the former at 51 % and the latter at 60 % (Arimoto 2011, p. 8). It is interesting to note that the academic profession reinforced its research orientation by almost 10 % within 15 years after 1992. Ten countries were above the average for research orientation and include Canada, the UK, Finland, Hong Kong, and Germany in addition to the top five countries mentioned above. Nine countries were above the average for teaching orientation and include Brazil, Portugal, the Netherlands, and Argentina in addition to the five countries mentioned above.

As Fig. 2.4 shows, total research time per week in session and not in session in advanced countries is 38.4 h, while it is 26.7 h in emerging countries. They are higher in advanced countries, especially the time spent not in session. Total research time is higher in Italy, Canada, Korea, Norway, and Japan, while it is lower in Brazil, South Africa, and Malaysia.

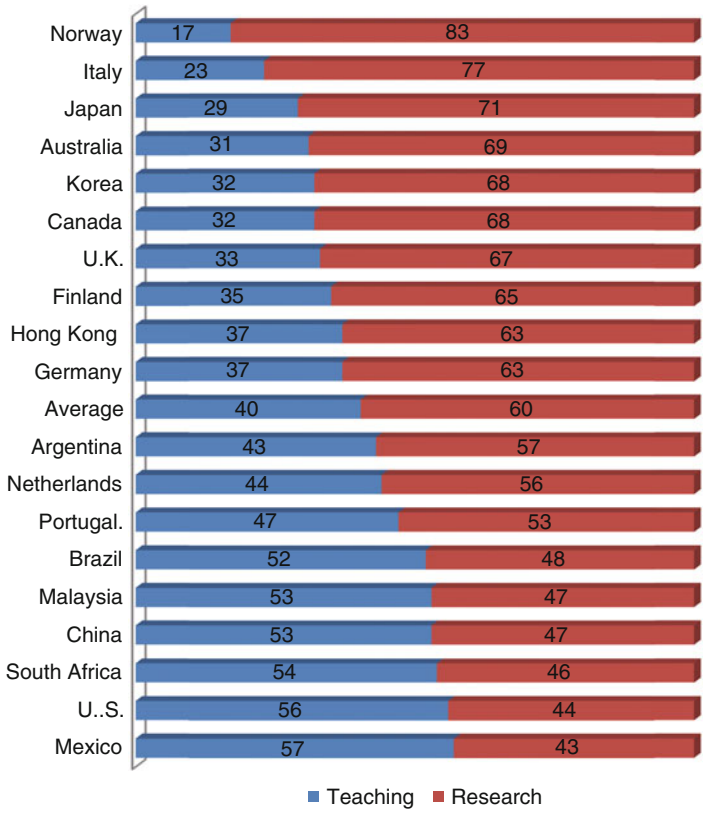
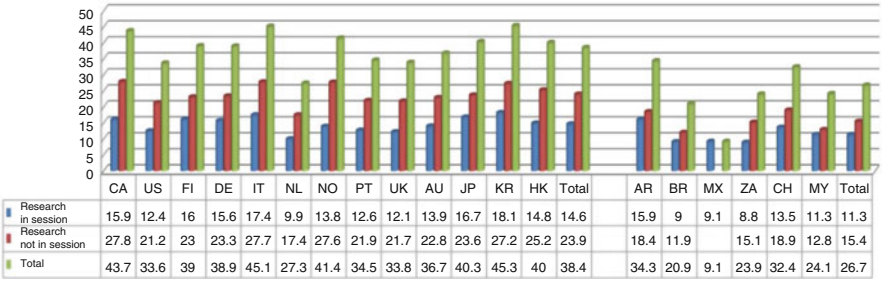


Fig. 2.3 Teaching and research orientation by country (%)



	CA	US	FI	DE	IT	NL	NO	PT	UK	AU	JP	KR	HK	Total	AR	BR	MX	ZA	CH	MY	Total
Research in session	15.9	12.4	16	15.6	17.4	9.9	13.8	12.6	12.1	13.9	16.7	18.1	14.8	14.6	15.9	9	9.1	8.8	13.5	11.3	11.3
Research not in session	27.8	21.2	23	23.3	27.7	17.4	27.6	21.9	21.7	22.8	23.6	27.2	25.2	23.9	18.4	11.9		15.1	18.9	12.8	15.4
Total	43.7	33.6	39	38.9	45.1	27.3	41.4	34.5	33.8	36.7	40.3	45.3	40	38.4	34.3	20.9	9.1	23.9	32.4	24.1	26.7

Fig. 2.4 Hours spent on research in session and not in session (arithmetic mean)

2.4.3 Research Orientation

According to the CAP survey, three types were mainly research in orientation including the fact that the numbers of countries in the Anglo-Saxon type decreased while those in the German type increased.

Table 2.3 Increase and decrease of research orientation by type, country, and year (%)

Type	Country	1992	2007	Increase or decrease
Latin	Mexico	35	43	+8
	Brazil	38	48	+10
	(Average)	36.5	45.5	+9
Anglo-Saxon	USA	51	44	−7
	Australia	52	69	+17
	HK	54	63	+9
	Korea	56	68	+12
	UK	56	67	+11
	(Average)	53.8	62.2	+8.4
German	Germany	66	63	−3
	Japan	73	71	−2
	Netherlands	75	56	−19
	(Average)	71.3	63.3	−8
	Overall average	55.6	59.2	+3.6

Although only ten countries participated in both surveys, the direct comparison of the results obtained in the Carnegie and the CAP surveys is possible because of the similar nature of the questions. As a consequence, it is surprising to discover that the results differ significantly from the expectation that the Humboldtian ideal model would have been realized to a great degree during the past 15 years.

The results from the CAP survey reveal that the German model has extended to a number of countries, while conformity to the Latin American model has declined (Fig. 2.3). The Anglo-Saxon model, which was thought to approximate to the Humboldtian ideal, has also declined to a considerable extent.

As Table 2.3 shows, in 1992, countries of the German type decreased from 71 % to 63 %, while countries of the Anglo-Saxon type increased from 54 % to 62 %. At the same time, the USA decreased from 51 % to 44 %, and countries of Latin America increased from 37 % to 46 %.

Research orientation increased in all countries except German-type countries which showed slight decrease in figures but still maintaining high research orientation ratio, although the Netherlands decreased noticeably from 75 % to 56 %. Therefore, it is understandable that, on average, all countries including those countries in the German type, which decreased slightly, increased their research orientation from 56 % to 59 %.

Summarizing these findings, we can see that the academic profession worldwide has reinforced its research orientation during the 15 years since 1992. William Cummings pointed out at the CAP Conference in 2009 that "While several countries exhibit an increased stress on research, no country for which there is data for both 1992 and 2009 indicates a notable increase in the stress on teaching"(Cummings 2009, p. 41). This fact reflects an increasing differentiation between research and teaching and that it is now directly opposed to the attainment of a Humboldtian ideal of integrated research and teaching.

However, are there in fact any differences among countries in terms of research orientation? We categorize the 19 country into three types: core, semi-core, and

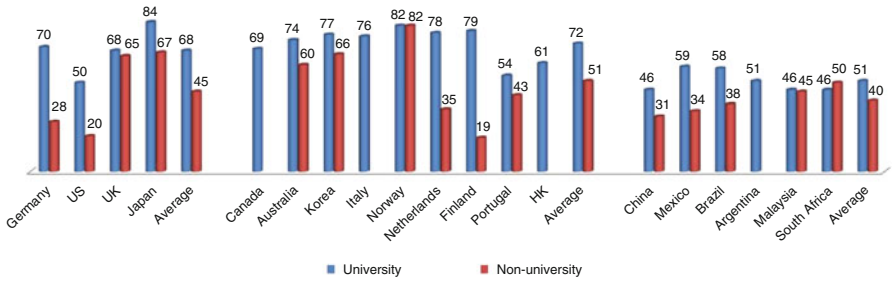


Fig. 2.5 Research orientation by university and nonuniversity (%)

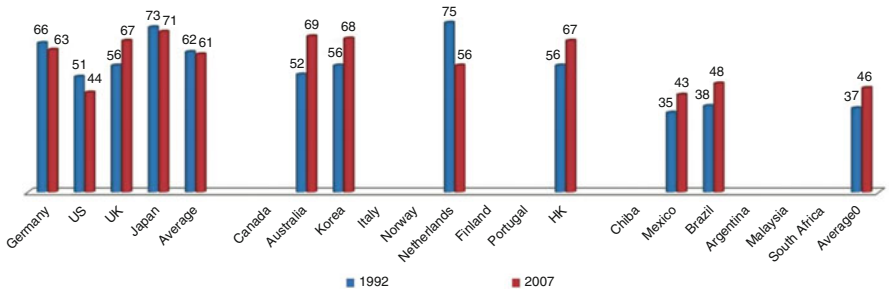


Fig. 2.6 Research orientation by country in 1992 and 2007

periphery countries. Core type consists of four countries such as Germany, the USA, the UK, and Japan. Nine semi-core countries are Canada, Australia, Korea, Italy, Norway, the Netherlands, Finland, Portugal, and Hong Kong. Six periphery countries are China, Mexico, Brazil, Argentina, Malaysia, and South Africa. Figure 2.5 shows percentages of research orientation by university and nonuniversity. These three types show different levels of research preference: core country (68 %, 45 %), semi-core country (72 %, 51 %), and periphery country (51 %, 40 %). University is higher than nonuniversity in terms of research orientation in all countries.

What happened to core, semi-core, and periphery countries? Figure 2.6 shows that on average, core countries have not changed (from 62 % to 61 %), while semi-core countries increased slightly from 60 % to 65 %. Periphery countries increased most from 37 % to 46 %. In the core countries, it is interesting that the USA has decreased in its number, while the UK increased. More precisely, Germany (from 66 % to 63 %) and Japan (from 73 % to 71 %) decreased slightly. In the semi-core and periphery countries, all except the Netherlands increased in its numbers. As a result, almost all countries except the USA and the Netherlands increased their research orientation in the past 15 years.

2.5 Perspective of the Twenty-First Century: Integration Is an Inevitable Problem to Be Dealt With

2.5.1 Uncertainty as well as an Unpredictable Future

In the twenty-first century, emerging trends such as the knowledge society, globalization, and marketization will be reinforced in even more powerful forms, and this will result in people facing complex, uncertain futures. Even economists are unable to predict the future, although economics is regarded as one of the most developed academic disciplines when it comes to future prediction.

At the same time, the universalization stage which comes after the massification stage of higher education development will bring about super-diversification of students against homogeneous students in the elite stage and diversified students in the massification stage. More than likely, the individual student will face an unpredictable future during their career and such difficulty will vary according to an individual's characteristics. Under this circumstance, the life course of individual student is differentiated throughout one's life span including both during campus life and after campus life.

2.5.2 Characteristics of the Academic Organization and the Mission of Academic Profession

Previously, the teaching and research nexus has been increasingly facing difficult to realize owing to the effects of the dominant research paradigm since the university introduced the graduate school as a core place for research. However, considering that among social institutions only the university has the dual function of research and teaching simultaneously, this creates certain inevitable problems needing an urgent solution.

- The core of work in the academic system is research and teaching as its two vehicles so that no educational institution other than university has two systemic and organizational functions.
- In a knowledge society, research-based teaching is necessary more or less at all levels of education from primary education to tertiary education. Furthermore, for a system of lifelong learning from birth to death, research-based teaching is necessary in order to develop human education for independent and autonomous thinking. This is true especially in universities and colleges where integrated research and teaching is considered to be most important among all levels of educational institutions.
- As part of their evolving professionalism, academics are expected to pursue teaching through research rather than merely by instruction. It is valuable for academics to recognize that the abilities of students for problem-solving as

well as creativity are realized through tacit knowledge embedded in academics as researchers. Students as learners have high possibilities of obtaining achievement from study as well as from learning when they are taught in universities and colleges by academic staff with research ability rather than those who lack it (Zuckerman 1977).

For academics who have been committed to a research orientation, it is especially difficult to change their consciousness and conception of scholarship as necessary for the innovation of a new nexus. For example, according to the Carnegie survey in 1992, Japanese academics indicated that the proportion of the age cohort enrolled in universities should be less than 40 %, although at that time the real enrollment rate was already 45 % (Arimoto and Ehara 1996, pp. 39–50). This discrepancy between academics' consciousness and the real enrollment rate persisted to 2007 when, in the CAP survey, the preferred enrollment still remained at less than 40 % despite an actual rate of 55 %—corresponding to the attainment of a universal stage of higher education development (Ogata 2008, pp. 111–114). The survey responses indicate that the existing student enrollment rates were far beyond of the expectation of academics, which clearly reflected their research orientation as well as a view of the university still in the elite stage of higher education development.

However, as discussed previously, the greater importance of learning (or study) in addition to that of teaching has increased in the universal stage of higher education development. Accordingly, it appears inescapable that achieving an R-T-S nexus will be extremely difficult in an environment that has yet to accept an R-T nexus. Academics, such as Japanese academics, who are involved in research, have to resolve this problem at all cost.

2.5.3 Division of Labor Between University and Nonuniversity Institutions

Figure 2.7 compares the research orientation between the university and the nonuniversity (other higher education institutions) and shows that a research orientation is higher in the university in both advanced countries (71 %, 49 %) and emerging countries (51 %, 40 %). It also shows that a research orientation is stronger in advanced countries than in emerging countries (71 %, 51 %; 49 %, 40 %). A research orientation is higher than the average (71 %) in some countries: Japan, Norway, Finland, the Netherlands, Korea, Italy, and Australia. In some countries, a research orientation is stronger in the university than in the nonuniversity with a difference gap of more than 30 %. Examples are Finland, the Netherlands, Germany, and the USA.

Figure 2.8 reveals there is closer relationship between scholarship and original research in the university sector than in the nonuniversity sector (other higher education institutions) in advanced countries (73 %, 63 %), although there is a balanced relationship in emerging countries (58 %, 58 %).

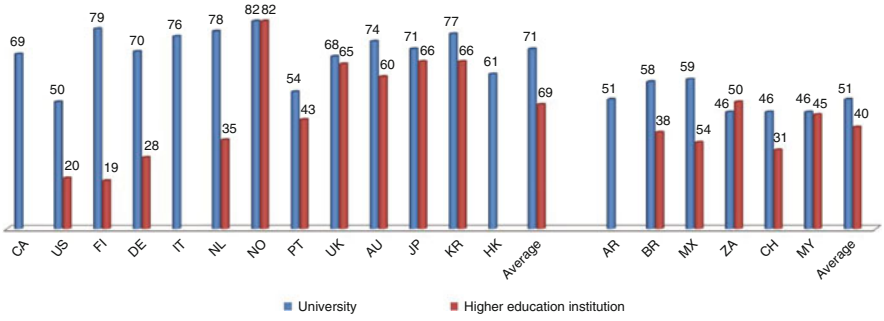


Fig. 2.7 Research orientation by university and nonuniversity institution (%)

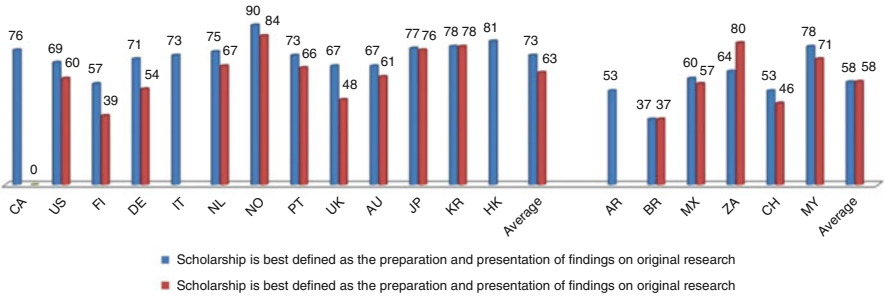


Fig. 2.8 Relationship between scholarship and original research by university and nonuniversity (%)

In the nonuniversity sector, a research orientation is lower in both advanced and emerging countries (63 %, 58 %), even though the former is a little larger than the latter.

According to these results, we can highlight the following:

- There is a trend toward strong levels of research orientation in the university than in the nonuniversity sector in both advanced and emerging countries.
- Research orientation is stronger in advanced countries than in emerging countries with regard to both university and nonuniversity sectors.
- The university sector reflects the characteristics of the research university possessing a strong research orientation because since the modern university was institutionalized, it has had strong emphasis on research.

In general, the findings are applicable to both the university and nonuniversity sectors globally. As a result, the traditional university has strengthened the characteristics of research university function since the institutionalization of the graduate school sector. Based on this, it is assumed that a university with a research function will seek to strengthen its research orientation in the future so as to increase its competitiveness in the world ranking competition (Shin et al. 2011). On the other hand, the nonuniversity sector (other higher education institutions) will put emphasis

on the teaching function rather than the research function. Accordingly, the university is now facing the need to increase its research orientation for graduate courses and teaching orientation for undergraduate programs at the same time (Arimoto 2012).

2.6 Concluding Remarks

1. Whether the university strengthens its research orientation or teaching orientation in the third wave when nonuniversity sector, especially tertiary education which is increasingly responsible for the universal stage of higher education, is thought to be competing with the university in terms of teaching to cover ever-increasing numbers of massified and diversified students.
2. In the emerging knowledge society, knowledge functions such as discovery, dissemination, and application are increasingly important for the academic activities of research, teaching and service that comprise academics' work, and especially for research and teaching as its two vehicles. Both teaching through research and learning (or study) through research are necessary, even though academics undertake teaching to conform to the curriculum and students undertake learning (study) to conform to the teachers and the curriculum.

   Considering these factors, the integration of research and teaching, and, even more, the integration of research, teaching, and learning (study) (R-T-S nexus) are necessary. In reality, however, such integration is rarely achieved due to the increasing tendency for differentiation between research and teaching.
3. Concerning the conflict between the differentiation and integration of teaching and research, the Carnegie survey identified conformity to three types: a research orientation, a research and teaching orientation, and a teaching orientation. By the time of the CAP survey, with the 15 years' time interval, the distribution between these types had changed. Conformity to a teaching orientation and to a research and teaching orientation had decreased, but the results showed that research orientation had increased. It is particularly noteworthy that the decline in the research and teaching orientation, the type closest to the Humboldtian ideal, had declined to some extent in all countries except the USA.
4. In the twenty-first century when unprecedented universalization will be steadily promoted, it has to be said that integration is necessary, not only to the establishment of an R-T nexus but further to an R-T-S nexus, if the increasing demands of students' learning (study) are to be met. As discussed in this chapter, when the present strong emphasis on research activity is considered, there will be greater difficulty in realizing an R-T-S nexus since formation of R-T is not easy.
5. In this context, at the time of third wave, the academic profession worldwide is confronted with the challenge of finding the means to achieve this development. On the other hand, the university is now confronted with a turning point for seeking more research orientation such as putting greater efforts on the function of graduate courses and at the same time trying to focus on a teaching orientation by enhancing the function of undergraduate courses in order to construct the R-T-S nexus.

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Chapter 3
The Research Role in Comparative Perspective

William K. Cummings

3.1 Introduction

Alongside teaching, research is a major expectation for academics. But what is research? We will suggest here that there is substantial variation in the ways that different academic constituencies perceive and conduct research. Especially notable are the differences by national research tradition and by academic field. Based on these insights we will evaluate some of the options for the measurement of research productivity and consider some of the determinants of research productivity.

These issues can be approached from different levels—specifically at the national, institutional, and individual levels. Our focus will be primarily on the national level, whereas the country chapters in this book will stress the institutional and individual levels.

3.2 Historical Overview of Academic Research

The classical medieval university was a teaching institution, and the staff (mainly clerics) were expected to command a thorough understanding of their respective fields but were not expected to contribute original insights (Wieruszowski 1966). Nevertheless, some of the university academics were research inclined, and these individuals sought outlets for their creative work in external bodies such as the Royal Society or the Académie Française (Johnson 1990). This pattern of separate institutions for teaching and for research persisted in the French model that was diffused to Russia, Latin America, and elsewhere.

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Meanwhile in Germany some of the leading university-based scholars, particularly in the sciences, received encouragement from their respective state sponsors to enter into contracts with outside bodies to establish research institutes for industrial and other research on their university campuses, thus bringing research onto the campus and into the classroom. The German academic tradition came to favor research monographs and articles for the routine publication of findings. But for an academic to gain promotion to the rank of full professor, it was expected that they complete a book-length doctoral thesis.

By the mid-nineteenth century, the German university was gaining considerable international recognition leading intellectual leaders in many countries including the youthful United States to consider imitating the German example—as in the examples of Clark University, Johns Hopkins, and the University of Chicago (Metzger 1955). A major difference in the US case was to locate research in departments composed of several professors with common interests, whereas in the German university the institutes tended to be one-professor shows.

An important innovation of the emerging American research university was the establishment of academic presses to publish books of scientific merit. These presses tended to emphasize the publication of humanities and social science titles, while the sciences stressed other modes of publication. Particularly notable from the turn of the twentieth century was the tendency of researchers especially in the natural sciences to form academic societies with the ritual of annual meetings; one important activity of these societies was the establishment of refereed journals as a vehicle for the publication of findings.

In more recent times national and local governments have sought to partner with the universities in research. Initially in the USA the focus was on the agricultural sciences, and in many states a lead university was identified to manage a statewide system of agricultural research and extension. Later state governments partnered with their universities in other applied areas such as road construction and urban planning. Only during and after WWII did this partnership extend to basic research. Still the result was that, in the USA, universities came to depend heavily on state and federal funding for their research.

Ben-David (1977) has chronicled this shift westward of the world's centers of learning. In more recent times, the shift has continued westward across the Pacific Ocean as the research systems and universities of Japan, Korea, and most recently China have received generous support from their respective governments and have come to be competitive in terms of many indicators with the great universities of Europe and North America (Cummings 2008). The Asian models arguably gained much of their ethos from the German university—an emphasis on the natural sciences (and engineering) while at the same time referring to the humanities as scientific fields of endeavor, a fascination with basic research, and a respect for the full professors of the respective academic fields.

Somewhat distinct from the above models is the professional school model or Latin model as it is most prevalent in the Mediterranean area and in Latin America. In this model, the major goal is to teach professional subjects such as law, business, medicine, and engineering. The great majority of academics have full-time jobs

outside the university and only have part-time teaching obligations at their university. Many of the universities do not support research or consider research in their evaluation of academics. And to the extent research is undertaken, it is more likely to be applied research reflecting the professional identities of the faculty.

3.3 Perceptions of Research

Similarly systems differ in their perceptions of what constitutes good research. Boyer drawing on his international encounters suggested four distinctive modes of scholarship. Boyer (1990) argued that all deserve respect but that different systems as well as different sectors within systems might place emphasis on one or the other. The CAP study sought to build on the Boyer terminology. Thus, it asked academics several questions concerning their perceptions of research. Two we will highlight were for degree of agreement (strongly agree to strongly disagree) with the following statements:

Scholarship is best defined as the preparation and presentation of findings on original research (original), and scholarship includes the application of knowledge in real-life settings (applied).

Table 3.1 below presents the percentages that strongly agree or agree for these questions by country. As can be seen, the differences are quite large.

The advanced countries, especially those in Western Europe, are more likely to stress original research. Norway leads followed by the three advanced countries in Asia—Hong Kong, Korea, and Japan. The emerging countries are more likely to

Table 3.1 Percent who agree that scholarship is original and is applied (B5) by country

Countries	Original work (%)	Applied work (%)
Argentina	56	78
Australia	67	74
Brazil	37	85
Canada	76	68
China	54	82
Finland	57	84
Germany	71	71
Hong Kong	81	79
Italy	73	60
Japan	77	75
Korea, Republic of	78	83
Malaysia	75	80
Mexico	60	86
Netherlands	75	46
Norway	90	62
Portugal	73	77
South Africa	64	76
United Kingdom	67	70
United States	69	81

stress applied or synthetic research—e.g., Mexico and Brazil. But among the advanced countries, the USA reflecting the land-grant emphasis favors applied research. Similarly Finland where the economy is tightly entwined with university innovations also stresses applied research.

3.4 Massification and Diversification

Parallel to the international experience in generating new academic models has been the expansion in the public and private demand for higher education leading to an increase in the provision of higher education, or what is sometimes called "massification" (Trow 1973).[1] The CAP project has collected extensive information on various aspects of the 19 participating higher educational systems. For example, these vary as of 2005 in their progress along the massification curve as illustrated in Table 3.2. Three are below 30 % (China at 20 %, Brazil and Mexico at 24 %), 2 are between 31 % and 40 %, 1 is between 41 % and 50 %, and the remainder (12) are at 51 % or greater.

Table 3.2 Indicators of massification and academic quality

Country/year	Tertiary GER 1980	Tertiary GER 2005	2005 GER–1980 GER	% of faculty with PhD	Per cap. output of S&E articles 2000
Australia	25	72	47	73	794.2
Hong Kong	10	31	21	79	nd
United Kingdom	19	60	41	73	821.9
United States	56	83	27	77	722.2
Argentina	22	65	43	20	77.8
Finland	32	92	60	41	960.5
Germany	34	50	16	64	530.5
Italy	27	66	39	45	371.4
Mexico	14	24	10	29	31.8
Norway	26	80	54	53	720
Portugal	11	56	45	40	191.3
Brazil	11	24	13	57	38.8
Canada	57	62	5	92	665.5
China	2	20	18	25	14.8
Japan	31	55	24	74	445.6
S. Korea	13	96	83	97	206.8
Malaysia	4	32	28	39	21.9
Netherlands	29	61	32	37	800.5
South Africa	na	15	na	52	55.8

Data source: UNESCO/IES for columns 1–3; CAP for 4; NSB 2012 for 5

[1] Massification of higher education refers to the expansion of higher education so that at least ten percent of the age cohort enrolls in courses; when expansion exceeds 50 %, it is said that the system is approaching the universalization of higher education.

Concerning the speed of massification between 1980 and 2005, Canada barely increased its enrollment ratio—from 57 % in 1980 to 62 % in 2005—whereas S. Korea increased from 13 % to 96 % and Finland from 32 % to 90 %. Massification is associated with economic growth which (a) generates a demand for workers with higher levels of education and (b) potentially increases the availability of both public and private resources to support higher education. Additionally massification may have an impact on the research performance of systems. On the one hand, higher education systems need more academics to teach the expanded student body, and depending on the system, these new academics may or may not contribute to the research effort. They will contribute to the extent they are qualified for research and to the extent they are employed in settings that emphasize both teaching and research.

Concerning quality, we only have data for more recent times though for two indicators. First, we consider the proportion of academics that hold a doctorate by country. This indicator varies from 20 % in the case of Argentina and 25 % in the case of China to 79 % in the case of Hong Kong, 92 % for Canada, and 97 % in the case of Korea. While there is a modest association between speed of expansion and a lower proportion with doctorates, Korea is a glaring exception.

Another frequently used indicator of the research inclination of academics is the ratio of the number of scientific articles published in a specified time period to some indicator of system or societal scale. Table 3.2 presents a comparison of the number of research articles written in 2000 by researchers in selected countries to the population size for the same period. There is wide variation between systems. There is a modest association between the percent of faculty holding doctorates and this indicator of quality—e.g., Canada, Australia, and the USA are high on both, but Finland is only high on academic articles. Academic articles per capita are related to the level of economic growth of societies—e.g., Finland, the UK, the Netherlands, and the USA score relatively high on this indicator. It is interesting that Finland, which had one of the fastest rates of massification, leads in terms of this indicator. This suggests that massifying systems need not sacrifice research quality to achieve rapid expansion.

3.4.1 Vertical Differentiation of Institutional Types

Another way that systems cope with expansion is to foster new systemic layers that, in contrast to the research-oriented missions of the traditional universities, are focused on meeting the mass demand. It can be argued that in the increasingly globalized world, ironically it is the institutions of higher education rather than the national systems that compete against each other and are measured and pitched against each other in terms of their attraction for globally mobile students, top-notch faculty and promising young researchers, knowledge production, and placement in the league of "world-class universities." Teichler et al. (1996) have argued for Europe that there today is more variation among institutions of higher education

within countries than across them. There have emerged sectors within systems or within institutions themselves that are more globally aligned and competitive, thus having further "globalized the difference" between those who fit the neoliberal paradigm and those who do not (Slaughter et al. 2010). UNESCO captures this differentiation with its distinction between 5a and 5b higher educational institutions. The CAP survey focused exclusively on 5a institutions, that is, institutions offering first degrees. However, within this group may be some self-designated as research universities and others self-designated as teaching institutions. Based on the responses to the CAP survey, as few as 22 % of the German sample are in primarily teaching institutions compared to 80 % in the cases of Japan and Korea.

Within systems, as might be expected, academics in the research universities are more inclined to embrace research and to emphasize basic research over applied research when compared to their colleagues in the teaching institutes. However, a somewhat unexpected finding is that academic systems where the research university sector is relatively small such as Korea and Japan are more research inclined and research productive than those with proportionately large research university sectors.

3.4.2 "Horizontal" Differentiation of Academic Fields

Our historical overview traces the steady differentiation of academic fields from the days of the classical university with its narrow focus on philosophy to the modern university with its support of the core of arts and sciences and a wide array of applied or professional fields. Within this broad spread of fields, national systems differ in terms of the academic fields they stress. Generally speaking there is a somewhat even distribution in the universities of Western Europe, a bias to the social and life sciences in North America, a clear stress on the natural sciences and especially on engineering in East Asia, and a professional school stress in Latin America.

3.5 Diversity of Disciplinary Research Styles

Our historical review suggests academic research and its dissemination take many forms. While the recent discourse on world-class universities and university rankings has tended to equate research with the publication of refereed journal articles, others have sought a broader definition of research that acknowledges the importance of applied research and even includes the scholarship that goes into preparing instructional material for the dissemination of knowledge in classrooms and other venues (Boyer 1990). Whereas the former perspective only recognizes journal articles as the acceptable medium for transmitting research, the latter expands the notion of worthy products so that they recognize the diversity of academic work,

considering along with articles such alternate products as books, monographs, patents, computer software, and documentary movies.

The CAP study and the earlier Carnegie study implicitly accept this broader perspective. Thus in its effort to capture research effort, the respective survey instruments ask respondents to estimate their "scholarly contribution" in ten areas ranging from scholarly books to videos or films (question D4 in 2007, question 41 in 1992). When publication patterns are examined (both by country and by field), it appears that there is not one but rather two broad patterns for the presentation of scholarship—on the one hand an article focus and on the other hand a book focus.

The article focus is more characteristic of the physical and life sciences, medicine, and agriculture. Additionally academics in engineering, agriculture, and the life sciences were more likely to seek patents for their work; agriculture and life science academics were more likely to publish monographs reporting funded research; and those in the physical sciences and engineering noted their achievements in developing computer programs.

In contrast academics in the humanities, social sciences, law, and education were more likely to look to books as the medium for communicating their research results. Additional to relying on books to communicate scholarship, humanities academics were most likely to publish artistic work, academics in the education field were most likely to publish videos, and those in law and the social sciences were most likely to publish in newspapers. Thus, there are big differences in what academics consider as appropriate channels for communicating research.

Reflecting on these differences in the expression of scholarship, some observers have suggested that the contemporary academy is composed of two cultures (Snow 1969): a humanities' culture that fosters nonlinear scholarship and a scientific culture that stresses logic and measurement. Others speak of the contemporary academy as composed of numerous more or less exclusive tribes that have little to do with each other (Becher and Trowler 2001; Clark 1984, 1987).

3.6 Funding of Research

While all academic fields make unique contributions, fundamental to the modern era is the belief that science and technology paves the road of progress. Thus in most advanced nations, there are systematic biases in favor of those who work in science, engineering, and health science fields (often called STEM fields)—better salaries, more opportunities to obtain funding for research, and if in academia lower teaching loads.

These differences in opportunity once were modest but have progressively expanded as science and engineering research has demonstrated its value. Most of the opportunities are funded by the private or corporate sector and support research in corporate laboratories. But in recent years corporations have also come to support selected projects conducted in university laboratories (Slaughter and Rhoades 2007).

Table 3.3 R&D and article publication among CAP countries

Country	Amount for R&D 2009	R&D as % GDP 2009	Global share of R&D 2009 (%)	R&D as % GDP 1996	Articles 1995	Global share of articles 1995 (%)	Articles 2009	Global share 2009 (%)	Annual growth rate of articles (%)
Argentina	2,679	1.1	0.2	0.4	1,969	0.3	3,655	0.5	4.5
Australia	18,775	2.2	1.5	1.7	13,387	2.3	18,923	2.4	2.5
Brazil	21,649	1.1	1.7	0.8	3,471	0.6	14,000	1.8	10.5
Canada	24,551	1.9	1.9	1.6	24,532	4.2	31,748	4.0	1.9
China	154,147	1.7	12.2	0.7	9,261	1.6	74,019	9.4	16.0
Germany	82,731	2.8	6.5	2.3	38,100	6.6	45,649	5.8	1.3
Finland	7,457	4.0	0.6	2.8	4,134	0.7	5,306	0.7	1.8
Italy	24,752	1.3	2.0	1.1	17,904	3.1	29,017	3.7	3.5
Japan	137,909	3.3	10.9	2.9	47,603	8.2	49,627	6.3	0.3
S. Korea	43,906	3.4	3.5	2.9	3,803	0.7	26,755	3.4	15.0
Mexico	5,719	0.4	0.5	0.4	1,901	0.3	4,128	0.5	5.7
Malaysia	2,091	0.6	0.2	0.3	373	0.1	1,351	0.2	9.6
Netherlands	12,273	1.8	1.0	2.1	12,330	2.1	14,866	1.9	1.3
Norway	4,734	1.8	0.4	1.7	2,953	0.5	4,440	0.6	3.0
Portugal	4,411	1.7	0.3	0.7	989	0.2	4,187	0.5	10.9
UK	40,280	1.9	3.2	1.9	45,993	7.9	45,649	5.8	–0.1
USA	401,577	2.9	31.8	2.6	202,887	34.9	208,601	26.5	0.2
S. Africa	4,689	0.9	0.4	0.7	2,364	0.4	2,864	0.4	1.4
Others	270,000		21.4						
Grand total	1,264,330				580,809		788,347		

Data source: US National Science Board (2010)

Alongside corporate research in many of the more advanced nations, national and local governments have launched programs to support research, favoring select higher educational institutions as well as specialized government laboratories (Wildavsky 2010). In most countries the great majority (90 % or more) of this R&D funding goes to researchers in science, engineering, and the health sciences. Strengthening the assertion above of two academic cultures, the amount of funding available to researchers in the social sciences is modest, and that available to educators and humanities scholars is very limited.

The aggregate amount of funds that is available for research in all venues (HEI, independent think tanks, government laboratories, corporate laboratories) in select societies is presented in column 1 of Table 3.3 below. The aggregate amount is a reflection of many forces—the energy and efficiency of researchers, the priority that nations attach to research, and the faith of the corporate sector in economic returns to investment in R&D but especially the size of economies. Thus, the top three economies of the world, the USA, China, and Japan, lead in terms of the aggregate amount of research funding.

To capture the comparative effort of nations, most analysts prefer to divide the aggregate research expenditure by the size of GDPs. The effort indicator gives a

different picture—some very small nations now stand out such as Finland and Israel. The amount of research funding that goes to higher education is only reported for a few nations and tends to be circa 20 % of the total. But as this data is not available for the majority of nations, the first two indicators can be thought of as rough proxies for the level of funding for academic research. In that the CAP study is interested in recent change, it is helpful to look at recent trends in R&D—specifically comparing the recent figures with those 14 years earlier. For most advanced nations, these figures are relatively stable—in contrast, a few nations stand out for the rapid increase in their effort, notably China, Korea, Portugal, and Brazil.

3.7 STEM Research Outputs

The above are possible comparative indicators of the resources that go into science. What comes out is product development, patents, etc. But in contrast with these practical outputs, the special contribution of higher educational institutions is the exploration of basic science issues, and in the case of the STEM (science, technology, engineering, and mathematics) fields, the standard vehicle for the publication of the results of these outputs is scientific articles.

Researchers have fashioned data banks to assess achievements in the realm of publications—the total number, the global share, changes in the global share, the ratio of the global share in publication outputs to the global share in inputs, and finally comparisons of the ratio of total publications to total inputs. Several of these output indicators are presented in Table 3.3. Several patterns stand out. As with R&D funding, large countries or more accurately countries with large economies have more publications—the USA, China, and Japan are the leading world economies and are the leaders in terms of publications.

Countries that score high on both effort and recent increase in effort also score high on total publications and exhibit the most rapid increases in number of publications over the 1995–2009 period. Korea and China especially stand out. It is noteworthy that the USA and Japan were the leaders in total publications (and in share of total publications) in 1995. But since both of these countries have experienced little growth in their publication totals (column 9), thus their shares of the world total have considerably dropped (e.g., for the USA from 34.9 % in 1995 to 26.5 % in 2009 and from 8.2 % to 6.3 % in the case of Japan). Meanwhile China's share has steadily increased (1.6–9.4 %) thus surpassing Japan.

An interesting comparison is between column 3 which presents each country's share of the global total of research funding in 2009 on the one hand and on the other hand column 8 which presents each country's share of the global total of research articles in 2009. Most countries have similar shares of both. But a few stand out for having greater shares of articles than would seem to be justified by their funding—Australia, Germany, Finland, and the UK, and some stand out for the opposite, having a smaller share of articles—Japan, the USA, and China. The country case studies that follow below will look into some of these anomalies.

3.8 Conclusions

Countries differ widely in their academic traditions, the massification of their higher education systems, their wealth, and the emphasis they place on academic research. These differences are reflected in their levels of scientific productivity as measured by the number of refereed research articles. But the point in this chapter is to stress that refereed research articles are only one dimension of the research vitality of academic systems. It is also important to look at non-STEM fields and at other modes of research such as the publication of books, newspaper articles, and the development of artistic and musical expression. Additionally many would argue that public service activities such as assisting communities in community development projects or exhibits and public lectures also constitute important modes of scholarship and research. We anticipate that the chapters that follow will enrich our understanding of the multiple research traditions prevalent in the contemporary academy.

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Chapter 4
Teaching and Curriculum Development Across Countries

Futao Huang

4.1 Introduction

Since the first international survey was implemented in 1992, numerous researches have been undertaken about university academics' teaching activities. Especially the international survey of the Changing Academic Profession (CAP) project, which was carried out in 2007 and 2008 in 19 countries, has made it possible for researchers to conduct new research. A brief review of the existing literature indicates that most of these studies are concerned with a general description of academics' activities in a participating country by variables of interests (e.g., by discipline, sector, or age), academics' preference over teaching or research activities, or the relationship between teaching and research activities at the national or institutional level. However, little is known about how academics were involved with curriculum development activities and what role they played in the process of curriculum development in comparative perspective.

This chapter attempts to make a comparative study on the characteristics of academics' teaching activities and curriculum development, with a focus on the USA, Japan, and China. Based on major findings from the CAP surveys in 2007–2008, firstly, this chapter makes a brief introduction of the research framework and methodology. Secondly, the chapter discusses similarities and differences in academics' teaching activities and curriculum development across three different systems with a focus on a research-focused system (Japan), a teaching-focused system (China), and a teaching-research balanced system (USA). The chapter concludes by presenting the similarities and differences in the various stages or aspects of academics' teaching activities and curriculum development and identifies three distinct patterns of curriculum development based on the case studies of the USA, Japan, and China.

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4.2 Research Framework and Method

4.2.1 A Conceptual Framework

Since the first book on curriculum was published in 1905 (Bobbit 1918), many studies have explored issues concerning curriculum development at different levels and in different types of educational institutions (e.g., Dewey 1938; Dressel 1963; Evelyn 1996; Goodlad et al. 1979; Goodlad and Su 1992; Haworth et al. 2002; Levin 1977; Stark and Lattuca 1997; Tayler 1949). However, there is little research about academics' involvement with university curriculum development, especially what role academics play in the process from a comparative perspective with empirical evidence. Therefore, this chapter will address two research questions as follows:

1. What are the similarities and differences in curriculum development at various stages or in various aspects among all the CAP participating countries?
2. What basic pattern(s) could be identified in relation to curriculum development through an analysis of the three different systems: a research-focused system (Japan), a teaching-focused system (China), and a teaching-research balanced system (USA)?

Adopting Taylor's basic principles about curriculum development and instruction and utilizing relevant data from the CAP survey, the author has developed a research framework based on which the above-mentioned research issues will be dealt with (Fig. 4.1).

As indicated in Fig. 4.1, the process of university curriculum development consists of four stages:

1. Which actor has a primary influence on approving new academic programs?
2. How do academics engage in designing, selecting, and providing teaching materials?
3. What major mediums of instruction are employed by academics when their teaching activities are carried out?
4. Which actor has the most powerful impact on evaluating academics' teaching activities?

However, the research framework differs somewhat from Taylor's principles, as it introduces a comparative perspective to the understanding of the important stages and aspects of curriculum development and academics' teaching activities.

4.2.2 Method

With regard to the comparative study of the academics' teaching activities and curriculum development in the 19 countries including Hong Kong, the latest version of the relevant data from the international survey of the Changing Academic Profession (CAP) project is used. As the characteristics of the samples of almost all the

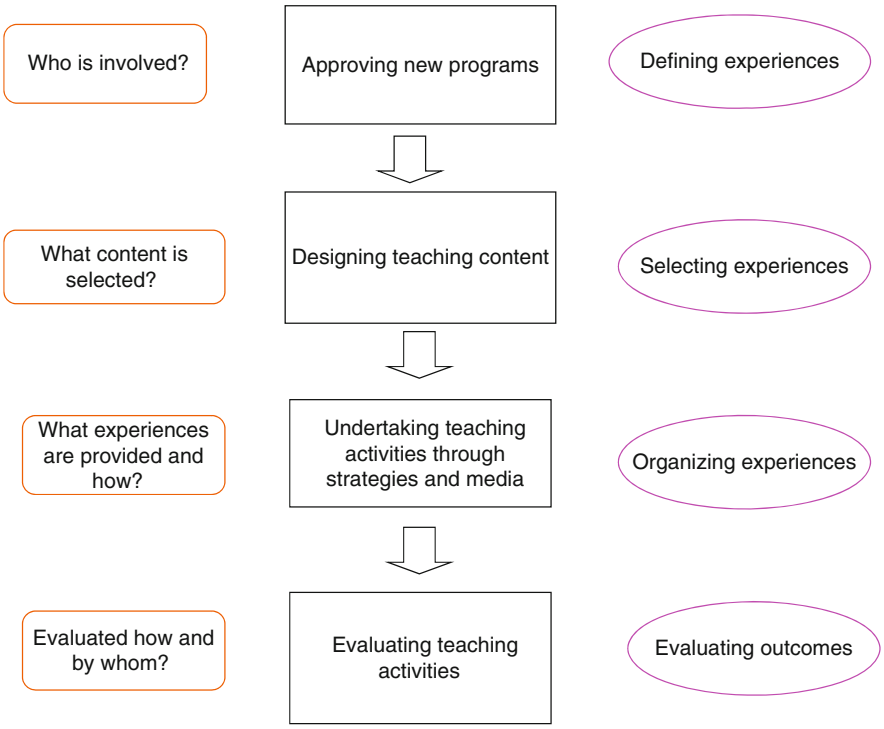

Fig. 4.1 Research framework on curriculum development

participating countries' teams are available in existing publications (RIHE 2008), a brief summary of the information about the respondents from the USA, Japan, and China is provided as follows:

- USA
  - Online survey, hosted by SPSS Research Services, with paper follow-up.
  - Sample size is 5,772, including a 4-year college and university faculty, and stratified by institutional type/size and control.
  - Adjusted response rate is 24.6 %, $N = 1{,}151$ respondents.
- Japan
  - Paper survey from early 2007 to October 2007.
  - Sample size is 6,200, including faculty selected from 18 4-year national, public, and private institutions, and sampled by institutional types and scale.
  - Faculty response rate is 23 %, $N = 1{,}408$.
- China
  - Paper survey in 2007 with the support from the Ministry of Education.
  - Sample size is 4,200, selected from 10 national and 60 regional institutions, and stratified by region, discipline, and institution type (e.g., national or local).

- Faculty response rate is 86 %, $N = 3{,}618$.
- Institution response rate is 97 %, $N = 68$.

4.2.3 Limitation

There are obviously many limitations to this study. First, curriculum development is a complex and changing process in which many actors, activities, and components are involved. Because the main purpose of the CAP international survey is not focused on the role of academics in curriculum development, the research below has certain limitations. As presented earlier, the research framework only deals with several stages or aspects of curriculum development. Issues concerning the educational purposes of particular universities and the extent to which these are attained are not addressed. Second, due to the limited questions and data about curriculum development, this study can hardly provide in-depth information about how academics are involved with curriculum development. Finally, with regard to the study of the USA, Japan, and China, as these three countries only represent a small part of the 19 participating countries, the patterns of curriculum development which are identified based on the three countries may not apply to other countries or other regions, e.g., Europe, Latin America, and Africa.

4.3 Results

As Table 4.1 reveals, among 19 countries, with regard to the actors having primary influence on approving new academic prorgams, the largest percentage of respondents (37 %) reported that faculty committees/boards have the primary influence on approving new academic prorgams in their institutions, followed by 31 % of respondents who expressed that their institutional managers have primary influence on doing it. 18 % of respondents answered that acadcemic unit mangers have primary influence on doing it. In sharp contrast, except for students' share, only 3 % of the academics indicated that individual faculty have the primary influence on approving new academic programs.

If we take a further look at the responses by the academics from the USA, Japan, and China, clear differences can be found. Namely, in the USA the largest share of respondents (40 %) reported that their institutional managers have the primary influence on approving new academic programs. In Japan, 59 % of the academics stated that committees/boards have the primary influence, while 48 % of Chinese academics responded that government or external stakeholders have the primary influence on approving new academic programs.

As discussed earlier, though individual faculty may not have primary influence on approving new academic programs in comparison with other actors, Table 4.2 indicates that nearly 70 % of the academics in the 19 countries are

Table 4.1 Main actors in approving new program

	CA	US	FI	DE	IT	NL	PT	UK	AU	JP	KR	AR	BR	MX	ZA	CH	MY	Average
Government or external stakeholders	7	7	25	8	2	3	7	4	2	1	2	7	2	30	13	48	19	11
Institutional managers	36	40	32	40	8	10	15	26	40	16	42	44	45	18	33	38	45	31
Academic unit managers	17	16	6	19	13	48	20	10	13	17	22	16	26	11	20	9	21	18
Faculty committees/ boards	38	37	32	29	70	34	54	55	42	59	33	32	26	39	28	4	14	37
Individual faculty	1	1	5	4	6	4	5	5	4	6	1	0	1	2	6	0	1	3
Students	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count (n)	957	1,096	1,082	964	1,467	639	831	950	913	1,301	893	790	1,120	1,862	588	3,262	1,108	

Notes: proportion (%) of respondents who agree to the survey: "At your institution, which actor has the primary influence on approving new academic programs?"

Table 4.2 Academics' involvement with curriculum development

	CA	US	FI	DE	IT	NL	NO	PT	UK	AU	JP	KR	HK	AR	BR	MX	ZA	CH	MY	Average
Development of course material	88	88	76	36	86	76	48	85	88	88	29	63	78	71	50	76	86	27	72	69
Curriculum/ program development	63	76	67	41	34	63	65	73	76	75	27	50	66	48	45	66	70	42	68	59
Total	636	674	649	411	595	560	589	603	692	685	482	547	636	547	583	683	632	468	680	
Count (n)	1,042	1,110	1,196	1,115	1,678	838	800	955	1,029	898	1,376	895	764	818	1,111	1,870	697	3,219	1,107	

Notes: proportion (%) of respondents who agree to the survey: "During the current (or previous) academic year, have you been involved in any of the following activities?"

involved in developing course materials and approximately 60 % of them are engaged in curriculum/program development.

Across three different systems of the USA, Japan, and China, as shown in Table 4.3, a much larger proportion of the US faculty are involved with course material (88 %) and curriculum development (76 %) than either Japanese academics (29 % and 27 %) or Chinese academics (27 % and 42 %). Actually, the percentages of Japanese and Chinese academics who responded that they are involved with both activities are not only lower than those of US academics, but they are also lower than the international mean.

As indicated in Table 4.3, more than 60 % of the respondents from all participating countries' teams stated that in their teaching activities, practically oriented knowledge and skills as well as international perspectives or content are emphasized. Also a similar percentage of the academics reported that they incorporate values and ethics into their teaching content.

Over half of both the US and Chinese academics stated that all these aspects are emphasized in their teaching activities. According to the CAP data (Table 4.4), the largest percentage of the US respondents (72 %) reported that they incorporate values and ethics into their course content, while the largest percentage of Chinese academics (77 % and 67 %) emphasized practically oriented knowledge and skills and international perspectives or content in their teaching. For these indicators, the Japanese percentages were lower.

Additionally, it is clearly suggested in Table 4.4 that, on average, 96 % of all the respondents agreed that they employ classroom instruction/lecturing in their teaching. The dominance of the traditional teaching strategy is evident and profound. However, the data also show that a large number of the academics adopted face-to-face interaction with students outside of the classroom (79 %), electronic communications (e-mail) with students (79 %), and individualized instruction (71 %) as their major teaching methods.

Within the above-mentioned three countries, similarly, over 90 % of the academics reported that they organize learning experiences in the most traditional way: classroom instruction/lecturing. However, only 67 % of both Japanese and Chinese academics reported that they undertook face-to-face interaction with students outside of class, and 56 % of Japanese academics and 51 % of Chinese academics responded that they communicate with their students through electronic method (e-mail). On the other hand, more than 90 % of the US academics utilize both methods in their teaching. Besides, there also exist striking differences among the three countries in other methods of instruction, e.g., learning in projects/project group, practice instruction/laboratory work, and distance education. Namely, a higher percentage of the US academics (55 %) use projects/project group than either Japanese academics (25 %) or Chinese academics (26 %), but a smaller percentage of the US academics (39 %) engage in practice instruction/laboratory work than either Japanese academics (62 %) or Chinese academics (53 %).

Table 4.5 shows that the actors who had primary influence on evaluating academics' teaching activities are academic unit managers, followed by faculty committees/boards. Besides, students are also very powerful in evaluating academics' teaching

Table 4.3 Academics' views on their teaching content

	CA	US	FI	DE	IT	NL	NO	PT	UK	AU	JP	KR	HK	AR	BR	MX	ZA	CH	MY	Average
Practically oriented knowledge and skills are emphasized your teaching	59	70	52	80	52	61	50	76	68	75	50	76	68	82	81	88	76	77	68	69
In your courses you emphasize international perspectives or content	62	53	51	61	61	54	67	81	66	68	51	74	72	58	53	77	59	67	60	63
You incorporate discussions of values and ethics into your course content	66	72	53	48	37	55	42	68	74	71	46	61	63	68	85	79	69	61	69	62
Count(n)	1,043	1,146	1,169	1,105	1,675	810	795	956	1,022	883	1,378	900	767	825	1,141	1,858	698	3,249	1,126	

Notes: proportion (%) of respondents who agree to the survey: "Please indicate your views on the following activities."

Table 4.4 Types of instructional methods across countries

	CA	US	FI	DE	IT	NL	NO	PT	UK	AU	JP	KR	HK	AR	BR	MX	ZA	CH	MY	Average
Classroom instruction/ lecturing	98	99	88	95	99	94	95	97	97	93	99	98	98	98	98	96	92	96	99	96
Individual instruction	77	82	81	37	95	67	90	20	84	81	79	58	79	42	89	78	75	71	70	71
Learning in projects/project groups	45	55	46	40	33	59	52	43	60	51	25	48	60	36	45	58	41	26	77	47
Practice instruction/ laboratory work	37	39	64	42	51	29	41	76	41	42	62	51	38	49	60	63	34	53	64	49
ICT-based learning/ computer-assisted	25	25	40	16	17	24	22	27	42	43	32	11	30	39	17	67	26	31	49	31
Distance education	12	25	33	3	9	9	8	14	22	36	5	13	9	16	18	15	48	5	15	17
Face-to-face interaction with students outside of class	95	93	66	50	83	72	80	78	87	85	67	88	89	72	80	86	83	67	86	79
Electronic communication (e-mail) with students	96	94	87	52	88	67	88	90	95	92	56	68	90	75	81	79	77	51	80	79
Total	636	674	649	411	595	560	589	603	602	685	482	547	636	547	583	683	632	468	680	
Count(n)	1,042	1,110	1,196	1,115	1,678	838	800	955	1,029	898	1,376	895	764	818	1,111	1,870	697	3,219	1,107	

Notes: proportion (%) of respondents who agree to the survey: "During the current (or previous) academic year, have you been involved in any of the following teaching activities?"

Table 4.5 Main actors of evaluating academics' teaching activities

	CA	US	FI	DE	IT	NL	NO	PT	UK	AU	JP	KR	AR	BR	MX	ZA	CH	MY	Average
Government of external stakeholders	0	0	6	3	1	2	2	4	5	1	2	0	6	4	11	4	41	2	5
Institutional managers	10	8	21	21	8	5	18	19	14	27	21	28	22	26	15	18	41	9	18
Academic unit managers	24	41	11	25	15	39	19	24	20	21	33	7	33	30	20	31	11	60	26
Faculty committees/boards	19	23	19	23	35	39	20	29	26	18	28	8	28	26	25	19	6	22	23
Individual faculty	4	4	28	6	5	7	15	4	21	14	10	2	7	8	2	17	1	7	9
Students	43	23	15	22	37	8	27	20	14	19	5	56	4	5	26	11	2	0	19
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count(n)	961	1,115	1,075	970	1,450	647	869	796	948	912	1,298	896	790	1,111	1,833	575	3,287	920	

Notes: proportion (%) of respondents who agree to the survey: "At your institution, which actor has the primary influence on evaluating teaching activities?"

because they are ranked third in terms of their influence on evaluating academics' teaching. In general, government or external stakeholders have the weakest influence on evaluating academics' teaching activities, though Chinese government or external stakeholders have the most significant impact on evaluating Chinese academics' teaching activities among all the countries.

A comparative study of the USA, Japan, and China suggests that academic unit managers have the primary influence on their academics' teaching activities in both the USA (41 %) and Japan (33 %), while government or external stakeholders have a similarly strong influence on Chinese academics in their evaluation of teaching.

4.4 Discussion

From the international and comparative perspective, except for a small number of countries, faculty committees/boards and individual academics have primary influences on approving new academic progams. A large majority of them are involved in developing course materials and curriculum or academic prorgams. With respect to their teaching materials or content, on average, they emphasize practically oriented knowledge or skills enormously; at the same time, they also pay much attention to international perspectives and ethical dimensions (values and ethics). While, on the one hand, they are undertaking these educational activities by relying on the traditional way of instruction, on the other hand, nearly 80 % also use new teaching strategies based on modern informationa technology such as distance learning of a hybrid of conventional and distance learning. In relation to actors who have primary influence on their teaching activities, faculty committees/boards have the same powerful influence on evaluating academics' teaching as they do on approving new academic programs. Another noticable fact is that students' influence on evaluating academics' teaching activities is also very strong. Actually, their influence is even more powerful than either government/external stakeholders or institutional managers.

Evidently, the academics from the USA, Japan, and China share many similarities in the introduction of practically oriented knowledge or skills and international perspective to their teaching content. Also academics in the three countries rely on traditional classroom instruction/lecturing while complementing it with individualized instruction and electronic communications. However, several differences can also be found in the three countries. First, in terms of approving new academic programs, government or external stakeholders have the primary influence over Chinese faculty, in contrast to the primary influence by institutional managers on US academics. Differing from either China or the USA, the faculty committee/boards in Japan have the most impact on this aspect.

Second, in relation to selecting learning experiences, a larger proportion of academics in the USA are involved in designing course materials and curriculum content than those from Japan or China.

Third, with regard to the implementation of key themes in teaching materials, while China's academics emphasize more practically oriented knowledge or skills and international perspectives, the US academics incorporate more values and ethics into their course content than do Chinese academics.

Fourth, with respect to the organization of experiences or teaching strategy, the US academics employ more diversified instructional methods in their teaching, especially through distance education and electronic media.

Finally, as for actors who are responsible for evaluating academics' teaching activities, similarly, government or external stakeholders have the primary influence over Chinese academics, in contrast to the primary influence by institutional managers in the USA. Differing from both countries, the academic unit managers in Japan have the most powerful impact on this aspect.

4.5 Conclusion

In recent years, though academics' teaching activities and their participation in curriculum development have been continuously and considerably affected by many factors, including economic-social changes, expansion of higher education, and market forces, this study suggests that more similarities still exist in academics' engagement in curriculum development in relation to the organization of experiences and teaching materials and the delivery of these materials across the 19 countries. Notably, each individual academic still plays a predominant role in these stages or aspects of curriculum development in his or her institution. However, in terms of actors who have primary influence on approving new academic program and evaluating academics' teaching activities, differences are remarkable. Though it varies greatly depending on different countries, in general faculty committees/boards and institutional or academic unit managers, rather than individual academics, seem to exert more powerful impacts on these activities.

Interestingly, three different patterns of academics' teaching activities and their involvement with curriculum development can be identified if we focus on actors having primary influence on approving new academic programs and evaluating academics' teaching activities. To illustrate, the US institutional managers have the strongest impact on these aspects; in Japan faculty committees/boards are the most powerful actors; while in China, government or external stakeholders have the final say in these matters. This probably reflects the complicated relationship between government or external stakeholders and internal actors within institutions, including institutional managers, academic unit managers, and faculty committees. Further, even within institutions, actors at different levels, e.g., institutional managers, academic unit managers, and faculty committees/boards, may affect academic's teaching activities and their involvement with curriculum development in different ways or to different degrees. Finally, this comparative study of three countries shows that the seemingly, different systems in relation to academics' preference over teaching and research activities do not translate into differences in the characteristics of academics' involvement in curriculum development.

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Part II
Research Focused Systems

Chapter 5
Teaching and Research in Germany: The Notions of University Professors

Ulrich Teichler

5.1 The Functions of Academics: Varying by Institutional Types

The Humboldtian "idea" of the university, among others, praises a close link between teaching and research. It is based on the beliefs that teaching is more creative and qualitatively more demanding, if the teachers are concurrently involved in research, and that research benefits if the scholars are involved in teaching. This idea formulated by Wilhelm von Humboldt was not only essential for the foundation of the University of Berlin in 1810, but, more importantly, it spread subsequently all over the world. For example, the European University Association only accepts higher education institutions as members which are characterised by a close link between teaching and research. The concept of the "research university" in the USA based on a similar link, even though the Humboldtian idea was taken primarily as a concept suitable for graduate education, has had an enormous influence as a role model all over the world.

One has to note, however, that *a close link between teaching and research does not apply equally to the higher education and research system as a whole*, i.e. not to all institutions of higher education and to all academic staff categories; in those respects, we observe differences by country. The academic profession is divided in many respects: The different disciplinary "tribes" vary as far as theories, methods and "culture" are concerned. While some *institutions* hold a close link between teaching and research in high esteem, other institutions are almost exclusively in charge of teaching; moreover, types might not only differ as regards the relationships between teaching and research but also in their conceptual thrust: Often, the

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institutions both in charge of teaching and research consider themselves theoretically oriented, while those solely or predominantly in charge of teaching see their strength in the application of knowledge. Moreover, *junior academic staff and senior academics* seem to have little in common with respect to job security, composition of tasks and influence in academia. Further, research and teaching of the kind, which is often accommodated in higher education, might be undertaken outside the higher education system. Last but not least, the current popularity of "rankings" of "world-class" universities suggests that the identity of the academics ought not to be primarily based on the academic profession as a whole or on the respective disciplines, but rather on the individual institution similarly to the often named "company spirit" of the Japanese companies at the "golden age" of lifetime employment for a few decades after World War II. These varied divides challenge the assumption that "the academic profession" really exists.

The project "The Changing Academic Professions" does not address the character of the individual academic disciplines; if this had been the case, specific questions would have been asked about the perception of the character of disciplines. The project also does not address the possibly emerging divides between individual higher education institutions (apart from the question, whether the respondents feel affiliated to their discipline, their department and their institution). But the CAP project provides ample opportunities to analyse the extent to which senior and junior staff are segmented or have elements in common as well as how far academics at universities with a close link between teaching and research differ from those at other higher education institutions.

Actually, Germany is an interesting case in this respect, because it is a country where—according to the available literature—the scholars' involvement in teaching versus research varies substantially according to institutional type and staff category. The Humboldtian idea of the virtue of a close link between teaching and research closely applies even today in Germany most clearly to the work tasks of *university professors*: They have a teaching load of 8–9 h per week during the lecture period; this is based on the assumption that the overall time available during a year on teaching and teaching-related activities is more or less equal to that available for research and research-related activities. The teaching load is almost uniform for German university professors. The number of actual teaching hours might be moderately reduced if the professor has to take care of large numbers of students, and only few professors get their teaching load reduced for other purposes.

Such an idea of balance between teaching and research, however, does not apply to other categories of academics in Germany. We have to name three other categories in this context.

First, *junior academic staff at universities* in Germany, by far more numerous than university professors, are involved to a lesser extent in teaching. Junior academics, who are paid by the regular university budget, often are expected to teach about half as many weekly hours as university professors; they spend most of the time on research, on the preparation of a dissertation and eventually of a *habilitation* as a grand piece of research qualifying for a call to a professorial position. A predominant involvement of junior academic staff in research, thus, is viewed as essential in Germany in order to prepare for a proper link between research and research

on the part of the professors. In addition, many young academics in Germany are employed on the basis of external research grants, i.e. exclusively for undertaking research; however, they might offer individual courses if they wish so and their supervisors do not disagree.

Second, when the substantial expansion of enrolment was accepted in the 1960s as desirable or inevitable, most actors and experts agreed that the close link between teaching and research as customary at universities could not be preserved for the higher education system as a whole. In Germany, from 1970 onwards, *Fachhochschulen* were established as a second institutional type primarily through the upgrading of former engineering colleges and higher vocational training schools. At the these institutions, calling themselves *universities of applied sciences* (UAS) in the English language since the early 1990s, professors are expected to teach as a rule 18 h per week even over a slightly longer lecture period than that at universities. Professors of these institutions have only an optional research task, and for that purpose they might get a small reduction of their teaching load. The number of junior staff at UAS is very small, because these institutions do not educate their future professors themselves; rather, a person applying for a professorship has to have acquired a doctoral degree at a university and has to have professional experience for at least 5 years after the award of a doctoral degree, among them 3 years outside academia in a professional area close to his or her future teaching. Moreover, the infrastructure at UAS for research activities is quite weak as compared to that at universities.

The importance of these differences can be illustrated by the fact that there is no common word for the "academic profession" in the German language at all. Rather, academics are divided into the occupational categories *Hochschullehrer* and *wissenschaftliche Mitarbeiter.* Moreover, there are distinct titles of "university professors" and of "professors" (i.e. those at other higher education institutions).

Third, there is a broad range of *public research institutes* in Germany exclusively in charge of research. The institutes under the umbrella of four associations—Max Planck, Leibniz, Fraunhofer and Helmholtz associations—vary in the emphasis on basic or applied research, in the typical size as well as in the disciplinary dominance (see Höhle et al. 2012). Most persons in director ranks at these institutes are appointed as well as a special-status professor at a university nearby. In those cases, the salary is paid by the research institute, and the professor has a relatively small teaching obligation, but he or she can make sure that the doctoral candidates of his or her research institute are accepted on equal terms as those of the university and might be together in joint groups of doctoral candidates and young researchers. The junior staff of the research institutes, like that at universities paid by external research grants, might teach individual courses at a university.

In sum, the ideal of a close link between teaching and research is held in high esteem in Germany. In reality, however, it is only a small minority of about 15 % of all academics in the higher education and public research system who are expected to have a real balance of these two functions, i.e. the university professors. The majority of others are either predominantly researchers or predominantly teachers whereby the respective alternative function might be mandatory on a smaller scale or even only voluntary.

5.2 The Analysis Envisaged

In this chapter the focus lies on teaching and research as well as the relationships of these two functions on the part of *university professors in Germany* as surveyed in the comparative research project "The Changing Academic Profession" (CAP) in 2007.

The responses of the university professors in Germany in 2007 will be compared to:

1. The responses of other academics in Germany (DE) surveyed in 2007, i.e. junior academic staff at universities as well as both senior and junior academics at other higher education institutions.
2. The responses of university professors at German universities surveyed in 1992 (in the Carnegie Study on the academic profession); this provides the opportunity to measure the extent of change occurred within more than a decade as long as questions posed are identical or similar.
3. The responses of academics in other six European countries participating in the project "The Changing Academic Profession": Finland (FI), Italy (IT), the Netherlands (NL), Norway (NO), Portugal (PT), and the United Kingdom (UK). Of course, the comparison between university professors and other academics surveyed is not confined to the responses in Germany in 2007, but will be included as well in the 1992–2007 comparison and in the comparison between European countries. The comparison between 1992 and 2007, however, can refer only to two European countries participating in both surveys: the Netherlands and the UK.

The above-named comparisons, first, provide the opportunity of examining the extent to which senior and junior academics as well as academics at universities and those at other higher education institutions have much in common or are clearly different and of examining the extent to which academics in Germany differ from those in other countries in those respects. One could assume, e.g. that the frequently advocated policies of reducing long 4periods of uncertainty and dependency of junior academic staff have succeeded in reducing the divide between junior and senior academics.

Second, it is interesting to note how much the teaching and research functions differ between academics at universities, and those at other higher education institutions. One could assume, e.g. that such differences become smaller as a consequence of an "academic drift" on the one hand, i.e. a tendency of the less prestigious institutions to copy the more prestigious ones, and as a consequence of increasing pressures exerted on the universities to provide useful results more visibly.

In the major publications of the 1992 Carnegie Study (Boyer et al. 1994; Altbach 1996) as well as various country reports, however, only the totality of academics in the respective countries is addressed: No attention is paid to eventual variations by institutional and staff categories. Therefore, the analysis of the 1992 surveys undertaken in this chapter draws from the report on the German academic profession in comparative perspective (Enders and Teichler 1995), where the respondents had been divided into three categories: (a) university professors, (b) junior staff at

universities, and (c) academics at other higher education institutions. As more than 90 % of the academics at the latter institutions had been professors, their responses are comparable to those of the professors at UAS in 2007.

It should be noted that no data are included on academics at other institutions in Italy and the UK. These institutions have not been included in the Italy survey, because they comprise such a small number, and in the UK, because the number of respondents is lower than 10. Finally, it has to be pointed out that information on other higher education institutions in Norway is questionable, because various public research institutes are included beside teaching-oriented institutions.

This article can draw from various publications on the findings of the CAP questionnaires on the academic profession in Germany (Höhle et al. 2012; Jacob and Teichler 2011; Teichler 2008, 2009, 2010; Teichler and Bracht 2006; Höhle and Teichler 2012). However, this analysis addresses more thoroughly the balance between teaching and research and the linkage between teaching and research specifically on the part of university professors.

5.3 Higher Education in Germany: Traditions and Recent Changes

The notions of university professors in Germany reported in response to the CAP questionnaire can be interpreted more appropriately, if the context is taken into consideration. Therefore, a short overview will be provided in advance on higher education in Germany and on the widely perceived characteristics of German university professors.

It is widely believed, first, that university professors in Germany are strongly *research-oriented*. Second, they seem to be protected by a high degree of *academic freedom* to pursue knowledge for its own sake or to opt individually for other emphases in research and teaching. Third, professors in Germany traditionally are relatively *powerful* in the internal decision-making processes within universities. Fourth, university professors in Germany *as chair holders* tend to be relatively *well supported* with personnel and material resources (see Teichler and Bracht 2006).

With respect to *academic careers*, overviews on higher education in Germany as well as on the situation of junior academics point out three traditional characteristics. First, a *relatively large number of relatively young junior academics*: Universities in Germany employ large numbers of graduates soon after graduation—short term and often part-time—to conduct research and work on their doctoral dissertation at the same time; the majority of doctoral candidates are employees at universities, either paid through university positions or with the help of external research grants. Second, a *long period of high selectivity and dependence*: Junior academic staff is expected to survive a long period of dependence and social uncertainty—mostly more than 10 years—before becoming independent and socially secure scholars. Third, *late formal qualification for the professoriate*: The *Habilitation*, an academic

qualification based on several years of academic work beyond the doctorate, is the entry qualification for the professoriate at a university in Germany and some other European countries.

In describing the *German system of higher education* (cf. the overviews in Kehm 1999, 2006; KMK 2003; Teichler 2005, 2007, 2008; Simon et al. 2010), we note a tendency to refer to the *idea of the university* put forward by Wilhelm von Humboldt at the beginning of the nineteenth century. Three principles characterise this overall concept. First, *unity of teaching and research* is most frequently cited because it has spread throughout the world and, accordingly, has contributed to the belief that professors at "real universities" are in charge of both teaching and research and that this link has a "cross-fertilisation" effect both on the quality of teaching and research. Second, *solitude and freedom* is reflected in the widespread claim that academic freedom in the pursuit of knowledge is the best way of guaranteeing high quality of academic work and, possibly, of ultimately guaranteeing the social relevance of research and teaching. Third, the concept of a *community of teachers and learners* has achieved less resonance worldwide and has undergone a broad range of reinterpretations in Germany and in other countries.

The nineteenth-century concepts of the university have an impact in various respects on German higher education in general and the conditions of the academic profession in particular, at the beginning of the twenty-first century; and this impact may continue into the future. In other respects we note major changes which caused a debate about whether Humboldt is "dead" or still "alive".

As regards *governance and steering at higher education institutions in Germany* (see the overview in Teichler 2011; cf. also Kehm and Lanzendorf 2006), first, *government* tends to be viewed as *providing the major resources for higher education*. Thus, it does not come as a surprise to note that most higher education institutions even today are public institutions or, even if they have been transformed into foundations, have a quasi-public character. Professors, as a rule, are *civil servants*, even if their university is formally a foundation. It should be noted, however, that most junior academic staff in public higher education institutions are normal employees, i.e. similar to employees in the private sector, and the majority of them do not have a permanent contract.

Second, *government* has a mixed function vis-à-vis the universities. On the one hand, it is the *guardian angel* of academic freedom. After World War II, the freedom of research for university professors was even embedded into the constitution of the Federal Republic of Germany. On the other hand, government has strong mechanisms of supervision of higher education. These were strongest in the administration of resources, the rules of access and admission and the *appointment of professors*. Until about 2000, higher education institutions in most German *Länder* (states) had to present a list of the three possible candidates for a professorship to the government, and the government was free to appoint the first, second or third candidate or even to send the list back to the university for reconsideration. Even after the right to choose one of the three candidates, recommended by the department and the senate, had been transferred to the university president, government still has to approve the final candidate in order to appoint him or her as a civil

servant, and it can refuse to do so. In contrast, the employment of individual members of junior academic staff who are not "civil servants" is, traditionally, completely at the discretion of the individual higher education institution, albeit within a range of traditionally detailed regulations.

Third, as already pointed out, a close link between research and teaching is most clearly guaranteed for university professors in Germany. Almost all of them have an identical *teaching load* of 8–9 h per week when classes are in session, and the university is obliged to provide some *basic funding for research*. In contrast, junior staff paid by the university have a smaller teaching load in order to have time for the research needed to prepare for a senior academic career; moreover, many junior academics are paid through research grants and are only required to research; finally, some academics are employed by universities as lecturers with a larger teaching load, called *Lehrkraft für besondere Aufgaben.* In addition, a certain share is employed *on an honorary basis, often as a side job.* Professors at *Fachhochschulen*, established in the 1970s as a response to the growth of student enrolment, have a teaching load more than twice as high as university professors. They might do research voluntarily, and some of them might be granted a small reduction in their teaching load for research purposes. It might be added here that these institutions have only small numbers of junior staff positions and they do not award doctoral degrees.

Fourth, there is a tradition in Germany of mandatory *career mobility* which is called *Hausberufungsverbot* (prohibition of home appointment). Universities recruit professors as a rule externally. Also, there is no internal promotion of professors from the lower to the upper professorial rank; only if a professor from the lower rank receives an offer of a higher ranking professorship at another university, his or her university might make a counteroffer which may eventually lead to internal promotion.

In the 1990s and in the first decade of the twenty-first century, *major changes* can be observed in German higher education either directly with respect to the academic profession or regarding other features primarily but affecting the academic profession strongly as well. Analyses of the academic profession in Germany tend to identify three major areas of change (see Teichler 2011; cf. also Enders 2001; Janson et al. 2007; Teichler 2007; Jacob 2011).

First, we note substantial changes in the *power of the academic profession* within German higher education. Until the 1960s, universities were characterised by the strong influence on decision-making by professors on the one hand and by government on the other hand, while the position of the university leadership was weak. In the 1970s and the 1980s, a participatory model prevailed in academic self-regulation, in which about half of the positions within committees were filled by junior academic staff, administrative and technical staff as well as students; concurrently, the power of government and of the university leadership grew to some extent. Since the late 1990s, German higher education followed the trend, common to other countries, towards the "managerial university" with an increasingly powerful university leadership (and, in some cases, departmental leadership) and towards the "evaluative university" with a substantial rise in the assessment of activities in teaching and

research. This made possible both greater self-reflection within the profession and greater control of academics. The details vary between 16 *Länder* of the Federal Republic of Germany—the governmental level predominantly in charge of higher education legislation—as regards the supervision and funding of individual higher education institutions, while the national (Federal) level has supplementary functions of coordination and funding.

Obviously, German higher education has moved somewhat cautiously towards an "evaluative" approach and the "managerial university" at a comparatively late stage. Most experts suggest that a bundle of factors might explain this. After the mixed results of the move towards the relatively radical model of the "participatory university" around 1970, there was no inclination to be in the vanguard of another administrative change. "Organisational quietness" (*Organisationsruhe*) became a slogan in the 1980s. Moreover, considerable energy was absorbed in coping with a substantial increase in student numbers as consequence of a temporary demographic bulk amidst moderate resource growth, and finally, the unification of Germany after the collapse of the Eastern European regimes kept all German higher education experts and key actors busy implementing a new integrated system predominantly following the model prevailing in the West. Obviously "managerialism" was viewed with mixed feelings. The actual implementation of the new managerial system might have had a less profound impact on higher education in Germany than in various other European countries.

Second, the *employment and work situation of junior academic staff* at German universities, for a long time having the subject of heated debates and repeated reforms, became a crucial area of reform (see BMBF 2008). Many observers describe the traditional relationship between junior staff and professors as creating a sense of dependency and subordination to the powerful *Ordinarius*. Doctoral candidates have been supervised by individual professors, while the majority of them are employed either in a university post or with the support of research funding. Mid-level staff with a doctoral degree—their title and official functions changed from "assistant" to "assistant professor" and back again to "assistant"—often clearly feel subordinated to professors. The spread of doctoral programmes as well as the introduction of a "junior professor" position, together with a relativation of the *habilitation* as the typical entry qualification into the professoriate, are seen as major steps towards strengthening the position of junior academic staff.

Third, the daily work of academics has become more strongly steered in recent years. Various mechanisms of evaluation have spread since the mid-1990s. More recently, *the remuneration system* has been changed to include a *stronger emphasis on incentives*. In the past, salary scales dominated the scene with financial increments linked to age or years of service, so that full-time junior academic staff earned about 50–60 % of what university professors earned and lower-ranking university professors as well as professors at universities of applied sciences earned about 80–85 %. Only university professors could negotiate higher salaries if they were offered a professorship from another university or received an equivalent job offer from outside. Now, professors do not receive any increments for their years of service anymore; rather, their achievements are assessed every 5 years, and their salary can be raised on the basis of the results of such assessments as well as for taking over specific functions and, as before, if they have been offered an attractive external

position. However, this new system was only in force for a minority of those professors surveyed in 2007, because those already employed prior to the implementation of the new remuneration system could remain in the old system if they wished and, in the event, the majority did not transfer.

It should be noted that German universities traditionally were considered not to vary substantially according to quality. This was linked to the phenomena that students could be mobile between German universities any time in the course of study and that professors could choose the university according to the offer of attractive working condition instead of the institutional reputation. Concurrently with the introduction of an incentive-based remuneration of professors, efforts were made to create greater quality differences between universities—most prominently with the so-called *Exzellenz-Initiative* that among other provides preferential funding for ten universities for a period of 5 years. As a consequence, academics were stimulated in the early years of the twenty-first century even more than before to put emphasis on the research function and to take care of visible research results. Efforts to counterbalance this by establishing prizes for good teaching and provide funds for reforms of teaching and learning got momentum only some years later (after the CAP survey has been conducted).

5.4 The Balance of Teaching and Research: Preferences and Actual Work Time

In asking the academics about their *preferences for teaching or for research*, the CAP questionnaire has provided four categories: "primarily in teaching", "in both, but leaning towards teaching", "in both, but leaning towards research", and "primarily in research". Actually, the majority of the academics responding—in all countries as well as in both staff categories and both types of higher education institutions—select the two middle categories. Thus, most academics adhere to the concept of a link between teaching and research.

University professors in Germany have a preference for research: Of those surveyed in 2007, 66 % appreciate both research and teaching, but lean more strongly towards research, and 12 % have a prime preference for research. However, this is by no means a strong emphasis in research in the European comparison: Both categories are stated together by a higher proportion of university professors in four other European countries and only by a lower proportion in two countries (see Table 5.1). Actually, 20 % of university professors in Germany lean towards teaching, and only 5 % have a clear preference for teaching.

The responses by junior staff at German universities are not extremely different but more polarised: 33 % have a prime preference for research and 7 % a prime preference for teaching.

This reflects the fact that a substantial number of junior academics in Germany have no teaching function at all on the one hand and that just a few junior academics have a higher teaching load than the university professors on the other hand. 28 % of German university juniors spend less than 10 % of their time for teaching,

Table 5.1 Preferences for teaching or research in selected European countries in 2007 (percentage)

	FI	DE	IT	NL	NO	PT	UK
(a) *University professors*							
Primarily in teaching	2	5	2	5	2	3	8
Both, leaning towards teaching	19	20	22	17	18	36	23
Both, leaning towards research	61	63	67	55	60	48	48
Primarily in research	18	12	10	23	20	14	22
(b) *Junior academic staff at universities*							
Primarily in teaching	8	7	3	5	2	6	9
Both, leaning towards teaching	12	22	22	17	14	41	24
Both, leaning towards research	39	38	60	49	44	47	37
Primarily in research	42	33	15	30	40	6	30
(c) *Professors at other HEIs*							
Primarily in teaching	15	42	.	16	3	11	.
Both, leaning towards teaching	49	35	.	33	43	27	.
Both, leaning towards research	26	22	.	40	58	37	.
Primarily in research	10	1	.	11	17	9	.
(d) *Junior academic staff at other HEIs*							
Primarily in teaching	49	46	.	47	5	13	.
Both, leaning towards teaching	36	17	.	36	8	44	.
Both, leaning towards research	11	19	.	15	51	37	.
Primarily in research	4	18	.	2	37	7	.

Table 5.2 Preferences in teaching and research, academics in Germany 1992 and 2007 (percentage)

	At universities				At other HEIs	
	Junior staff		Professors		Academics[a]	
Preferences	1992	2007	1992	2007	1992	2007
Primarily in teaching	6	9	5	2	29	42
In both, but leaning towards teaching	22	2	30	20	49	35
In both, but leaning towards research	46	42	58	66	22	21
Primarily in research	26	27	7	12	0	2
Total	100	100	100	100	100	100

[a]Academics: professors and junior staff (actually more than 90 % professors)

whereas only 9 % of German university professors do so (Höhle and Teichler 2012). The proportion of prime preference is relatively high in European comparison, but not exceptional: It is even higher in Finland and Norway.

As one might expect, professors at universities of applied sciences in Germany express a preference for teaching (42 % prime preference and 35 % leaning towards teaching). This is more pronounced than among senior academics at other higher education institutions in the other European countries surveyed in the CAP study.

As Table 5.2 shows, the preferences did not change substantially among academics in Germany from 1992 to 2007. University professors moved somewhat towards research, and junior staff at universities hardly changed. Surprisingly, however, professors of UAS in Germany moved in their preferences somewhat from leaning

Table 5.3 Average weekly working hours[a] in selected European countries 2007

	FI	DE	IT	NL	NO	PT	UK
University professors	46	52	46	44	38	41	47
Junior academic staff at universities	40	39	44	41	27	42	42
Professors at other HEIs	37	41	.	36	33	38	.
Junior academic staff at other HEIs	34	28	.	31	27	38	.

[a]Calculated as 60 % of time when classes are in session and 40 % when classes are not in session

towards teaching in the direction of a strong emphasis on teaching, even though their time budget, in reverse, shifted somewhat from teaching towards research. It might be added here that changes were relatively small from 1992 to 2007 in the Netherlands and United Kingdom as well. Only the academics at other higher education institutions in the Netherlands moved in their preferences substantially and junior staff at universities of the UK somewhat towards research.

In the CAP questionnaire (in the preceding Carnegie survey as well), academics have been asked to estimate their weekly work time separately for the periods when classes are in session and when classes are not in session. This should prevent from stating annual work time pattern, which only reflects the period when classes are in session. A comparison of previous surveys has shown that academics have the period in session in mind, if they are not surveyed separately, and thus overestimate the total working time as well as the time spent on teaching. In most of the subsequent tables, the information provided on these periods is merged to estimates of time—overall working time as well as time spent on teaching and on research—*spent on average over the whole year*.

Academics are often viewed as intrinsically motivated persons willing to spend substantially more time than the about 40 h weekly expected from full-time employees. Table 5.3 shows that university professors in Germany surveyed in 2007 report an *actual work time* of 52 h per week—more than their colleagues in other European countries.

In contrast, professors at other higher education institutions in Germany work only 41 h, but even this figure is slightly higher than in other European countries. Junior staff at universities in Germany report 39 h (close to the European average), and junior staff at UAS only 28 h (below the European average). One has to bear in mind, though, that a clearly higher proportion of junior academics have part-time contracts than professors.

As far as data are available, the average working time of academics seems to have declined from 1992 to 2007. Only the university professors in Germany work as much in 2007 as they have worked in 1992.

As university professors are generally expected to be in charge of teaching and research more or less equally, one might assume that the *actual time spent on research* does not differ substantially from that *on teaching*. On the one hand, research is held more highly on esteem by the majority; on the other hand, teaching is safeguarded by regulations on teaching load, and certainly teaching-related activities are indispensible.

Table 5.4 Proportion of time spent on different activities[a], academics in selected European countries 2007 (percentage)

	FI	DE	IT	NL	NO	PT	UK
(a) *University professors*							
Teaching	33	29	32	32	33	35	32
Research	37	38	46	40	39	37	34
Other	30	33	22	28	28	28	32
(b) *Junior academic staff at universities*							
Teaching	24	22	33	39	21	41	29
Research	58	53	48	43	65	40	41
Other	18	25	19	18	14	19	30
(c) *Professors at other HEIs*							
Teaching	39	51	.	45	37	37	.
Research	23	25	.	28	37	36	.
Other	38	24	.	27	26	27	.
(d) *Junior academic staff at other HEIs*							
Teaching	57	36	.	63	12	47	.
Research	21	25	.	12	69	34	.
Other	22	39	.	25	19	19	.

[a]Calculated as 60 % when classes are in session and 40 % when classes are not in session

According to Table 5.4, however, university professors in Germany spend about 1.3 times as much time on research as on teaching: actually 38 % on research and 29 % on teaching. According to the CAP study, university professors in all seven European countries spend more time on research than on teaching, whereby this difference is more striking in Italy than in Germany and smaller in the other five European countries covered.

As expected, the proportion of time spent on research by junior academic staff is higher than by university professors in all European countries surveyed, whereby this difference is smaller in some countries and higher in some other countries than in Germany. Academics at other higher education institutions, as expected as well, spend more time on teaching and teaching-related activities than academics at universities, whereby this proportion is highest in Germany.

Table 5.5 shows that the proportion of time spent on teaching by university professors in Germany has declined from 34 % in 1992 to 29 % in 2007. One can estimate that university professors in Germany spent on average about 2 ½h on teaching-related activities (curriculum development, preparation, guidance, examinations, etc.) per teaching hour in 1992: This declined to less than 2 h in 2007. This change has happened, even though the average number of students per professor has increased during that period. In contrast, the time spent on teaching by university professors in the United Kingdom increased during that period, and it remained more or less constant in the Netherlands.

Table 5.5 shows as well that time spent on teaching by junior staff at German universities has increased slightly. We cannot be surprised to note that academics at UAS in 2007 allocate more time on research at the expense of time on teaching than they had done in 1992.

Table 5.5 Proportion of time spent on different activities[a], academics in Germany 1992 and 2007 (percentage)

	At universities				At other HEIs	
	Junior staff		Professors		Academics[a,b]	
Activities	1992	2007	1992	2007	1992	2007
Teaching	20	22	34	29	59	51
Research	55	53	39	38	20	25
Other	25	25	27	33	21	24
Total	100	100	100	100	100	100

[a]Calculated as 60 % when classes are in session and 40 % when classes are not in session
[b]Senior and junior academics in 1992, senior academics in 2007

Altogether in Germany, the differences between senior and junior academics as well as the differences between academics at universities and those at other higher education institutions seem to have become smaller. As regards the time spent on teaching and on research, however, these differences by status group and type of higher education institutions still remain larger than the respective ones in the advanced countries participating in both comparative surveys.

5.5 Select Aspects of Teaching

The CAP study aims at examining the diversity of activities undertaken by academics. In 2007, the academics were posed a list of seven *teaching activities other than the usual classroom instruction*: individualised instruction, learning in projects/project groups, practice instruction/laboratory work, ICT-based/computer-assisted learning, distance education, face-to-face interaction with students outside of class and electronic communication with students.

As Table 5.6 shows, university professors in Germany are least involved in varied teaching activities. In contrast, a broad range of teaching activities is customary in the United Kingdom, Finland and Norway. University professors in Germany were substantially less involved than their colleagues in other European countries in distance education and in the development of course material, while they were close to the average as far as learning in projects and curriculum development are concerned.

Table 5.6 shows as well that university professors in Germany are involved in a broader range of teaching activities than junior academics at universities, but in a smaller range than academics at other higher education institutions. The same holds true for some, but not consistently all, other European countries surveyed.

Academics were asked as well in the CAP questionnaire about the extent to which their *teaching activities are regulated or exposed to more or less clear expectations*. Four themes were addressed in this context: student numbers in classes and to be supervised as well as success rates and time spent on consultation (a similar question as regards teaching load is not included here because it was not asked in the German questionnaire). In Table 5.7, only the responses of university professors

Table 5.6 Involvement in varied teaching activities, academics in selected European countries 2007 (arithmetic mean)[a]

	FI	DE	IT	NL	NO	PT	UK
University professors	4.4	2.8	3.7	3.2	4.1	3.3	4.5
Junior academic staff at universities	3.7	2.3	3.8	3.2	3.4	3.7	4.0
Professors at other HEIs	5.1	3.2	.	3.7	3.7	3.5	.
Junior academic staff at other HEIs	4.9	2.6	.	3.5	3.2	3.6	.

[a]Average number of seven teaching activities named others than regular classroom teaching

Table 5.7 Institutional regulations and expectations as regards teaching, professors at both institutional types in selected European countries 2007 (percentage, multiple responses)

	FI	DE	IT	NL	NO	PT	UK
(a) *University professors*							
Number of students in your classes	33	42	37	35	26	46	51
Number of graduate students for supervision	33	19	13	45	48	15	52
Percentage of students passing exams	7	19	4	35	14	7	29
Time for student consultation	25	14	38	55	56	53	61
(b) *Professors at other HEIs*							
Number of students in your classes	49	57	.	36	43	62	.
Number of graduate students for supervision	9	31	.	28	39	21	.
Percentage of students passing exams	16	20	.	37	28	13	.
Time for student consultation	52	15	.	73	29	68	.

as compared to professors of other higher education institutions are provided, because it can be taken for granted that the work of senior academics is regulated to a lesser extent than that of junior academics.

Table 5.7 shows that Germany belongs to the three countries (Finland and Italy as well) where regulations or clear expectations of that kind are relatively rare for university professors; in contrast, they are most frequent in the UK and also relatively frequent in the Netherlands. Compared to other countries, time for student consultations is rarely regulated at German universities.

Altogether, those regulations and expectations apply more often to professors of other higher education institutions. Again, Germany belongs to those countries where those regulations and expectations are least customary; in contrast, they are quite frequent in Portugal. Again, time for student consultations is rarely regulated in Germany.

As the final example of information selected in the domain of teaching, Table 5.8 shows the responses to a list of possible respondents' *approaches as regards teaching* others than those of emphasising the value of the academic subject matter and the quality of teaching and learning as such. We suggest calling these approaches:

- *Practice-oriented approach*: "Practically oriented knowledge and skills are emphasized in your teaching".
- *International approach*: "In your courses you emphasize international perspectives or content".

Table 5.8 Teaching approaches, academics in selected European countries 2007 (percentage[a])

	FI	DE	IT	NL	NO	PT	UK
(a) *University professors*							
Practice-oriented approach	31	75	54	40	49	75	69
International approach	63	79	62	64	69	90	66
Value-oriented approach	53	55	40	48	45	71	69
Honesty approach	41	53	32	53	36	78	94
Meritocratic approach	95	72	79	54	78	55	87
(b) *Junior academic staff at universities*							
Practice-oriented approach	48	77	54	42	51	77	67
International approach	46	50	60	60	60	82	60
Value-oriented approach	41	36	34	44	36	70	68
Honesty approach	38	41	28	58	36	88	86
Meritocratic approach	89	59	81	59	71	53	79
(c) *Professors at other HEIs*							
Practice-oriented approach	79	93	.	84	57	81	.
International approach	52	60	.	58	61	68	.
Value-oriented approach	53	54	.	71	39	73	.
Honesty approach	60	58	.	67	41	72	.
Meritocratic approach	98	80	.	42	80	47	.
(e) *Junior academic staff at other HEIs*							
Practice-oriented approach	80	99	.	90	70	82	.
International approach	45	40	.	38	64	75	.
Value-oriented approach	57	21	.	62	48	62	.
Honesty approach	55	81	.	62	60	75	.
Meritocratic approach	95	76	.	44	52	51	.

[a]Responses 1 and 2 on a scale from 1 = "strongly agree" to 5 = "strongly disagree"

- *Value-oriented approach*: "You incorporate discussions of values and ethics into your course content".
- *Honesty approach*: "You inform students of the implications of cheating or plagiarism in your courses".
- *Meritocratic approach*: "Grades in your courses strictly reflect levels of student achievement".

About three quarters of university professors in Germany each characterise their teaching as practice-oriented and internationally oriented, and about the same proportion characterise their assessment activities as strictly based meritocratically. As Table 5.8 shows, only slightly less than half underscore a value-oriented approach and an honesty approach. Compared to other countries, university professors in Germany (as well as those in Portugal) have a relatively strong practice-oriented approach.

Junior academics at universities in Germany emphasise practice-oriented teaching as much as university professors; again this most strongly underscored in Germany and Portugal. All other approaches are less frequently named by junior academics in Germany than by professors at universities.

As one might expect, professors at other higher education institutions in Germany pursue a practice-oriented approach more strongly than university professors, and they name it more frequently than their colleagues in other European countries. In contrast, internationality is less highly on the agenda.

5.6 Select Aspects of Research

In describing aspects of research according to the academics' views, first, we might address the *institutional environment*. In the respective question, respondents have been asked to assess the extent to which a fundraising, a utility and an interdisciplinary emphasis prevail at their institution. Actually, the items have been phrased in the questionnaire in the following way:

- *Fundraising emphasis*: "The pressure to raise external funds has increased since my first appointment".
- *Utility emphasis*: "Your institution emphasizes commercially-oriented or applied research".
- *Interdisciplinary emphasis*: "Interdisciplinary research is emphasized at my institution".

As Table 5.9 shows, a *fundraising emphasis* seems to be strong at higher education institutions in all countries. The proportion stating this ranges among university professors from 81 % in Italy to 94 % in Germany. It is surprising to note that as many professors of other higher education institutions (93 % among those in Germany) note such a research emphasis except for the Netherlands. Junior academics at both types of institutions note such an emphasis of fundraising for research to a somewhat lower proportion, whereby this difference is higher in Germany than in most other European countries.

A *utility emphasis* is noted only about half as often at universities in Europe on average as a fundraising emphasis. Thereby university professors in Germany who report a fundraising emphasis more often than their European colleagues actually state a utility emphasis (32 %) less often than those in the other European countries (ranging from 34 % to 56 %). Junior academics at universities perceive a utility orientation similarly as senior academics. Academics at other higher education institutions note a stronger utility orientation than their colleagues at universities in almost all European countries; this is most strongly emphasised by academics at other higher education institutions in Finland and Germany.

An *interdisciplinary emphasis* is observed most often by university professors in Germany (71 %). It is stated by more than half of the academics at universities and by less than half of those at other higher education institutions across the European countries surveyed, whereby junior academics at universities and academics at other institutions of higher education in Germany of the other categories are close to the European average.

Table 5.9 Perceived research emphasis at their higher education institution, academics in selected European countries 2007 (percentage[a])

	FI	DE	IT	NL	NO	PT	UK
(a) *University professors*							
Fundraising emphasis	88	94	81	90	87	87	89
Utility emphasis	39	32	37	64	34	45	56
Interdisciplinary emphasis	66	71	37	62	48	60	68
(b) *Junior academic staff at universities*							
Fundraising emphasis	73	78	71	82	66	84	75
Utility emphasis	38	32	35	72	33	39	51
Interdisciplinary emphasis	61	53	38	54	51	52	68
(c) *Professors at other HEIs*							
Fundraising emphasis	80	93	.	62	86	80	.
Utility emphasis	80	71	.	44	40	32	.
Interdisciplinary emphasis	75	37	.	55	44	34	.
(d) *Junior academic staff at other HEIs*							
Fundraising emphasis	82	79	.	39	81	62	.
Utility emphasis	66	76	.	54	34	39	.
Interdisciplinary emphasis	63	46	.	42	48	30	.

[a]Responses 1 and 2 on a scale from 1 = "strongly agree" to 5 = "strongly disagree"

Second, the CAP questionnaire survey has addressed the academics' *own views on the character of research and scholarship*. They have been asked about the role they see for research and scholarship as oriented towards original research, as synthesis of findings, as application and as socially relevant. Actually, the following phrasings were employed in the questionnaire:

- *Original research*: "Scholarship is best defined as the preparation and presentation of findings on original research".
- *Synthesis of findings*: "Scholarships includes the preparation of reports that synthesize the major trends and findings in my field".
- *Application*: "Scholarship includes the application of academic knowledge in real-life settings".
- *Societal relevance*: "Faculty in my discipline have a professional obligation to apply their knowledge to problems in society".

Table 5.10 shows that university professors in Germany as well as the other academics in Germany surveyed express views on research and scholarship which resemble more or less the European average. Altogether, scholars at universities across the European countries surveyed emphasise original research more strongly, while scholars at other higher education institutions are more inclined to emphasise application. Thereby, junior academic staff holds similar views as the professors of the same institutional type.

Table 5.10 suggests that there are no divided worlds between the two types of higher education institutions. They differ gradually with respect to original research

Table 5.10 Views regarding research and scholarship, academics in selected European countries 2007 (percentage[a])

	FI	DE	IT	NL	NO	PT	UK
(a) *University professors*							
Original research	68	83	73	80	92	81	68
Synthesis of findings	69	61	45	44	56	59	68
Application	74	62	57	41	59	77	69
Societal relevance	65	61	62	45	50	73	58
(b) *Junior academic staff at universities*							
Original research	61	69	74	82	69	74	66
Synthesis of findings	59	67	49	41	61	62	63
Application	67	84	65	42	64	76	65
Societal relevance	58	44	61	46	51	73	59
(c) *Professors at other HEIs*							
Original research	54	56	.	67	88	80	.
Synthesis of findings	75	72	.	53	68	57	.
Application	92	87	.	63	56	88	.
Societal relevance	78	63	.	74	56	66	.
(d) *Junior academic staff at other HEIs*							
Original research	35	49	.	67	81	64	.
Synthesis of findings	54	83	.	48	63	47	.
Application	91	84	.	46	70	80	.
Societal relevance	64	75	.	63	74	68	.

[a]Responses 1 and 2 on a scale from 1 = "strongly agree" to 5 = "strongly disagree"

and application, and they hardly differ with respect to the appreciation of syntheses of findings and the societal relevance of academic work. But there are differences by country: Actually, academics in Germany differ in their views as regards original research and application more strongly according to type of higher education institutions than academics of the other countries surveyed.

Finally, information ought to be provided here in this section on research about the results of research work. The academics surveyed in this study have been asked to name the *number of publications* of various types completed in the past 3 years.

Actually, university professors in Germany surveyed 2007 report that they have been responsible or have contributed with others in the past 3 years to:

- 0.6 books as (co)author
- 1.2 books as (co)editor
- 15.4 articles for books and journals
- 3.1 research reports
- 10.5 papers at conferences
- 2.7 articles for newspapers and magazines

In addition, they report on average 0.6 patents, 0.1 computer programmes written for public use, 1.3 artistic works performed or exhibited, 0.3 videos or films produced and 0.7 other outputs.

Table 5.11 Index of publications completed in the last 3 years, academics in selected European countries 2007 (arithmetic mean of points)[a]

	FI	DE	IT	NL	NO	PT	UK
University professors	38	56	39	41	28	47	29
Junior academic staff at universities	16	20	29	27	11	23	15
Professors at other HEIs	10	19	.	7	21	42	.
Junior academic staff at other HEIs	7	9	.	5	8	16	.

[a]3 points each for scholarly books (co)authored and co(edited), 2 points each for articles published in academic books or journals and research reports, 1 point each for papers presented at conferences and articles written in newspapers/magazines

In Table 5.11, an index of written publications is presented. One might challenge the weighing undertaken (see the explanation below Table 5.11), and we have to bear in mind that the number of publications reported does not mirror the quality. Yet, this might be the best approximation of academic productivity possible in the framework of this study.

Actually, university professors in Germany publish more than their colleagues in other European countries surveyed in 2007 (index score of 56 vs. 28–47). Academic productivity of university professors in Germany measured that way has increased substantially since 1992, when the respective score has been 34; this is in contrast to the United Kingdom, where the score has remained about the same, and the Netherlands, where the score has declined.

On average of the European countries surveyed, junior staff at universities and senior academics at other higher education institutions publish only about half as much as university professors. In those categories, the German academics do not publish more than the European average.

5.7 Links Between Teaching and Research

According to the Humboldtian ideal of "unity of research and teaching", one should assume that involvement in research enhances the quality of teaching and that teaching—e.g. through the discourse between the professors and the advanced students—provides a positive feedback to research. In the CAP questionnaire, only the former link is explicitly addressed with the item "Your research activities reinforce your teaching". However, the mutual relationships are touched as well by asking the academics to state their opinion as regards the following: "Teaching and research are hardly compatible with each other".

Almost all university professors in Germany (86 %) are convinced that research reinforces teaching. As Table 5.12 shows, university professors in the other European countries surveyed share this view more or less to the same extent (range from 82 % to 86 %).

It is interesting to note that even three quarters of professors at German universities of applied sciences—about the average among the European countries for which information is available—share this view, even though the majority of them are

Table 5.12 Views regarding the links between teaching and research, academics in selected European countries 2007 (percentage[a])

	FI	DE	IT	NL	NO	PT	UK
(a) *Research reinforces teaching*							
University professors	83	86	85	82	86	86	83
Junior academic staff at universities	73	60	78	82	75	75	73
Professors at other HEIs	68	74	.	.	86	76	.
Junior academic staff at other HEIs	42	44	.	.	65	69	.
(b) *Teaching/research hardly compatible*							
University professors	37	33	12	18	13	19	25
Junior academic staff at universities	35	34	17	25	14	28	25
Professors at other HEIs	38	47	.	.	20	32	.
Junior academic staff at other HEIs	45	27	.	.	10	36	.

[a]Responses 1 and 2 on a scale from 1="strongly agree" to 5="strongly disagree"

hardly involved in research. In contrast, this view is only held by 60 % of junior academics at German universities (fewer than in other European countries); one might assume that they consider their research agenda as highly specialised in a way that teaching can draw from it only to limited extent.

One third of university professors in Germany state that teaching and research are hardly compatible with each other. The question is too general to allow any conclusion about the weight of possible tensions: working schedules, research specialisation as compared to broader teaching assignment, etc. The proportion of university professors in Germany noting such problems of compatibility is among the highest in Europe.

Junior staff at universities hardly differ in their responses. It is interesting to note that even almost half of the professors at UAS in Germany note such problems of compatibility between teaching and research: It is known that many of them hardly see a chance to be active in research due to their enormous teaching load and the usually only small reduction of teaching load for research purposes.

5.8 Interindividual Comparison: Impact of Teaching and Research Approaches

Hitherto, attention has been paid to university professors in Germany in comparison to the other academics in Germany and various European countries. For example, Table 5.1 has already shown what proportion of them has a clear preference for research and what proportion a clear preference for teaching. How much they publish on average has been described in Table 5.11.

It is worth, too, to examine interindividual diversity among university professors in Germany as well. In analysing the views and activities as regards their core functions, i.e. teaching and research, it is certainly interesting to note what options university professors choose and whether an option actually turns out to be meaningful for their views and activities as a whole (see Teichler 2010).

Table 5.13 Variation of academics life of university professors in Germany according to their teaching and research profiles 2007

	Time budget			Preferences				Orientation			
	R	RT	T	RR	R	T	TT	Tp	TP	tp	tP
Weekly working hours[a]	55	52	52	49	54	51	–38	55	52	51	52
Affiliation to one's discipline/ fields (%)[b]	91	95	94	82	96	92	–83	90	94	92	97
Job—considerable strain (%)[c]	43	49	62	53	48	50	–67	42	54	63	42
Job satisfaction (%)[d]	84	79	45	79	78	62	–50	69	79	72	77

[a]Calculated as 60 % when classes are in session and 40 % when classes are not in session
[b]Responses 1 and 2 on a scale from 1 = "very important" to 5 = "not all important"
[c]Responses 1 and 2 on a scale from 1 = "strongly agree" to 5 = "strongly disagree"
[d]Responses 1 and 2 on a scale from 1 = "very high" to 5 = "very low"

Academics are quite free to choose. First, they are free in terms of "academic freedom", i.e. regarding the choice of themes, theories and methods of inquiry. Second, they are relatively free as far as the allocation of time for various functions and activities is concerned. For example, the time a university professor has to spend on teaching comprises in many countries mostly somewhere between 10 % and 15 % of a normal work time; otherwise they are quite free in their intensity of teaching-related activities, in their participation in administrative and service functions and last but not least in their time and energy devoted to research. This freedom applies most clearly to university professors. Junior staff at universities might have to do what the seniors say, and academics at other higher education institutions often have constraints in terms of teaching load, rights and resources to be active in research, etc. Therefore, the following analysis will comprise only university professors in Germany.

The following analysis is based on the assumption that certain options (they will be called *academic profiles* subsequently) could be highly influential for all the views and activities:

- *Time budget*: According to the relative time spent all over the year on teaching and research, the respondents are grouped into three categories: R = time spent predominantly on research, RT = about the same amount of time spent on research on teaching and T = time spent predominantly on teaching.
- *Preferences*: The preferences of the respondents as regards research and teaching are included here in the way they are presented in Table 5.1: RR = primarily in research; R = in both, but leaning towards research; T = in both, but leaning towards teaching; and TT = primarily in teaching.
- *Orientation*: The questions how much the respondents put emphasis on original research and how much on application are viewed here as indicating theoretical orientation and practice orientation. Four categories are presented: Tp, strong emphasis on theory, little on practice; TP, strong emphasis both on theory and practice; tp, little emphasis both on theory and practice; tP, little emphasis on theory, strong on practice.

Table 5.13 shows some features of the variations of academic life. The weekly working hours and the affiliation to one's discipline/field do not seem to be strongly influenced by the respondents' teaching and research profiles. However, time budget

Table 5.14 Variation of institutional life of university professors in Germany according to their teaching and research profiles 2007 (percentage)

	Time budget			Preferences				Orientation			
	R	RT	T	RR	R	T	TT	Tp	TP	tp	tP
Perception of good work environment[a]	55	48	39	52	50	42	39	46	54	51	46
Affiliation to one's university[b]	47	50	42	41	51	43	50	46	47	53	52
Personal influence on one's faculty[c]	60	65	62	45	67	60	67	64	69	64	54
Personal influence on one's university[c]	34	28	13	19	30	20	33	21	40	23	23

[a]Average rating of 1 or 2 on a scale of 1="excellent" to 5="poor" on 12 items (classroom, computer facilities, library facilities, secretarial support, research funding, etc.)
[b]Responses 1 and 2 on a scale from 1 = "very important" to 5 = "not all important"
[c]Responses 1 and 2 on a scale from 1 = "very influential" to 5 = "not at all influential"

plays a role as regards job satisfaction. Those who spend clearly more time on teaching than on research relatively often consider their job as a source of personal strain, and they state the lowest overall satisfaction with their job as a whole. As no similarly strong link can be observed between preferences and job satisfaction, we might conclude: Notably those German university professors spending much time on teaching without having a preference for teaching frequently are dissatisfied with the job.

Table 5.14 addresses the variation of the institutional life of university professors in Germany according to their teaching and research profiles. First, teaching and research profiles seem to have little influence on the extent to which university professors consider themselves affiliated to their own university.

Second, university professors in Germany whose preferences are clearly in the area of research consider themselves to have little influence on their university. This holds true both regarding the university level and the faculty level.

Third, the work environment (material and personnel resources) is least often positively viewed by those who are clearly linked to teaching. This applies both for those spending more time for teaching than for research and with a preference for teaching.

Fourth, the findings are surprising as regards influence on one's own university. On the one hand, those preferring teaching report relatively often a personal influence on their university. On the other hand, those spending much time on teaching report relatively seldom a personal influence on their university.

Finally, Table 5.15 shows the extent to which views and activities in the area of teaching and research vary according to the teaching and research profiles. As one might expect, all research activities and all results of research activities addressed are more often reported by those with a preference for research and those spending more time on research. Thereby, preference seems to be more influential than time spent on research.

In contrast, involvement in curriculum is not often reported by those university professors in Germany with a prime interest in teaching. But it is often named as well by those who spend much time on teaching and teaching-related activities.

Finally, it is interesting to observe the profile of those stating that teaching and research are hardly compatible. Such a problem is most often stated by those with a clear preference for teaching. Similarly, those who spend most time on research

Table 5.15 Variation of the views and activities of university professors in Germany in the area of teaching and research according to their teaching and research profiles 2007 (percentage)

	Time budget			Preferences				Orientation			
	R	RT	T	RR	R	T	TT	Tp	TP	tp	tP
Active in ICT-based/computer ass. learning	12	23	23	6	22	23	17	20	21	11	33
Active in curriculum development	45	67	75	55	60	75	33	65	61	65	59
Emphasis on external research funding	65	64	51	65	64	59	34	58	68	59	65
Emphasis on multi/interdisciplinary research	78	70	64	74	70	68	50	66	92	56	63
Number of publication and reports[a]	24	23	13	27	22	16	3	22	22	18	21
Serving as member of scientific committees	60	49	32	57	50	45	20	43	63	46	46
International research collaboration	79	74	69	85	75	63	25	86	78	63	62
Publishing in a foreign language	69	52	40	72	55	40	48	62	57	48	45
Considering teaching and research as hardly compatible	3	29	33	41	26	35	60	33	17	38	28

[a]Number of scholarly book (co)authored and (co)edited, articles in books and journal and research reports/monographs written for a funded project in the past 3 years

hardly see any problem of compatibility between teaching and research. One finding does not fit in that pattern: Also those with a prime preference for research relatively often state that teaching and research are hardly compatible.

In summing up the findings, we note that the theoretical versus practical orientation of university professors in Germany has hardly any impact on the aspects of academic life, institutional life and views and activities in the area of teaching and research. The preference for teaching and research has a stronger weight in this respect, but clearly the time spent on teaching and research is most influential. Some of the findings cannot be explained easily and cannot be clearly put into a plausible order.

One finding, however, is overwhelming: Those who spend considerably more time on teaching consider themselves to be in an unfortunate situation in various respects. There is only one finding which shows a link between time priority and respective activity: They are frequently involved in curriculum development. But elements of an unfortunate situation prevail: University professors in Germany spending more time on teaching than on research consider the resources for their academic work least favourably, see most problems of compatibility between teaching and research, consider influence on university level as week, consider their job often as a source of personal strain and express least often a high level of overall job satisfaction. As preferences for teaching have only in some respect similar links, we might assume that much time devoted to teaching has such an impact irrespective whether this is based on one's own preference or whether so much is spent on teaching without corresponding preferences—one could even say "involuntarily".

In sum, a link between research and teaching is the ideal. However, if research dominates in everyday life, university professors in Germany might consider their life desirable, but those who are primarily active in teaching do "feel less at home" than others.

5.9 Concluding Observations

In the analysis of the "academic profession" in Germany and notably of its core functions teaching and research, we have reasons to challenge the concept of a single "academic profession". The credo of the modern university, the Humboldtian call for a "unity of research and teaching" combined with stronger appreciation of research than teaching among the academics themselves, applies in Germany clearly to the university professors. Junior academics at universities are less free in their options, and they are primarily expected to improve their research capacity along less than systematic training and learning process in the domain of teaching. And only a minority of 10 % or somewhat more professors at universities of applied sciences (*Fachhochschulen*) can be considered to be visibly active researchers; the teaching load is enormously higher, and reductions are seldom and small.

As a consequence, the analysis presented focused on the university professors in Germany. Findings on other academics in Germany as well as academics generally in the CAP survey were presented only in order to provide comparisons.

The Carnegie Study on the academic profession has shown for 1992 that the differences between the categories of academics according to occupational rank and institutional types have been more substantial in Germany than in the other European and the further advanced countries addressed. From 1992 to 2007, we observe a narrowing of the gap between the different categories of academics in Germany in some aspects, but not consistently throughout. For example, the differences of the time spent on teaching versus research declined, though remaining higher than in the other countries. Also, the preferences stated for teaching and research become more similar on average for the different staff categories in Germany. But altogether, variations remained so substantial that the concept of a single academic profession remains questionable. Thus, it does not come as a surprise to note that the lack of a single term "academic profession" has persisted in Germany and one continues to talk about *Hochschullehrer* or professors on the one hand and on the other *wissenschaftliche Mitarbeiter*.

It is generally believed that the Humboldtian concept of the "unity of research and teaching" put forward about two centuries ago has led in almost all countries of the world that a close link between research and teaching is the characteristic of high-quality higher education institutions. But the notion of this linkage varies across countries. Arimoto (2010) points out that a balance between research and teaching really has been strived for in the United States of America and in the United Kingdom, while in Germany (and Japan as well) research has been at the forefront—not highly regarded as an area of competences which professors have to acquire and not highly appreciated by the professors themselves. This notion of the German university professor as having a low regard for teaching, however, is not confirmed consistently in this study—notably not as regards preferences and actual work time. Certainly, research is more highly appreciated than teaching by

university professors in Germany, and they spend more time on average all over the year on research than on teaching. But in both respects, the attitudes and activities are close to the average among the European countries and all advanced countries surveyed in the CAP study.

In two respects, however, teaching does not seem to be highly on the agenda at German universities. University professors in Germany seem to be less exposed than their colleagues from other countries to standardising expectations as regards the processes and the outcomes of teaching. Moreover, we note that German academics at universities are least involved in various teaching activities apart from the usual lecturing. In those two respects, there are not any major differences of responses between university professors and junior academic staff in Germany.

The relatively strong emphasis on research on the part of university professors in Germany does not mean that they are just interested in theory and the pursuit of knowledge for its own sake. The Humboldtian legacy in Germany is not that of an "ivory tower". Rather, university professors in Germany underscore practice-oriented approaches in research as well as teaching more strongly than colleagues in most other European and further advanced countries, and the gap between the practice-oriented other higher education institutions and the universities is in this respect smaller in Germany than in other countries.

The university professors in Germany are strongly devoted to their profession and are very active. They spend more time on academic work and they publish more than university professors in the other European countries survey in CAP. The substantial increase of publications by university professors in Germany from 1992 to 2007 is a striking result.

The link between teaching and research is generally held in high esteem, and there is a widespread agreement that research reinforces teaching, but tensions are visible in this respect. It is only a minority of academics believing that research and teaching are hardly compatible, but this minority is relatively large among university professors in Germany in comparison to their colleagues in other European countries surveyed. It is also a sign of a lack of a balance that, as pointed out above, those who spend more time on research than on teaching assess their professional situation by and large positively, while a substantial proportion of those who spend more time on teaching are not satisfied with their professional situation.

As already pointed out above, one could not exclude that teaching at universities in Germany gets a stronger role in the further increase of the rate of enrolment and of various activities of evaluation in the domain of teaching as well as in the decline of the gap between universities and universities of applied sciences in various respects. But the growing attention paid to "world-class universities" and the growing competitive mechanisms of sanction and rewards point into the opposite reaction: Actually, the time devoted to teaching and teaching-related activities has declined between 1992 and 2007. There is no consistent trend as regards the balance and the linkages between research and teaching, as far as university professors in Germany are concerned.

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Chapter 6
Teaching and Research at Italian Universities: Continuities and Changes

Michele Rostan

6.1 Introduction

It seems appropriate to distinguish three periods in the historical development of contemporary Italian university. The first period lasts more or less one century. It goes from the mid-1800s, at the time when the unified Kingdom of Italy was established, to the World War II, when the Kingdom collapsed following Italy's defeat in war, the end of Fascism, and the results of the democratic referendum founding the Italian Republic. The second period largely coincides with the "golden age" of both Italian and European economies (1950–1970) which turned what at the time still was an elite higher education system into a mass system. The Italian political system and the Italian academy proved to be unable to provide adequate answers and solutions to the problems arising from the shift to mass higher education, and a university reform was passed only in 1980. It is worth choosing as the starting point of the third period the late 1980s. In 1989, 40 years after the Constitution of the Italian Republic was approved and came into effect, a law translated the constitutional principle of "university autonomy" into practice. In the following years, several policy initiatives have changed the institutional environment in which academics carry out their teaching and research activities.

The three periods are equally relevant to understand teaching and research at Italian universities and their relationship. The first period has given to Italian higher education some long lasting features. First, Italian higher education has largely coincided with the university system. There has been less room for horizontal or functional diversification between higher education institutions. Universities—formally considered as equals—have dominated higher education, and Italy has never experienced a

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binary system. Second, starting with the establishment of the Kingdom of Italy, higher education has developed under a strong state monopoly, and the private sector has always been small. Third, since the 1880s the relationships between the state, universities and the academy might be described as characterised by a strong tension between centralisation and autonomy. While in some historical periods state central control—that is governmental control—over both institutions and academics has prevailed, in others the claims of universities and academics for more autonomy have gained room resulting in several different "balances of power". Tensions between the state and universities have focused mainly on financing and recruitment, governance, especially the choice and appointment of rectors, powers assigned to basic academic units, the *facoltà* (schools), and study programmes. Further, the academic profession has always been strictly regulated. Academics were, and are, civil servants whose rights, duties and salaries are determined by law. On the other side, the professoriate has progressively managed to "shelter" its teaching and research activities from external control. Further, it has been able to command the daily functioning of academic units where teaching and research activities were carried out, having also the final say on recruitment. Fourth, since the establishment of the university system in 1859, both at the political level and in the academic culture, teaching and research have always been considered as strictly connected, although it is questionable whether and how this view has been translated into practice.

The university reform ending the second period in 1980 must be considered as a crucial event within the frame of the Changing Academic Profession Research Project. The main features of the reference population we have investigated depend on it. The reform determined the structure and size of the academic profession, recruitment and promotion regulations, tasks and duties of Italian academics.

In the following decades, policy initiatives—more or less strictly connected with the reform of the public administration and the process implementing university autonomy—have had a strong impact on the academic work turning what has been for a long time a rather stable institutional setting into a fast changing and unstable one. Changes are still ongoing and are currently enacted by the implementation of a major university reform passed by the Parliament in 2010.

In this chapter, we briefly describe the main traits of the two first periods especially focusing on teaching and research and on the structure of the academic profession. Next, we look at the changing working environment of Italian academics in the third period describing the policy initiatives having an impact on academic teaching and research. Finally, relying on the results of the CAP Italian survey, we describe both academics' teaching and research activities and their view on the relationship between teaching and research, occasionally comparing Italian academics with their most similar colleagues in selected European countries.[1]

[1] On the basis of CAP data, Italian academics are compared to their most similar colleagues—that is, people working in universities—in four selected European countries, namely Finland, Germany, Norway and the United Kingdom.

6.2 The Historical Development of Italian University

Two key events mark the first part of the historical development of Italian higher education (Miozzi 1993; Capano 1998; Vaira 2011). First, the Casati Law was approved in 1859. The Law, named after the nobleman Gabrio Casati—a former officer of the Sabaudian army to whom the King of Piedmont assigned the task to restructure the whole educational system, including higher education—was issued before the establishment of the Kingdom of Italy in 1861. This notwithstanding, it provided the basis and the structure of primary, secondary and tertiary education of the new unified state. Building on the experience of the University of Turin, higher education was shaped after the French and the Prussian models. Universities were conceived as state elite schools. They were intended to train the ruling classes and to pursue cultural and scientific aims. According to the Law, universities had to provide higher education on the basis of expertise and method and of a selected and qualified body of teachers. The Law was progressively enforced in the provinces annexed to the new Italian state starting with the four universities of Turin, Pavia, Genoa and Cagliari. In this way, the principles and the rules of the Casati Law, including those regulating the academic profession, gradually spread throughout the country imprinting the structure and functions of the Italian higher education system and modelling its main traits for more than one century.

In its first decades, the university system was very small in size and unevenly distributed throughout the new Kingdom. There were between a dozen and a couple of tens of functioning universities—mostly old institutions established in the Middle Ages or during the Renaissance—and one single institution, namely, the University of Naples, served the southern regions. University students were 7,000 in 1861, 12,000 in 1881 and 27,000 in 1901 (ISTAT 2011), accounting for no more than 1 % of the reference population (Miozzi 1993, p. 53). Universities consisted of five academic units, named *facoltà* (schools): theology (abolished in 1872), law, medicine, sciences (physics, mathematics, natural sciences) and humanities (literature and philosophy). They performed both teaching and training and research. These activities were organised through *istituti* (institutes) that were basic academic units led by a full professor supported by subordinates, assistants and researchers. Two specialised institutions, the Polytechnic of Turin (established in 1906), formerly Technical School for Engineers (1859), and the Polytechnic of Milan (1863) provided applied research. These institutions had university status and strong links with textile, chemical and automotive industries. A private institution, the Luigi Bocconi University in Milan (1902), provided training in economics and business administration. Starting early in the twentieth century, the preparation for regulated professions increasingly became a university responsibility although access to the professions and to corresponding professional bodies depended, and still depends, on a system of traineeships and "state exams". Notaries (1913), engineers and architects (1923) and lawyers (1933) were the first professions to be regulated followed by many others during the century such as physicians, veterinaries and pharmacists (1946), journalists (1963) and psychologists (1989).

The second key event in the history of the Italian university was the so-called Gentile Reform, named after the philosopher Giovanni Gentile. Although passed by the Parliament in the early days of the Fascist Regime (1923), the Reform had nothing to do with Fascist ideology, and its principles and norms rested on a plurality of different streams of thoughts embedded in the conservative, liberal, democratic and idealistic traditions of the previous decades. The reform reaffirmed the elitist nature of universities and the basic functions of higher education stated by the Casati Law. Yet, while the Casati Law considered teaching and professional training as preceding the enhancement of culture and the pursue of scientific knowledge as higher education priorities, the Gentile Reform inverted this order, clearly stating the primacy of the cultural and scientific functions of higher education. Furthermore, Gentile intended to distinguish universities from other tertiary education institutions having a vocational mission. He also proposed to enhance the autonomy of universities and academic units in front of the state. Just opposite to this purpose, in the following years, especially starting from 1931, Fascism's grip on higher education became increasingly strict. A complete "*fascistizzazione*" of Italian universities was never accomplished because of the outbreak of World War II, yet centralisation was reaffirmed and autonomy was disregarded.

The second period of the Italian university historical development starts with the slow post-war recovery of higher education and the country. Crucial for both were the restoration of democracy, the establishment of the Republic and the approval of the Constitution. The Constitution sets five basic principles concerning higher education. First, development of culture and scientific and technical research, the safeguard of natural landscape and historical and artistic heritage are considered constitutional values. Second, higher education is part of the public education system, and both are considered instruments to pursue these values. Third, unlike other educational institutions, universities have the right to establish their own regulations. Fourth, capable and deserving pupils, including those without adequate finances, have the right to attain the highest levels of education. Fifth, in order to avoid top-down authoritarian imposition of state culture and arts, both freedom of arts and sciences and freedom of teaching are guaranteed.

These principles notwithstanding, in the first decades of the Republican era, the structure and functioning of the higher education system and of the academic profession were largely based on a set of norms and regulations which were established during Fascism and before.

Two researches, providing an extremely valuable term of reference for the CAP survey (Rostan 2008), inquired the main traits of the organisational structure of both Italian higher education and the academic profession in the period lasting till the end of the 1960s. The author of the first research depicted these arrangements in terms of the prevailing power of the academic oligarchy on a centralistic but weak bureaucracy (Clark 1977). The author of the second research viewed them "as a system of patrimonial relationships veiled by a fine gloss of bureaucratic regulations" (Giglioli 1979, p. 64) centred on the single chair holder who was fully independent in his own domain "as a lord in his fief" (Giglioli 1979, p. 26). In a relatively small system lacking internal competition between institutions and effective tools to

enforce centrally determined norms and rules, full professors were free to organise their teaching and research activities. They were able to allocate their working time between these activities and others, according to disciplinary cultures, to the degree of their involvement in external professional activities and to their ability to control and mobilise subordinate labour.

The unprecedented changes occurring in the Italian economy and society in the 1950s and 1960s put under severe and increasing pressures this organisational and institutional frame. Following economic growth—the so-called economic miracle—and the slow development of the welfare state, the social demand for higher education increased dramatically. The enrolment ratio (% of students enrolling for the first time with respect to the total of people aged 19) grew from 5 % at the time of the Census in 1951 to 8 % in 1961 and to 28 % in 1971. Total enrolment skyrocketed from 227,000 students in 1951/1952 to 288,000 students in 1961/1962 (+27 %) and 760,000 students in 1971/1972 (+164 %) (ISTAT 2011).

Political parties, the Parliament and the government reacted to shift towards mass higher education. They promoted some investigations and designed a complete and articulated reform of higher education. The Minister of Education Luigi Gui presented the results of the inquiries in 1963 and a reform proposal in 1965. These initiatives addressed several crucial aspects of the system, including the relationship between teaching and research (Luzzatto 2010; Miozzi 1993, pp. 167–188). Two proposals are worth mentioning: (a) the establishment of a new organisational unit, namely, the department, and (b) the introduction of a new degree, namely, the doctoral degree. Following the suggestions of a small group of academics who had studied in the USA and were advocating the importation of some aspects of the American model within Italian universities, it was proposed to establish a new academic unit connecting a plurality of *istituti* (institutes) and *cattedre* (chairs) belonging to one or more *facoltà* (schools). This unit would perform both didactic and scientific activities, foster new patterns of cooperation among academics and disciplines in both teaching and research, orient students in their learning and training activities and provide new links with the economy. Further, looking at the demands and the needs of both the national productive system and of scientific research, it was proposed to diversify university degrees into three degrees, namely, the *diploma* (a short-cycle degree), the *laurea* (the traditional long-cycle degree) and the *dottorato di ricerca* (the doctoral degree).

Depending on the malfunctioning of the Italian political system and the strong opposition, albeit for different reasons, of large part of the academy and of the student movement, the reform was never approved. A timely opportunity to modernise universities answering to students' growing dissatisfaction and protests was lost. Higher education was left with its increasing difficulties quickly bringing to an untenable situation. The emergency was backed relying on a sequence of episodic, loosely connected, "urgent" measures resulting in a set of reactive, piecemeal adjustments (Capano 1998). Two are worth mentioning. In order to answer to the growing demand of higher education, pending the approval of a substantial university reform, the Law n. 910/1969 introduced an "open door" policy widening access and measures aimed at the personalisation of study programmes destructing the

former very rigid curricula. Further, a massive recruitment of academic personnel was launched by some "urgent" measures in 1973 (Law n. 766/1973) through a set of competitive and noncompetitive procedures providing both tenured and nontenured positions. In order to support teaching and research activities, temporary contracts and fellowships were offered to fresh graduates and young scholars working in subordinate positions and having very limited opportunities to gain a tenured academic status (Miozzi 1993, pp. 235–238).

The growing social demand for higher education combined with the inadequate responses to it from both the political system and the academy shaped Italian higher education. Some of the resulting traits lasted for the following decades.

Despite the creation of new universities, *facoltà* (schools) and study programmes and despite the expansion of subordinate positions within the academic staff in order to face the increased demand of lecturing and tutoring, universities were unable to provide adequate teaching and didactics to an enormously expanded and highly diversified student body. As a consequence, low levels of class attendance, effective study duration exceeding the legal one, high levels of dropouts, low productivity in terms of graduates, persisting selectivity based on family social background and overcrowding of universities in large cities characterised the system. Career promotions hardly acknowledged the importance and value of commitment to teaching and didactics, and the provision of subordinate personnel supporting both teaching and research activities prevented full professors from being exceedingly engaged in teaching helping them to maintain their research and professional interests and activities.

Following the policy measures aiming at the expansion of the academic body, at the end of the 1970s, the academic profession consisted of four different groups of people (Rostan & Vaira 2011a). There were 6,000 full professors enjoying a tenured position, 4,000 professors with a temporary "appointment" and 18,000 assistant professors with a tenured position. Besides these three groups, there were 12,000 people working on a temporary basis and making strong pressures in order to gain a more stable position.

6.3 Reshaping the Academic Profession: The University Reform of 1980

Amidst one of the most dramatic periods in recent Italian history following the killing of President Aldo Moro by the Red Brigades (1978), politics looked again at the university. The creation of a "grand coalition" in the Parliament supporting a "national solidarity government" set the conditions to get back to university problems answering to the quest for stability coming from the subordinate and nontenured segments of university teaching and research staff. As a consequence, a university reform was finally approved in 1980 (Law n. 28/1980 and D.P.R. n. 382/1980). The reform consisted of two main measures: (a) restructuring of the academic profession and (b) the promotion of new didactical and organisational arrangements.

The law established that the professoriate consisted of two positions: *professore ordinario* (full professor) and *professore associato* (associated professor). Further, the law instituted a new position that of *ricercatore* (researcher). These were all permanent or "tenured" positions differentiated according to scientific expertise and job tasks. Teaching classes in official courses and performing other didactical and research activities were professorial duties, while researchers were dedicated primarily to scientific research and secondarily to integrative didactical tasks. The law also established limits to the number of people to be recruited in the three categories (all together the three positions could not include more than 46,000 people) and fixed the procedures for recruitment. Academics were recruited in three ways: (a) by *concorso* (public competition), at the national level for the professoriate, at the local level for researchers; (b) by transfer from other universities; and (c) by administrative act based on internal assessments for some categories of personnel already working at universities. The law fully determined rights and duties of the professoriate distinguishing full-time and part-time employment. Part-time professors could not be appointed to apical positions (rector, dean, director, etc.), and full-time professors could not carry out external professional activities and be engaged in any trade or industry. It also fixed minimum teaching, didactical and organisational workloads. Although a set of rules was also stated for researchers, the law left it open the full regulation of this position triggering a condition of uncertainty which lasted for years. Finally, the law allowed universities to sign fixed-term contracts with non academic professionals providing teaching and technical services.

Within the frame of the Changing Academic Profession Project, approval and implementation of the 1980 reform are of crucial importance as they set the main features of the academic profession in Italy and of the population that has been investigated. As a matter of fact, the reform determined the three-layered structure and the size of the academic profession. Consequently, for the following 30 years the regular academic career path has consisted of three steps: gaining a position as researcher, moving to the position of associated professor and, finally, to the one of full professor. Further, the reform answered the demands of the growing mass of people working within universities under precarious and unstable conditions providing a way to transfer—often without sitting in a public competition—from temporary positions to tenured ones. Within few years, the implementation of the reform brought to the saturation of each academic rank, rendering practically impossible to enter the academic profession for the following 10–15 years, hindering generational turnover and shaping for years the age structure of the Italian academy.

Although the reform was mainly aimed at restructuring the academic profession, it also contained some measures intended to change the structure and functioning of Italian universities. Resuming previous ideas and proposals, it established a new academic unit, namely, the *dipartimento* (department), introduced the doctoral degree and provided new means to coordinate didactical activities within *corsi di laurea* (study programmes). These novelties had—and continue to have—an impact on academics' teaching and research activities.

The establishment of the department was meant gradually to overcome and transform existing research units, namely, institutes, which were based on one

single chair or few chairs, inducing individual academics, especially full professors, to cooperate in research activities. Although through a slow and contrasted process, the importance of departments as organisational units, as well as units of affiliation and identification for academics, has grown throughout the following decades, competing with other units and disciplines. Study programmes were considered as internal articulations or sections of the *facoltà* (school) deserving a specific collegial body to coordinate teaching and didactical activities.

One of the, possibly unintended, consequences of the reform was that, albeit individual academics were required to perform—to a different extent according to academic rank—both teaching (or didactical) and research activities, these activities were carried out in two separate institutional settings. As a matter of fact, study programmes and departments had their own governing bodies and their leaders, within the overarching persisting frame of the *facoltà* with their governing bodies and leaders. This institutional dualism will last for decades. Only very recently, it has been questioned as the new university reform (Law n. 240/2010) assigns to one single organisational unit—namely, the department—the functions of teaching, research and service.

More or less a century after it was established in the German and the American systems, the 1980 reform provided the Italian system with a doctoral degree. The doctorate was intended to have an exclusively academic function as a training programme for future researchers, and no "professional" or "executive" doctoral degrees were introduced. The new degree had several consequences on the academic profession. While, before the 1980s, academics wanting to earn a doctorate needed to study abroad, the reform provided an opportunity to gain a doctoral degree at home making it a de facto requirement to enter academic career. According to the CAP data, while only 13 % of the Italian academics belonging to the oldest generation (born before 1951) have earned a PhD, 86 % of the academics belonging to the youngest generation (born after 1970) have earned one. The establishment of the doctoral degree provided the system with some vertical diversification and increased academics' teaching requirements and workloads. Finally, the reform populated universities with new students, the doctoral students, and, after the completion of the doctoral programme, also with a growing mass of highly qualified people aspiring to enter the academic profession and willing to perform teaching, tutoring and research tasks on a temporary—sometimes even unpaid—basis.

In spite of introducing crucial novelties, the 1980 reform failed to put into effect the constitutional principle of university autonomy. It also failed to structure higher education into different cycles of study and to renovate and update both study programmes' regulations and curricula. Moreover, it was unable to address some of the main problems of Italian higher education such as the lack of functional diversification and the lack of competition between institutions. Finally, nothing was set up to assess student learning outcomes and to evaluate the performance of both universities and academics.

Within a system that was bigger in size but was growing much more slowly than in the previous decades—students were 1,050,000 in 1980/1981 and 1,223,000 in 1988/89 (+17 %) (ISTAT 2011)—the reform did not meet the structural problems

arising from the shift to mass higher education. Sometimes it even worsened them as it was the case with the increasing fragmentation of disciplines and study courses resulting from the greater number of professors entitled to teach official courses (Miozzi 1993, p. 218).

A survey on the academic profession timely carried out in the late 1980s (Moscati 1997) stressed the elements of continuity in the attitudes and behaviours of Italian academics, largely left untouched by the reform. It described the Italian academic world as characterised by a strong resistance to changes, either societal changes pressing higher education "from the outside" or changes brought about by policy initiatives affecting the "internal" functioning of universities and the academic profession. The results from the research also showed that the Italian academic profession was not yet involved in the processes of change that were ongoing in other Western countries. Nevertheless, a new season of policy initiatives was approaching turning Italian university professors into a "guild in transition" (Moscati 2001).

6.4 Recent Policy Initiatives

In the past 20 years, various waves of policy initiatives have changed the institutional environment within which Italian academics work. These initiatives can be grouped into three categories. At a general level, several measures (i) impacted the structure of higher education and the relationship between academics and their universities and (ii) have introduced relevant novelties such as evaluation procedures of teaching and research activities. At a more specific level, (iii) measures variously connected to general policy initiatives have had a direct impact on teaching and research. On the whole, these measures have contributed—and still contribute—to create a more complex, demanding and unstable environment within which academics perform their daily tasks. Some effects of these changes are already visible in the results of the CAP survey—as we will see in the following paragraph—while others are too recent to be detected by it.

In 1989, Law n. 168 created a new Ministry of University and Scientific and Technological Research, independent from the Ministry of Education and pursuing a stricter coordination between teaching and research in higher education at the system level.[2] The same law, 40 years after the Constitution of the Italian Republic was approved, translated the constitutional principle of university autonomy into practice. Law n. 168/1989 defined five types of university autonomy (didactic, scientific, organisational, financial and bookkeeping) and started the process of university "autonomisation". The first step of the process consisted in the reform of university financing. This gave universities financial autonomy (Law n. 537/1993, Sect. 5). Public funding of universities was confirmed, and financing was conveyed

[2]The Ministry was remerged with the Ministry of Education following the general reform of public administration in 1999 (Moscati 2006, p. 820).

to them by means of three funds, the principal of which included personnel expenditure. According to the law, personnel expenditure cannot exceed 90 % of the total.[3] As public funding was increasingly considered as linked to accountability and quality to evaluation, the same law set up an evaluation system organised into two levels assigning internal evaluation of universities to local committees (*nuclei interni di valutazione*) and system evaluation to various national agencies which have changed throughout the years.[4] Student evaluation of teachers and didactical activities was introduced later (see Law n. 370/1999).

The second step—starting in 1995 (Law n. 236/1995, Sect. 6)—was aimed at forcing universities to issue their statutes and regulations. While universities were writing their new statutes, Law n. 210/1998 assigned them the capability to manage recruitment procedures. Although norms and requirements to access the academic profession were still centrally determined, for the first time, universities were enabled to plan their recruitments and to recruit their academic staff. Academics, although remaining civil servants, were no more considered as employed centrally by the Ministry of University but as employees of their institution.

The third step concerned didactic autonomy. The process implementing didactic autonomy and restructuring university study programmes started with the Law n. 341/1990. The Law established a new degree, the *diploma universitario*, to be obtained by completing short vocational study programmes lasting 2 or 3 years. These programmes were parallel to the traditional programmes leading to the *laurea* but allowed to enter them at their completion. The new didactical provision was quite successful in the field of health services and professions and of engineering but was dismissed—without any serious attempt to assess this new experience—10 years later. After a period of pause, the process restarted under the leadership of Luigi Berlinguer gaining momentum thanks to the Sorbone Declaration (1998) and the Bologna Declaration (1999) eventually materialising in a key policy measure in late 1999. The Ministry of University Decree n. 509/1999 restructured university study programmes, established new degrees and provided a general framework for the implementation of didactic autonomy. This included normative tools to organise study programmes and to regulate access, definition of groups of study programmes, curricular frames for each group and a credit system (Luzzatto & Moscati 2005; Moscati 2010; Rostan 2010; Vaira 2003, 2011).

The reform of study programmes represents one of the major changes in the Italian higher education system in recent times. A European framework entirely replaced the long-lasting national framework mainly based on one long-cycle study programme (*corsi di laurea* lasting 4–6 years) and one degree (the *laurea*). Promoted by the Bologna Declaration, this framework introduced two cycles of study

[3]This fund—currently consisting of about €7 billion—is the main source of funding for universities.

[4]The restructuring of the Italian evaluation agencies has resulted in the establishment of the new *Agenzia Nazionale per la Valutazione del Sistema Universitario e della Ricerca* (National Agency for the Evaluation of Universities and Research Institutes; Law n. 286/2006, Presidential Decree n. 76/2010).

following the Bachelor/Master scheme leading to two degrees (the new *laurea* and the new *laurea specialistica*, later renamed as *laurea magistrale*). Only doctorate programmes—introduced in 1980—and study programmes regulated by European directives (medicine, dentistry, pharmacy, veterinary) were left untouched. As a consequence, the reform gave a strong push towards a steeper vertical curricular differentiation within Italian higher education and set the conditions to increase teaching workloads.

The implementation of the reform has been—and still is—a long and troubled process gradually turning into a "battle field" opposing faculty, universities and government. Started as a pillar of university autonomy and decentralisation, the reform of didactics and study programmes progressively has become a tool for centralising the governance of the system. The process can be divided into three phases. First, by the academic year 2001/2002, the new first-cycle study programmes were ready to start. With few exceptions, starting in the academic year 2002/2003, universities began to offer also second-cycle study programmes. As a consequence, in few years the overall didactic supply of Italian universities arose from 2,600 to 5,000–5,500 study programmes. Although the reform aimed at giving to single institutions the lead of its implementation—enhancing their role as corporate bodies—in fact the implementation was carried out mainly at the level of *facoltà* by committees composed by academics under the coordination of the Conferences of Deans, an institutional body acting at the national level. To finance the reform implementation, government and single institutions provided no—or remarkably little—extra resources.

Second, while the implementation of the reform stemming from the Decree n. 509/1999 was on its way, government approved a so-called reform of the reform without any serious attempt to evaluate the ongoing implementation process. A new decree—the Ministry of University Decree n. 270/2004—replaced the old one substantially maintaining the main guidelines of the original reform yet introducing some novelties. A more sharp separation between the two cycles of study programmes was introduced. The second-level degree was renamed into *laurea magistrale*. A common first year was set for the first-cycle study programmes belonging to the same group or to similar groups. The possibility to differentiate first-cycle study programmes according to their function (academic vs. vocational) was offered. Some exceptions to general rules were established in order to meet strong pressures to provide programmes as similar as possible to the old ones in the field of legal professions. The implementation of the "reform of the reform" has not been straightforward. Decrees and guidelines to steer the reorganisation of study programmes according to new requirements were provided only in 2007. The government intended to take the opportunity of the implementation of the Decree n. 270/2004 to rationalise the didactic supply of the universities. Further, it aimed at overcoming some serious weaknesses deriving from the implementation of the Decree n. 509/1999. The government targeted the proliferation of study programmes, the fragmentation of curricula and courses, the high number of examinations and excessive work load for students, the excessive use of nonacademic teaching staff relying on fixed-term contracts and barriers to student mobility. As a matter of fact, when the Italian CAP team approached academics asking to answer

the questionnaire, deans, professors and researchers were back to reorganise once again study programmes in order to provide a new and rationalised didactic supply by the academic years 2009/2010 or 2010/2011.

Finally, in 2009 the Ministry of University announced new measures to correct some of the outcomes of the second phase. The Ministry aimed at further reducing the number of study programmes,[5] the proportion of first-level graduates enrolling in second-cycle programmes and the number of universities' branches established at the regional level. She also wanted to provide students more qualified teaching and support services, moving towards the accreditation of university study programmes, and fostering a higher level of effectiveness and efficiency of the entire higher education system. Consequently, universities, *facoltà* and academics had to restructure their didactic supply again. Afterwards, the Ministry of Education, University and Research Decree n. 17/2010 made stricter and more demanding the requirements to be met in order to restructure study programmes. This measure was taken just at the eve of approval by Parliament of a new reform which is going to change deeply the structure of Italian university reshaping, once again, the academic profession. As a matter of fact, Law n. 240/2010 requires universities to modify their statues according to a common set of rules. These rules aim at changing the institutional governance and at assigning to a single organisational unit—namely, the department—both research, teaching and service functions. Further, the reform addresses the quality and the efficiency of the whole higher education system and academics' recruitment and status. Among other measures, the Law dismisses the tenured position of *ricercatore* substituting it with a temporary position.

In order to provide a complete picture of the institutional setting within which teaching and research activities were carried out at the time of the CAP survey, we now turn to the field of research.

Three main features characterise the Italian research system. First, although slightly growing over time, the rate of Italian R&D expenditure on GDP has been and still is one of the lowest among developed countries, below both the European Union and the OECD countries averages (OECD 2011). Second, although business sector's direct involvement in research activities has grown, its contribution in terms of percentage of gross domestic expenditure on R&D remains one of the lowest among developed countries, and the share of R&D activities performed by higher education remains considerable, above EU and OECD averages (OECD 2011). Third, within the public research sector, R&D activities are performed not only by universities but also by several other institutions[6]; while these institutions play a vital role within the national research system, nevertheless university R&D expenditure share is considerably higher.

[5]The Ministry argued that it was necessary to take into account not only the above mentioned 5,500 study programmes but also their internal articulation in specific segments bringing the total number of offered courses to 8,250.

[6]Public research institutions include the *Consiglio Nazionale delle Ricerche* (National Research Council; established in 1923), the *Istituto Nazionale di Fisica Nucleare* (National Institute of Nuclear Physics; established in 1951), the *Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Sostenibile* (Italian National Agency for New Technologies, Energy and Sustainable Economic Development; first established in 1960 as National Committee for Nuclear Energy) and the *Agenzia Spaziale Italiana* (Italian Space Agency; established in 1988).

Starting in the 1990s, several policy initiatives aiming at reorganising the network of public research institutions, introducing competitive allocation of research funds, widening and enhancing Italian researchers' participation in international—and especially European—projects and fostering or strengthening links between research organisations and industry have changed the structure and the rules of the research system. Some of these initiatives have had, and still have, a direct impact on university research. Six of them are worth mentioning (Corradi and Rostan 2009; Rostan 2010; Rostan and Vaira 2007, 2011b): (1) the reform of university research financing (Ministry of University Decree n. 320/1997); (2) the establishment and the implementation of two research assessment exercises (Ministry of Education, University and Research Decrees n. 2206/2003 and n. 17/2011); (3) the slowly increasing importance of the evaluation of research projects and outputs in the allocation of the fund for ordinary financing of universities (Law n. 537/1993, Sect. 5; Law n. 1/2009); (4) a package of policy measures promoting stricter links between academics and the economic sector (Legislative Decree n. 297/1999); (5) the reform of the intellectual property rights legislation (Law n. 383/2001, Sect. 7; Legislative Decree n. 30/2005); and (6) the establishment of university technology transfer offices as a consequence of points (4) and (5) and other policy measures (NETVAL 2009).

These measures strengthen academics' commitment to research and—at least in some fields—to technology transfer. For instance, it is worth noting that Italian academics—as civil servants—were legally prevented from being involved in industrial and commercial activities, with the exception of part-time academics—in particular those belonging to the fields of law, medicine, engineering and architecture—who were allowed to run professional activities. This kind of legal constraint lasted until the 1999 Decree. The Decree—pivoting on the enlargement of university autonomy—deeply changed the normative framework enacting a favourable regulative environment to support R&D projects, technology transfer from universities and a wider participation of academics to innovation processes.

All together, these changes in the teaching and research institutional environment have made Italian universities more open to the demands of students, families and firms; have strengthened the cooperation between universities and external actors; and, to some extent, have fostered their entrepreneurial attitude (Ballarino and Regini 2005; Ballarino and Perotti 2011; Moscati and Vaira 2008).

6.5 Teaching and Research According to the CAP Survey

In the academic year 2007/2008, about 62,000 academics teach and research in the 88 existing universities.[7] The environment in which Italian academics carry out their daily teaching and research activities is not particularly supportive. On average,

[7] When the CAP survey was carried out, in Italy there were 88 universities: 61 public institutions including 3 polytechnics and 27 private institutions including 11 institutions providing distance learning. Most of the about 1.8 millions students (95 %) attended public universities.

Italian academics' view on classrooms and technologies for teaching is neither positive nor negative. It is slightly more positive on library facilities and services and slightly more negative on teaching support staff. The fact is that Italian teaching environment at universities results as the worst among selected European countries participating in the CAP survey on three aspects out of four and as the second worst as far as library facilities are concerned. The evaluation of the research environment is even more severe than that of teaching. Most of the Italian academics (85 % with small differences across disciplines) support the view that the organisation of university life and bureaucratic paper work makes it more and more difficult to dedicate oneself to research activities.[8] On average, academics' evaluation of laboratories, research equipment and instruments and research support staff is slightly negative, and it is clearly negative on research funds. Research funding appears to be as especially worrying if we consider that academics' opinion refers to the situation at their own institution and that on average half of the financing for academic research is coming exactly from single institutions. Again, Italian research environment at universities appears to be the worst among selected European countries, while a similar proportion of Italian and other European academics (75–80 %) share the view that the pressure to raise external research funds has increased since their first appointment. Finally, academics' evaluation of general facilities and services (computer facilities, office spaces, secretarial support and telecommunications: Internet, networks and telephones) is slightly leaning towards the positive side, or it is neither positive nor negative. In the European context, Italian universities never rank high in providing adequate general services to their academic employees. On the whole, teaching and research environments and general facilities appear to be better off in small universities (with less than 700 academics) than in bigger ones (with 700 academics or more) and are considered poorer in universities located in the southern regions of the country.

As noted before, starting from the year 2000/2001, the reforms following the implementation of didactical autonomy have totally transformed the institutional setting within which teaching activities are carried out. According to a large majority of academics answering a question included only in the Italian version of the CAP questionnaire (64 % and 79 %), the reform has increased their teaching workload and has also increased their organisational and management duties (Bonafé et al. 2011; Trivellato and Triventi 2011).

As a matter of fact, when classes are in session, the median number of hours that Italian academics dedicate to teaching and other didactical activities in a typical week is 16, while it is 15 in the UK and more or less 10 at universities in other European countries (Trivellato and Triventi 2011, p. 80). On the whole, the variation of weekly hours dedicated to teaching when classes are in session is quite limited possibly because the law determines general rules regarding didactical duties, which apply to all academics. Yet some differences are worth mentioning: women are teaching longer hours than men, and academics from the humanities, economics and

[8] This item was included only in the Italian version of the CAP questionnaire.

business administration and the social sciences are teaching longer hours than those from the natural sciences and medicine. On the opposite, no differences result by academic rank. Albeit the 1980 reform assigned to *ricercatori* mainly research duties and only a support function in teaching, their status have progressively changed, and—especially after the introduction of the European Bachelor's/Master's framework of study—they have been increasingly asked to teach also regular courses. As a consequence, in the CAP survey they report spending in teaching activities when classes are in session 18 h per week, slightly more than the median number of hours spent by *professori*.

On average, Italian academics spend half of their time devoted to instruction teaching in first-level or undergraduate programmes, slightly less than 40 % of it teaching in second-level or master programmes and about 5 % of it teaching in doctoral programmes. Teachers in the humanities, *ricercatori*, and women dedicated a higher proportion of their time instructing first-level programmes, while academics from medicine and engineering, *professori ordinari*, and men dedicate a higher proportion of time teaching second-level programmes. It is worth noting that traditionally first-year basic courses were reserved to expert, senior academics, while after the introduction of the Bachelor's/Master's scheme, first-level courses are more often assigned to *ricercatori* and *professori associati*, while *professori ordinari* more often teach in second-level and doctoral programmes.

While the 2000s reforms have changed some aspects of academics' teaching, others have remained unchanged. On the one side, Italian academics teach a higher median number of students in first-level classes and a slightly higher median number of students in second-level classes than their colleagues working at universities in other European countries. Further, the variation of the number of students in each level is higher than elsewhere, and—having cleaned data from extreme values—some Italian respondents report teaching classes with 200 students while this does not occur in other European countries. These findings suggest that the overcrowding, which has been considered one of the main problems affecting Italian universities in transition to mass higher education especially in so-called mega-universities in Milan, Bologna, Rome and Naples, has not been overcome (Moscati 2006).

On the other side, according to CAP data, academic teaching in Italy still displays rather traditional features. Teaching is largely based on classroom instruction and lecturing, individualised instruction and face-to-face interaction with students outside of class (as or slightly more than in universities of other European countries) and on electronic communication (e-mail) with students. Practice instruction and/or laboratory work involves half of the Italian academics, while those involved in learning in projects and project groups and in ICT-based learning or computer-assisted learning are much less (generally less than in most other European countries).

While practically oriented knowledge and skills are emphasised in teaching (a bit more than in some European countries and a bit less than in others), discussions of values and ethics are seldom incorporated into course contents, and teachers rarely inform students of the implications of cheating or plagiarism. While international perspectives or contents are emphasised, Italian academics teach very few international students.

CAP data also shed light on the importance given to teaching within Italian higher education. On the whole, academics having received training in instructional skills or learned about teaching methods in a doctoral programme are remarkably few (11 %), and they are a bit more only considering those who have earned a PhD (25 %). Within Italian universities, adequate training courses for enhancing teaching quality are badly lacking. While most academics (86 %) say that their teaching is regularly evaluated by students and maintain that they are encouraged to improve their instructional skills in response to teaching evaluations (more than in other European countries), in fact, academics are neither rewarded nor sanctioned according to teaching evaluations' outcomes. Finally, few respondents (12 %) say that their institution is considering teaching quality when making personnel decisions.

Research represents the core of Italian academics' scholarship and their main professional interest (Rostan 2011). Three quarters say that scholarship is best defined as the preparation and presentation of findings on original research and that, in their work, they are primarily, or at least prevalently, interested in research. This attitude is supported and possibly enhanced by national rules governing competitions for recruitment and promotion which assign prevailing importance to research outputs and their assessment. This influence—although softened—is visible also at the local level where academics saying that their institution considers research quality when making personnel decisions are twice as much of those saying that it considers teaching quality when making these decisions (24 % vs. 12 %).

The importance assigned to either basic or applied research is roughly equivalent: 57 % of respondents characterise their primary research as basic or theoretical, and 61 % characterise it as applied or practically oriented. On the contrary, those characterising their research as multidisciplinary are much more than those characterising it as mono-disciplinary (66 % vs. 33 %). Finally, three Italian academics out of four—more than in other European countries—characterise their research as international in scope or orientation.

According to the answers to the CAP questionnaire, when classes are not in session, the median number of hours that Italian academics dedicate to research in a typical week is 27, while it is 15 when classes are in session. While teaching, Italian academics dedicate to research less hours than their colleagues at Finnish and German universities, but more hours than their colleagues at Norwegian and British universities. When teaching duties are over, Italian academics dedicate to research less hours than their Finnish colleagues but more hours than their colleagues in other European countries.

Time dedicated to research is spent in projects that are mainly carried out in collaboration with others, especially in the hard sciences. This collaboration involves academics in both national and international research networks. Most academics (53 %) are involved in both types of networks, showing that national and international research collaborations are not mutually exclusive but rather complementary. Further, 24 % of the respondents are involved only in national networks, while 7 % are involved only in international networks (16 % are not participating in any network). It is worth noting that, among Italian academics, collaboration with persons at other institutions within the country is more frequent than in other selected European countries,

possibly because Italian academics prefer, or need, to collaborate with colleagues working in other universities or institutes instead of collaborating with colleagues located in their same academic unit. International research collaboration—although involving less people than those characterising their research efforts as international in scope or orientation—is quite frequent, more than in Germany but less than in Finland. Differences across disciplines within Italian academy are deeper than those across countries. Both national and international collaborations are more frequent in the hard sciences than in the soft ones.

The CAP questionnaire asked respondents about their involvement in a whole range of research activities, which can be classified into three broad categories: (a) research activities properly, (b) administrative activities supporting research and (c) dissemination activities. Academics involved in all the activities of a single category may be considered as "research very active" persons. In the Italian universities, these persons are much more frequent within the natural and medical sciences than in other fields. Further, "research very active" persons are more frequent in Italy and in Germany than in other selected European countries. Academics "very active" in administrative tasks supporting research are much more in Italy than in other European countries, a finding that might be related to the rather negative view that Italian academics have of the quality of research support staff and the attitude of administrative staff towards research at their institutions.

The research output can be considered both in its quantitative and qualitative dimensions. According to the CAP survey, the quantitative dimension can be investigated relying on the percentage of "inactive" or "nonproductive" academics—those who had completed no scientific contributions in the 3 years before the survey was carried out—and on the average number of contributions produced by "active" or "productive" academics in the same period. Italian "nonproductive" academics range from 5 % when articles published in an academic book, or journal, are considered to 73 % when edited or coedited scholarly books are considered. Compared to their colleagues at universities of other selected European countries, Italian academics appear to be less "inactive" or "nonproductive". When net productivity is considered, Italian academics write or edit slightly less than two books in 3 years and write slightly more than three research reports in the same period, as their colleagues at universities in other selected European countries do. On the contrary, they write more articles in journals or books and present more paper at scholarly conferences than their colleagues, that is, slightly more than nine each on average.

The sheer number of products is not enough to gain a complete picture of research outcomes. Other, qualitative, dimensions need to be taken into consideration. CAP data allow one to investigate the degree of internationalisation of the scientific production, its openness to new media and the extent to which it is exposed to quality control procedures.

International comparison within Europe—excluding British academics who enjoy a peculiar condition worldwide—shows that the degree of internationalisation of Italian scientific production, although quite high, is slightly lower than the one of their German and Finnish colleagues and much lower than the one of their Norwegian

colleagues. As far as new media are concerned, Italian academics stand in-between their Finnish and their German colleagues, where the later publish online or electronically twice as much as the former.

While differences across countries are not so pronounced, differences across disciplines within Italian academy are considerable. Academics from the hard sciences are much more internationalised and more keen to use new media than their colleagues from the soft sciences.

Thanks to the implementation of the national research assessment exercise in 2004–2005, the quality of the research outcomes of a considerable part of Italian academics (43 %)—smaller than in the UK and in Finland, but bigger than in Germany and Norway—has been evaluated by external reviewers. Besides centrally managed assessment procedures, it is worth noting that the percentage of Italian academics who have not submitted their scientific contributions in a 3-year period to peer review is similar to that of their German and Finnish colleagues (27–30 %) while it is much higher than the percentage of Norwegian (14 %) and of British (6 %) academics. Internal differences across disciplines are even more striking. Within the Italian academy, only 10 % of authors from the natural sciences have not submitted their publications to peer review while 70 % of authors from the humanities and law have done the same. Thus, CAP data show that Italian academics' scientific productivity is quite high but also that their research outcomes present some weaknesses in terms of internationality, dissemination through new media and lack of quality control by peers in some disciplines.

6.6 The Relationship Between Teaching and Research

As noted before, about three quarters of the Italian academics are primarily or prevalently interested in research. Yet, if we consider the whole answers to the question which was asked (see Table 6.1), we can see that 86 % of them are interested in both teaching and research. Interest in both activities is slightly more widespread among full and associated professors than among researchers/assistant professors and slightly increases with age, while differences across disciplines are small.

Table 6.1 Preferences in teaching and research among Italian academics (%)

Answer	%
Primarily in teaching	2
In both, but leaning towards teaching	22
In both, but leaning towards research	64
Primarily in research	12
Total %	100
Total *N*	1,691

Source: CAP international data set, 2011

Table 6.2 Attitudes towards the relationship between teaching and research in selected European countries (%)

	FI	DE	IT	NO	UK	Total	*N*
Expressing interest both in teaching and research	57	63	86	67	64	70	5,400
Arguing that teaching and research are hardly compatible with each other	36	33	14	14	25	23	5,313
Arguing that their research activities reinforce their teaching	76	64	82	81	77	77	4,558

Source: CAP international data set, 2011
Note: only respondents working at universities are considered

Table 6.3 Italian academics' time budget when classes are not in session by academic activity and rank (% of time)

	Teaching	Research	Service	Administration	Other
Full professors	18	56	7	13	6
Associate professors	18	58	10	9	5
Assistant professors	17	62	8	8	5
Total *N* = 1,560	17	59	8	10	5

Source: CAP Italian data set, 2010

Academics arguing that teaching and research are hardly compatible with each other are remarkably few, less than one out of six, while those saying that their research activities reinforce their teaching are quite a lot, slightly more than four out of five. These attitudes are largely shared by academics from different disciplines and are slightly more pronounced among professors and older academics.

Italian academics' view of the relationship between teaching and research appears to be rather different from that of their colleagues in other selected European countries (see Table 6.2).

Academics interested in both activities are much more in Italy than elsewhere; those arguing for the incompatibility of teaching and research are fewer, while those saying that research activities strengthen teaching activities are more. These differences largely hold also controlling for academic rank and age. These findings suggest that this attitude towards the relationship between teaching and research does not depend—or does not depend only—on career's characteristics but is a cultural trait largely shared within Italian academy. It is possible to conclude that Italian academics conceive the relationship between teaching and research in a rather traditional way echoing the Humboldtian view of a strict link between teaching and research (Moscati 2011; Rostan 2010, 2011).

It might be asked whether the institutional setting—illustrated above—determining Italian academics' time budget is consistent with their preferences. Taking into consideration the share of teaching and research hours in faculty workloads, Table 6.3 shows that when classes are not in session, about 60 % of the time is dedicated to research, 17 % to teaching and 23 % to service, administration and

Table 6.4 Italian academics' time budget when classes are in session by academic activity and rank (% of time)

	Teaching	Research	Service	Administration	Other
Full professors	38	38	7	12	5
Associate professors	42	36	9	8	5
Assistant professors	42	38	8	7	5
Total $N = 1{,}628$	41	37	8	9	5

Source: CAP Italian data set, 2010

other activities.[9] As a consequence, on average about three quarters of the time devoted to the two main academic activities is dedicated to research. When classes are in session (Table 6.4), time for teaching increases to slightly more than 40 % while time for research decreases to slightly less than 40 %, and time dedicated to other activities remains nearly the same. This means that a bit less than half of the time budget devoted to the two main activities is dedicated to research.

Italian academics' time budget is remarkably stable across disciplines, academic rank, age cohort and gender with some meaningful variations. In the medical sciences the percentage of time dedicated to service is higher than elsewhere when classes both are in session and are not in session. Academics working in the natural sciences dedicate a slightly larger share of their time to research than others in both the periods of the academic year. Full professors (*professori ordinari*) are more involved in administrative tasks than others in both periods, while researchers (*ricercatori*) are slightly more engaged in research (but their share of time dedicated to teaching is remarkably similar to the one of professors). Women are more engaged in teaching and less engaged in service, administration and other activities than men in both periods. Younger academics are more engaged in research while mid-age academics are more engaged in service, administration and other activities than academics of other age cohorts in both periods.

As mentioned, the time budget of academics depends on the institutional setting within which they work. Comparing academics' preferences with their actual time budget, it can be noted that when classes are not in session, time allocation between teaching and research activities seems congruent with the preferences of the large majority of academics. These people are either primarily interested in research or are interested in both activities but leaning towards research. When classes are in session, teaching subtracts time to research to the detriment of those who are more interested in research and possibly would like to reduce their teaching workload.

[9]Teaching activities include the preparation of instructional materials and lesson plans, classroom instruction, advising students and reading and evaluating student work (it has to be noted that within Italian universities students can sit for exams several times during the academic year and not only at the end of the course); research activities include reading literature, writing, conducting experiments and carrying out fieldwork; service, administration and other activities include services to clients and/or patients, unpaid consulting, public or voluntary services, committees, department meetings, paperwork and other professional activities.

Nevertheless, also when classes are in session, almost half of the time devoted to the two main academic activities is dedicated to research.

Likely, the largely consistent match between individual preferences and actual time budget is a result of some long-lasting features of Italian higher education where universities have dominated the educational landscape, universities have always performed both teaching and research functions and both system and institutional rules and individual preferences have mutually reinforced the primacy of research. Recent developments such as the reform of study programmes following the Bologna Process and the growing evaluative pressures on both research projects and outcomes, together with the comparison with other higher education systems within Europe and outside it, suggest that this enduring balance might be call into question in the future.

6.7 Conclusion

The balance between teaching and research is deeply rooted in the history of Italian contemporary university. Starting from 1859, higher education and its institutions—universities—were intended to perform both teaching, training and research functions with few room for internal diversification and a remarkable continuity across different political regimes and economic phases. As the CAP data show, the match between teaching and research is deeply rooted within individual attitudes, as well. Italian academics focusing primarily only on teaching or focusing primarily only on research are remarkably few, and most are interested in both activities. Further, academics' time budget is largely consistent with their preferences.

When, as a result of the increasing demand for higher education, the Italian system shifted from an elite to a mass one, several measures preserved the balance between teaching and research. During the 1960s and 1970s, the increasing demand of instruction was met expanding the academic profession—especially in its subordinate positions—and recruiting "para-academic" personnel through temporary contracts, fellowships, etc., enabling the professoriate to keep the balance between the two main academic activities. After the 1980 reform, *ricercatori*—who were supposed to focus on research activities—have been increasingly asked to teach in regular courses supporting universities teaching provision. Neither the 1980 reform nor the 1998 one has prevented universities to rely on temporary support staff especially for teaching activities but also for research ones. It had been estimated that when the CAP survey was carried out, alongside 62,000 "regular" academics, there were more or less 48,000 people supporting them either in teaching or research activities on the basis of various temporary arrangements (Rostan and Vaira 2011a).

In recent times, the cultural and institutional basis supporting the balance between teaching and research within the Italian academic profession has been called into question. Possibly, it will be put under growing pressure in the future.

Teaching workloads and related, organisational, responsibilities have grown following the long and troubled implementation of the reforms connected to the Bologna Process and to didactical autonomy. Student numbers may decrease in the future as the result of the combination of demographic trends decreasing youth cohorts and of fluctuating proportions of secondary education diploma holders entering higher education, possibly mitigated by the growing participation rates in higher education of second generation immigrants. Nevertheless, teaching workloads may further grow due to the downsizing of the academic profession and temporary support staff depending on budgetary constraints.[10]

Teaching could become more demanding in its qualitative dimension, as well. The reform of study programmes has reshaped the structure of the Italian didactic supply, but it has left unsolved several problems strictly linked with teaching. While the reform has introduced a steeper vertical curricular diversification with a strong impact on teaching responsibilities, it has hardly answered the problem of the horizontal or functional curricular diversification. Two issues have never been defined: the balance between academic and vocational functions within higher education and the location of vocational programmes within or outside universities.[11] This has contributed to maintain a high degree of uncertainty on what teaching is expected by faculty. Further, the reform has reshaped the form of university teaching but—at least up to now—it has hardly changed the substance of it, that is, its contents and methods.

Universities and their teachers have increasingly been urged to care for the employability of their graduates and lifelong learning of already employed people. Although several measures and experiences have been implemented, results are considered rather unsatisfactory at least according to academics interviewed by the CAP survey. Measures introducing graduate employability as an indicator in evaluating higher education institutions have been planned. If and when they will be implemented, the quest to enhance the quality of teaching will increase. Finally, although up to now student evaluation of teaching has remained without practical consequences on academics' rewards and career, things may change in the future adding extra pressures on teachers.

CAP survey's results and the historical reconstruction provided in the previous paragraphs show that pressures on academics as researchers are growing, as well. Pressure to raise external research funds has increased. Competitive funding of research projects has expanded. After a first research assessment exercise carried out in 2004–2005, a second one is ongoing in the years 2012 and 2013, and the rather limited impact of their results on resource distribution among universities is

[10] According to the Ministry of Education and University (http://statistica.miur.it), the Italian university student body reached its maximum expansion in the year 2005/2006 (1,823,748) few years after the study programmes reform slightly decreasing in the next 5 years (−2.3 %). In the same period, the academic body, first grew from 2005 to 2008 (+4.2 %) reaching its maximum expansion (62,768) and then decreased by 8 % within 2010.

[11] The vocational programmes in the medical and health sector, which have been restructured but were already there before the reform, represent an exception.

growing putting more emphasis on scientific productivity. Moreover, the newly introduced *abilitazione scientifica nazionale* (see Law n. 240/2010) emphasises almost exclusively scientific productivity and research skills and performances.[12]

Briefly, both teaching and research activities have become—and likely will further become—more demanding. Consequently, the balance between teaching and research that has characterised the Italian academic profession until now may be disrupted. The tension between teaching and research has grown and still will grow under three circumstances. First, according to the responses to the CAP questionnaire, teaching workloads at Italian universities are heavier than at universities of other selected European countries, and research workloads are similar to those at other European universities. Both teaching and organisational responsibilities have grown, and Italian academics strongly engaged in administrative tasks supporting research activities are more than in other European countries. Although these findings stem from the self-portrait of Italian academics, they suggest that their working schedule is already quite tight. Second, according to both CAP and official data, Italian academics perform their teaching and research activities in a context where resources provided to higher education and scientific research are either stable but lower than in other advanced countries or decreasing. Third, CAP data reveal sharp differences across disciplines in both behaviours and attitudes towards teaching and research activities.

Under these circumstances, it could be increasingly difficult to preserve the balance and the link between teaching and research activities at both the individual and the institutional levels. A trade-off between efforts, time and resources dedicated at enhancing the quantity and the quality of teaching and research could result. Challenges to diversify either teaching and research activities, teaching and research staff or teaching and research institutions could arise. Likely, these challenges will hit the academic body in different ways and to a different extent triggering different reactions and deepening the cleavages which already fragment the academic profession. Both universities and their academics will face not only tensions and trade-offs between teaching and research but also increasing tensions among disciplinary groups.

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[12]The *abilitazione* is a national certification which is needed to enter the professoriate or to move from the position of associated professor to the position of full professor.

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Chapter 7
The Changing Balance of Teaching and Research in the Dutch Binary Higher Education System

Egbert de Weert and Harry van der Kaap

7.1 Introduction

A main feature of Dutch higher education is its binary structure, separating the universities from higher professional institutions (HBO—*Hoger Beroepsonderwijs*) providing a wide range of professional courses with a standard period of study lasting 4 years leading to the bachelor's degree. The sector also provides a limited number of professional master's programs in particular areas such as the health professions, education and engineering. The HBO is internationally termed Universities of Applied Sciences (UAS), a term that will be used in this chapter.

The respective goals and functions of universities and UAS are clearly defined. There are 14 universities, nine of which provide teaching and conduct research in a wide range of academic disciplines. Three universities offer courses mainly in science and engineering, one in agricultural sciences and the Open University. In addition there are a few university level institutions, mainly in theology and business studies. The main objectives of a university education include training for the independent pursuit of scholarship and preparation for those professions that require training at university level. The goals are to be achieved through teaching and research.

Today there are about 40 Universities of Applied Sciences with the main task to provide theoretical and practical training for a wide range of professions with a clear vocational orientation. They also have the important task of transferring and developing knowledge for the benefit of professional development in both the industrial and service (public) sectors. Their role is to support regional needs but

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increasingly are operating nationally and internationally too. About 65 % of the student cohort are enrolled in UAS against 35 % in universities. This nearly 2:1 balance in favour of the UAS is much higher than the OECD averages and much higher than in most other European countries with a binary higher education system.

Although the legal framework encompasses a range of regulations regarding organisational and administrative matters that apply identically to all institutions, the government policy continues to maintain the distinctive profiles of both sectors as a guarantee of institutional differentiation. The main difference is the status of research. For universities, this is a core task. The UAS are traditionally teaching-only institutions but have since the last decade developed a research function—practice-oriented research in the context of the professional preparation and development. The Dutch government supports these institutions in their ambition to develop a research infrastructure and augment the research capacity of these institutions mainly through earmarked funding. This has led to an extension of the working roles of the faculty of these institutions.

This chapter discusses on the basis of the CAP findings how these changes have affected the work roles of faculty regarding teaching and research in both sectors. The argument will be considered whether and to what extent the traditional distinction between research universities and teaching institutions still holds. In the analysis variables of staff on different positions and in different career stages will be taken into account.

The first part provides the policy background in Dutch higher education that puts pressure on teaching and research. Special attention will be given to the changing patterns of system coordination between the state, higher education institutions and the market. Next the way universities have organised their teaching and research will be discussed, followed by the research function at UAS and functional ranking and reward system.

In the second part we use CAP data to investigate what factors affect the working role of faculty members in both universities and UAS and how the teaching and research nexus is being perceived both in undergraduate and graduate programs. Finally the professionalisation of teaching in the binary higher education system will be discussed.

7.2 Research and Teaching in the Dutch System

7.2.1 Historical Traditions

In the international literature the Netherlands are sided with the countries with a strong research tradition. Several Dutch universities enjoy an international reputation and are well represented in global rankings. According to the Times Higher Education World University Ranking (2011), the Netherlands is ‘the standout performer in this year’s tables’ because of the sudden jump of 12 Dutch universities in the top 200 rankings.

However, from a cultural-philosophical viewpoint, the Dutch university system can be seen as a clash between pretentions of unitary and pluralistic tendencies which have their roots in the German, French and Anglo-Saxon tradition (Harskamp 1995; Rupp 1997). The unitary pretentions are based upon the normative principles derived from the Humboldtian conception of a university:

- The theoretical principle of the unity of scientific knowledge
- The pedagogical principle of the unity of teaching, studying and scientific inquiries

From the principle of unity of science, based in the mental attitude of the individual, the unity of research and education arises automatically or more precisely: teaching and learning constitute an integral part of science as 'research' and formal boundaries between teaching and research are blurring. The university in the first place is an institution for disinterested research protected by academic freedom, and the aim of education is scientific formation ('Bildung'). In this conception every student is also an active researcher and the university is a real community in which there is consensus among faculty and students about the fundamental issues at stake. In this conception there is less space for empirical experiments and research that has relevance for practical purposes. Since these activities are a real danger of pluralism, these should organisationally be located outside the university.

This 'Humboldtian' model is a one-sided perspective that is nowadays practically impossible and in its consequences never existed in the Netherlands. Other conceptions can be distinguished that exerted their influence in the history of Dutch universities: the Napoleonic and the economic model (Philipse 2008). According to the Napoleonic model, the university has primarily the task to prepare graduates who are able to perform the cadre for the public functions. Likewise for other professions like physician, lawyer or engineer, the educational preparation was and continues to be primarily a university responsibility rather than an entitlement by some professional body as in some other countries is the case. The economic model is based on the exploitation of knowledge and the view that the university has to be instrumental to demands from the market, such as demands from students and from industry. All these conceptions are manifest in the Dutch system and have left their tracks.

Many critics from academia argue that the emphasis of the university system has shifted away from the Napoleonic and Humboldtian model towards the knowledge-economic model that currently tends to predominate. Another component in the current policy is to encourage institutions to develop their own distinctive profile. This can be a concentration on specific disciplinary or thematic areas, but universities can also make a conscious decision to specialise in outstanding teaching and scholarship rather than in research, quite the opposite of the Humboldtian idea of the university.

In 'Adieu von Humboldt?' Francot and De Vries (2010) describe how the Humboldtian model has been challenged by market forces and economic rationality. This economic rationality imposes organising principles on the university as a corporate organisation thereby changing the triangle of coordination between the state, institution and market forces.

7.2.2 Changing Patterns of System Coordination

Traditionally the state has played a significant role in higher education and research, particularly regarding the finance and administration of institutions, prescriptive educational structures and course requirements. During the last 25 years, the traditional governing arrangements have been criticised and alternative roles developed. In the 1980s and 1990s, the shifting governance style on the higher education and research sector was expressed in terms like 'steering at a distance', 'new public management', 'communicative planning' and 'network governance', to mention a few.

Some of these 'models' are connected with a general political view on the changing role of government towards the public or semipublic sector in general. Similar role models of ministerial governance can be found in fields like health care, hospitals, housing corporations and public transportation, all fields which have been infused with private sector elements. There are doubts whether the private elements—with emphasis on market mechanisms, clients' roles and consumer choices—would do justice to the specific character of the public domain where clients have insufficient information and have no competency to judge adequately the services provided.

Also the growing emphasis which became apparent in the Anglo-Saxon world on the economic exploitation of knowledge and market-driven reform strategies to generate external revenues found a breeding ground in the Netherlands. The Act on the Modernization of the university governance structure (1997) stimulated a further 'Americanisation' of Dutch higher education. This shift away from the continental model where authority is vested in academic oligarchy as well as state bureaucracy was apparently more supported by the ministry and university managers than by the (often resisting) academic research community.

An important turning point with the role of the Ministry as the central planning and regulative agent of education and research took place in the 1980s with two papers:

- The White paper on University Research (1979): coordination of research on the basis of national research programs as determined by external, disciplinary-based committees. Science should serve national (economic) interests more directly. This was regarded as the first market-type form of coordination as universities had to compete for research grants on the basis of research quality assessments.
- 'Steering at a distance'. The autonomy of institutions should be increased so that they can be more responsive to their environment. The autonomy implies that detailed input control has been replaced by output measures in terms of high-quality education and research.

The views expressed in both papers constituted the basis for subsequent higher education policy-making and continue to be actual till the present day. The ministry should not steer higher education with detailed planning and extensive control mechanisms, but should adopt a facilitative role allowing institutions considerable freedom in managing their own affairs.

At the same time funding mechanisms have increasingly been based on output performances such as student progress and graduation rates, societal relevance of research and commercialisation and valorisation of research. This way of steering the system, known as New Public Management (NPM), relies on (1) markets rather than planning, (2) strong performance measurement and audit mechanisms and (3) entrepreneurial management (Ferlie, Musselin and Andresani 2009). The university governance structure tends to transform the traditional task-oriented organisation in which academics have a large amount of professional autonomy into a market-type organisation which stresses the managerial aspects of teaching and research. The basic notion of NPM involves the steering by incentives and increasing competition in the university (research system) system. This is manifest in, for example:

- Increasing dependency of research on separately budgeted funds.
- Increased dependence on the competitive strength of the departmental unit or research centre. Resources are allocated according to internal policies by rectors, deans but also by the Dutch Research Council and external constituencies (public and private organisations alike).
- Emphasis on a corporate style of leadership and management.

The NPM led to a new configuration of authority relations. For criticasters NPM has resulted in a form of managerialism that 'domesticizes the genuine professional and disciplining professionals to submissive knowledge workers' (Lorenz 2008). The prevailing profession-coordinating model has been replaced by a model in which the state, institutional management and the market are stronger intertwined than ever before.

First, the new university governance structure resulted in considerably stronger management on the central institutional level and its constituent faculties. Professional managers with increased budgetary responsibilities and authority for staffing issues have replaced the collegial structure that previously typified the university decision-making structure.

Second, the state exercises its powers in relation to institutions' outputs and the societal consequences of the universities performances ('output steering'), thereby reducing institutional autonomy. The current government emphasises accountability about results achieved through the mechanism of performance agreements between institutions and the government (Ministry of OC&W 2011). These agreements include measurable outcomes regarding the educational process in particular on study progress and success rates and profiling of research and education as well as valorisation of scientific research. A larger part of the budget is depending on the meddling of the government which through a list of performance indicators gets a grip on a complex system of agreements focusing on relevant outcomes.

Third, the market coordination enters where universities should become 'real' corporate organisations. The effect was that some universities increased their commercial activities and the 'entrepreneurial university' was born with the basic feature to increase private funding, thereby making them less dependent on government funding.

These three authority components in their mutual interdependency constitute the centre of the coordination although it seems that the overall direction of higher education and research is more under control of the state. The question arises whether this change has implications for the balance between teaching and research.

7.3 Shifting Balance Between Research and Education

7.3.1 Teaching and Research in Universities

The NPM steering model emphasises the performance of the system as a whole and the power that this entails is generally believed to be too strong. The CAP survey reveals on three items how the NPM has been experienced by academics:

- The larger majority of the Dutch professoriate (58 %) agrees or strongly agrees with the statement that their institution uses performance-based allocation of resources to academic units. Their international colleagues show much lower levels of agreement, with the exception of Finland (60 % agreeing).
- Likewise, Dutch respondents are the second highest to agree that the funding of departments is substantially based on numbers of graduates: 60 % agreeing again after Finland (with 72 %).
- Eighty-six percent of the Dutch respondents agree or strongly agree with the statement that 'the pressure to raise external research funds has increased since my first appointment'. This is by far the highest percentage of all advanced CAP countries.

Regarding teaching the performance is increasingly depending on study progress of students and graduation rates. It is therefore in the interest of institutions to direct their students as efficiently as possible through the curriculum. Additional time investment for students who are behind is a financial burden. This steering by incentives has its perverse effects in terms of quality, and institutions feel forced to organise their curricula in such a way that students are enabled to finish in time. Another implication is that those courses that are not cost-effective and do not constitute part of the core curriculum will be cancelled. In some fields this has resulted in a reduction of the number of courses especially at the bachelor's level leading to the development of broader courses at this level, a development supported by the present government. This development entails a further differentiation between education and research as researchers in a particular domain no longer have an 'own' optional course within the curriculum (Francot and De Vries 2010).

Research funding for universities depends on three streams: core funding for universities, funding through the research council and contract research. Over time research funds have gradually been transferred from the core funding towards the funding by the research council, one argument being that such a reallocation would facilitate to steer research more on the basis of research performance, productivity and

social-economic relevance. Especially the latter criterion has been strengthened, and researchers are required to indicate in their proposal what the relevance of their research outcomes will be in terms of marketable application (valorisation). This is quite a tentative endeavour, often leading to conservative research approaches stifling more innovative or more risky but challenging research.

Contract research with business is the third stream and individual researchers are increasingly dependent on these financial sources. Some research groups are required to earn up to 50 % of their research budget externally. In other words, universities are not merely the place where independent research is undertaken, it also is increasingly dependent on market forces.

One of the key policy issues is to increase incentives in order to foster a more dynamic research landscape and more profiling of research and to fund specific areas. Especially the government innovation policy regarding R&D enforces universities to engage with business in selected top sectors. By providing fiscal facilities, companies are incited to invest more in R&D than is currently the case. The argument being used is that the national budget for R&D is among the lowest in the European Union. The average budget as percentage of the Gross Domestic Product (GDP) decreased to 1.67 % (in 2010) which is under the European Union average of 1.84 %. Whereas the investment in R&D in the last decade showed no growth at all, other EU countries spent additionally an average of 15 %. The other side of the picture is that such an enforced cooperation between universities and business entails that university research is increasingly subject to a norm of relevance and problem definition that is at odds with basic science and academic independence.

In the light of these developments, universities have organised their teaching and research in different organisational units, with separate budgeting and resources and with separate managerial structures for the respective teaching and research program as well as their staffing. Although these can be rather virtual units, the question arises to what extent such an organisational divide would affect the teaching and research work load and whether this would open a widening gulf between the two core roles of the academic profession.

7.3.2 Research at UAS

Traditionally the UAS are seen as ‘teaching-only’ institutions, which have been assigned a special role by preparing students for a variety of professional areas. In the last decade research has been playing an increasingly important role alongside their teaching obligations. Many UAS see it as their mission to accommodate societal demands by linking professional practice and education through innovative practically oriented research. This evolving research function of UAS has been supported by government with targeted funds to build a research infrastructure and to attract qualified researchers by creating the new rank of lector as a kind of professorship who has been assigned a leading role in a research group.

Research at UAS has some common features (De Weert and Leijnse 2010):

- Initiatives for research emanate from the needs of professional practice.
- Research should be relevant for the quality and innovation of education and the professionalisation of the teaching faculty.
- Research should be practice driven in that it is oriented to solve practical problems and to intensify collaboration with industry.

Two basic principles are underlying the conception of research at UAS. First, research should be closely interwoven with and beneficial to the teaching of students through for example inquiry-based learning. In a knowledge economy students are expected to acquire competencies that can be termed 'research skills' such as problem definition, methods, inferring conclusions and interpretations. Professional education in combination with applied research will allow these competencies to develop (Borgdorff et al. 2007). Some institutions have organised their research activities in separate units similar to the university but generally have integrated research with educational sections.

The second principle is that research is strongly demand led with financial resources from business and the government through targeted funds. These financial arrangements should provoke an articulation of research demands from the relevant professional field.

7.3.3 Functional Differentiation and Reward Systems

The standard model for academics to allocate a fixed percentage of time for teaching research and administration (respectively, 40–40–20 %) has been replaced by a staffing model that allows greater possibilities for a differentiated work role regarding teaching and research. The basic idea is that teaching and research are equally important and that these tasks may exist in different proportions in the workload of individual faculty members. Allowing flexibility would recognise the full range of facets of academic work to be expected from researchers and teachers as well as the different aspirations and competencies of faculty.

The new system of job ranking effective since 2002 aims to make explicit the various roles, tasks and responsibilities that have to be carried out to achieve specific results. Individual staff members can apply for specific roles on the basis of the actual appraisal of individual performances and on future development plans, for example, to be more involved in either teaching or research. Teaching activities are classified in four specified tasks such as teaching, curricular development, participating in project groups and curriculum evaluation. Research activities consist of co-ordination, acquisition of contract research and participating in research working groups and scientific or advisory committees. Within each of the main ranks, functional categories are distinguished with research and education. For example, professors are classified in three functional categories. In the extent to which a professor

is more authoritative in the field, more managerial and leading larger research group, the higher the status and appraisal scheme. The UAS adopted a similar system of functional differentiation.

The system has been criticised because of its bias towards the position of management activities in the staff hierarchy and the creation of a stronger pyramidal or hierarchical structure with new forms of superimposition (Lorenz 2008). Yet the system cannot be conceived as a further step in the disentanglement of the teaching—research nexus creating teaching-only and research-only staff. Rather, through a system of functional differentiation, specific competencies can become manifest whereby the research performance is not the all-determining criterion for promotion and tenure. Exclusive concentration on either teaching or research is possible but only for the duration of a previously arranged period. The combination of competencies in teaching and research is assessed higher than competencies in either teaching or research.

Thus, although there is a flexible ranking order of functions (an academic can reach a higher rank on the basis of teaching qualifications), the model reinforces the combination of teaching and research qualifications, giving equal value to excellence in teaching and in research and more generally in academic scholarship. In other words, high-level achievements in research do no longer serve as a sufficient criterion for academic excellence.

The three developments described above mark the academic profession in Dutch higher education. On the basis of CAP, data aspects of the work role regarding teaching and research will be analysed as well as the interrelationships between them.

7.4 Conditions of the Academic Work Role

In the analysis of CAP data, the different ranks at universities and UAS have been arranged as follows. For universities three main positions can be distinguished: Professor, University Main Lecturer (UHD) and Lecturer (UD). These positions correspond roughly to the international terms full professor, associate and assistant professor. The proportional distribution of the total population of academic staff (12,430 in 2010) is 19 %, 17 % and 36 %, respectively. The other 28 % consists of other academic staff, mainly postdocs and research associates. In the analyses the professors and associate professors have been taken together as the ‘higher ranks’ and the other positions as the ‘lower ranks’. The sample distribution shows a very similar distribution, respectively, 19 %, 16 %, 38 % and 27 % which is a representative sample for position (chi-square = 6.98, df = 3, $p = 0.07$).

The positions at the UAS can be quite differentiated and institutions often use their own categories. The ‘higher ranks’ consist of lector and senior lecturer/researcher. They have an explicit task to carry out research and consultancy activities for external constituencies. The ‘lower ranks’ consist of college teacher, lecturer and

Table 7.1 Descriptive statistics of the academic work role, controlled by institutional type and by rank

	Universities 1992			Universities 2009			Other HEIs 2009		
Rank	Total	High	Low	Total	High	Low	Total	High	Low
(*N*)	(649)	(309)	(340)	(628)	(292)	(336)	(539)	(175)	(364)
Teaching hours weekly	44 %	38 %	49 %	45 %	40 %	50 %	61 %	47 %	69 %
Research hours weekly	26 %	25 %	26 %	32 %	33 %	32 %	14 %	25 %	9 %
Total hours weekly	54 %	56 %	53 %	43 %	45 %	42 %	35 %	37 %	34 %
Research oriented	76 %	78 %	74 %	78 %	78 %	79 %	35 %[a]	51 %	17 %
Journal articles	3.1	4.1	2.3	9.5	11.2	7.8	1.3	1.4	1.1

[a]The Carnegie 1992 study showed that of the total staff in UAS 18 % was research oriented and 82 % teaching oriented

instructor at various levels. The proportional distribution of the total academic staff (16,152 in 2010) is for lector 3 %, senior lecturer/researcher 46 % and the lower ranks 51 %. The sample distribution is, respectively, 2.2 %, 30.3 % and 67.5 %, showing a slight overrepresentation of the lower ranks (chi-square = 59.06, df = 2, $p < .001$). This is not problematic since these ranks will be itemised in the analyses.

Table 7.1 presents descriptive results of the two surveys of the staff working role: weekly hours in teaching and in research as proportion of the total weekly hours, teaching versus research orientation and publication of journal articles. These data are controlled by institutional type and academic ranks.

Comparing data from the 1992 Carnegie study with the 2009 CAP survey, university respondents in 1992 reported over 50 weekly work hours, most of which were attributable to teaching hours and much less hours devoted to research. A rather substantive part has been devoted to other tasks not directly related to teaching or research. It is not clear how the total working hours could fall in 2009 to 43 h per week. The total proportion of time spent on teaching and research has increased, possibly due to the fact that over the years professionals in the organisation have taken over administrative tasks that were previously done by academics. Staff could devote more time to their core academic tasks.

The weekly hours in teaching as proportion of the total weekly hours has remained quite stable over the years (although in absolute hours has declined), whereas the proportional time spent on research increased from 26 % to 34 %.

The time spent on research differs to rank. For both the higher and lower ranks, teaching comprises the main part, the lower ranks slightly more in hours and relative to the total working hours. The higher ranks (among them the full professors) spent more time to management than the others. These figures illustrate how the previous ideal on average proportion of 40–40–20 turns out in favour of more teaching time in universities, 43 % and 33 % on average. Another observation is that while lower rank university respondent devoted in 1992 more time to teaching than those in the higher ranks, this difference has decreased only slightly. These CAP data of time spent on research/teaching are remarkably consistent with the finding in an earlier survey in the Netherlands to determine the time spending by university academic personnel (De Kok et al. 2007).

Table 7.2 Teaching and research by gender and employment contract

	Gender				Employment contract			
	University		UAS		University		UAS	
Gender	M	F	M	F	Tenure	Non-T	Tenure	Non-T
Total *N*	314	158	165	325	347	124	370	76
Teaching hours weekly	43 %	48 %	61 %	59 %	45 %	40 %	59 %	87 %
Research hours weekly	33 %	31 %	15 %	15 %	29 %	46 %	15 %	11 %
Total hours weekly	43.6	42.3	38.7	32	44	40.1	35.5	31.5
Research oriented	78 %	77 %	33 %	27 %	73 %	87 %	29 %	25 %
Journal articles	10.5	7.4	1,3	1.4	10.8	7.1	1.2	2.1

The research orientation, measured as the percentage of the own preferences primarily in research and leaning to research (compared to teaching or leaning towards teaching), has remained quite consistent for university faculty over the years. There is a slight increase of the lower rank respondents indicating that their interests lie primarily in research or leaning towards research.

The figures for the other HE institutions, the UAS, reflect the emerging research function in this sector. The difference in weekly research hours between the higher and lower ranks is explainable since the two higher ranks have the explicit task to do research, whereas the lower ranks are mainly charged with teaching tasks. The latter, however, are enabled to engage in research, as part of a research team or on an individual basis. For the total staff group, the research orientation of the total staff has doubled from 18 % (in 1992) to 35 %, while more than half of the higher ranks have research preference/leaning to research. This finding means that the institutional differences are attenuating.

A difference between universities and UAS is the total weekly hours spent, for universities this is much higher than for their UAS counterparts. This is possibly due to the higher number of part-timers in UAS. In the university sector 72 % is full-time employed, whereas in the UAS this is 48 %. Given this major difference, the part-time factor will be included in the further analysis.

Finally the productivity in terms of publication of journal articles (only respondents with any research output) has increased considerably between 1992 and 2009, whereas the actual hours invested in research have remained rather unchanged. This shows the high productivity of Dutch academics and also the increasing importance attributed to scholarly articles.

Other variables are expected to affect the working role as well in particular gender and employment situation. These are summarised in Table 7.2 and again controlled by institutional type.

As in other countries, women tend to be less oriented towards research than men and spend less hours for research relative the total weekly working hours. For universities, however, the difference is negligible on all dimensions, but for UAS the differences are larger on all aspects including the fact that women spend less time to teaching. Presumably the part-time factor may play a role here.

Regarding the employment contract, the differences are more pronounced. Tenured university faculty members do more teaching, whereas nontenured faculty do considerably more research. The latter also expressed their preference for research or leaning to research. This corresponds with the general fact that in the Netherlands, temporary contracts mainly apply to those who have primarily research positions and much less in charge of teaching. This is quite the reverse of what is common in for example North American universities where nontenured staff are predominantly in teaching jobs (Finkelstein et al. 2009).

In the UAS on the other hand, 87 % of the total weekly hours of nontenured faculty are absorbed with teaching and their research time is correspondingly low. General conclusions are difficult to make since the proportion of nontenured positions in the UAS sector is quite low: 15 % against 33 % in universities. This is by far the lowest of all CAP countries for the 'Other HE Institutions', only the UK is nearing with 18 %.

7.5 Regression Results

The descriptive variables were used in a regression analysis for the research time, preference for research and publications as follows:

Relative research time: the hours spent per week time on research (including reading literature, writing, conducting experiments, fieldwork) divided by the sum of the teaching time and research time. This is a measure of the relative time spent on research compared to teaching.

Preference for research: the score of the interests primarily in research or leaning towards research (the other two categories with focus on teaching add up to 100 %).

Publications: the sum of publications of books, articles published in an academic book or journal, research monograph written for an externally funded project and papers for a scholarly conference. This measure of publications is only of those respondents with *any* research output. A correction of extreme cases has been carried out. It was considered to differentiate between different types of publications such as refereed international journal articles, book chapters, review of books and textbooks. Other research (Horta et al. 2012; Shin 2011) separate international journal articles from publications in domestic journals or textbooks in their effect on teaching indicators. Shin (2011), for example, assumes that research by book publication might be closely related to teaching performance because especially textbooks cover comprehensive knowledge, which is essential in discipline-knowledge-focused teaching. As the CAP survey does not allow a sharp distinction between international publications and domestic journals or textbooks, it was decided to combine the major types as an indicator of research output.

As independent variables we used dichotomised categories: discipline (STEM subjects), employment status (permanent employment or tenure), academic rank (higher ranks), appointment (part-time), gender (female) and age. It is expected that

Table 7.3 Regression analysis for research time, focus of interests and publications, controlled by institutional types

	Relative research time		Preference for research		Publications	
	Universities	UAS	Universities	UAS	Universities	UAS
Variables	*Beta*	*Beta*	*Beta*	*Beta*	*Beta*	*Beta*
Discipline (STEM subjects)	0.149**	–0.035	0.074	–0.049	0.048	–0.004
Employment (tenure)	–0.275**	0.090	–0.170**	0.018	0.086	–0.044
Rank (high)	0.174**	0.475**	0.062	0.392**	0.140**	0.228*
Appointment (part-time)	–0.113*	0.047	–0.140**	0.051	–0.220**	–0.005
Gender (female)	–0.038	–0.007	0.025	–0.068	–0.050	–0.077
Age	–0.048	0.019	–0.139**	–0.084	–0.026	–0.124
N	385	286	464	314	450	119
R2 (adjusted)	0.11	0.22	0.08	0.14	0.09	0.01

**Significant $p = <.01$; *$p = <.05$

the relationships differ according to these characteristics. The discipline is added in the analysis since in the literature differences between disciplinary areas are strongly predictive of how faculty members spend their time on teaching and research (Fairweather 2009). Earlier research in the Netherlands on time spent on research/teaching revealed that the different disciplines show a similar pattern except for the natural sciences and engineering (STEM fields) where the faculty spent twice as much time on research than in the other disciplines (De Kok et al. 2007). For this reason we included the STEM sciences versus the rest of the disciplines as a dummy variable in the analysis.

We intended to include the institutional variable (university and UAS) in the analysis. However, this variable is more strongly predictive of how faculty members score on the research variables as expressed by the relatively high explained variance (34 %). This variable is so determining that the effect of the other variables would be very difficult to interpret. Given the assumption that the effects of the different variables are not similar, for example, rank may differ between universities and UAS, the analysis has been split up for the two types of institutions separately to test the effects of the six independent variables.

Table 7.3 presents the results of the regression of the work role on the six predictors for universities and UAS separately. The variables were added subsequently, testing the effects of each of them on the research role thereby excluding interaction effects. To give information about the relative importance of the independent variables, the standardised regression coefficients are reported.

The multiple regression analysis determines the effect of a variable in combination with the effect of the other variables. Overall the academic rank appears the most important predictor. This means that the higher the rank, faculty members are spending more time on research than on teaching, have a larger output and are stronger oriented towards research. For UAS the rank is the only variable that makes a difference. The higher the rank (lector and main lecturer/researcher), the more

faculty spend time on research is more orientated to research and shows a higher publication output than those in the lower ranks. This confirms the division between the higher ranks who are assigned explicitly a research task and the lower ranks where teaching is emphasised and research is optional.

For universities the discipline (STEM subjects) has also a positive effect on research time of university faculty. This may be attributed to the relatively high number of doctoral students and other scientific staff that need a research-intensive environment.

Another powerful predictor for university faculty is the employment contract in the sense that those on tenured positions spend more time on teaching and express a more equal orientation on teaching and research than those on temporary contracts. The latter are more oriented to research, presumably given the fact they are mostly employed on temporary research contracts.

Part-time is negatively associated with research. Gender does not appear to have determinative power on any of the dependent variables. Although on most aspects women score negative, the differences are not significant. Finally, age is reversely related to the preference for research. Thus, the younger the staff (and more contract relationships), the higher they score on the research working role, whereas the older the staff member the less research oriented.

Through additional analysis we researched to what extent the coefficients differ between the two institutional types. It appears that for discipline, type of appointment, employment and rank also differ significantly differ from each other. For example, the university higher ranks spend more time on research; this relationship is more extreme at UAS.

The conclusion from our analysis so far is that the organisational changes in Dutch higher education and the functional differentiation have not led to a major shifting balance of teaching and research. Teaching remains the larger component of the work role. However, research has compared to teaching increased in importance. This applies in particular for those in the higher professorial ranks who are in the exact sciences/engineering and are full-time employed. This goes along with increased research productivity. Institutional differences continue to be important in defining the work role regarding teaching and research. However, the differences are attenuating as the research role of the UAS is increasing, particularly regarding the higher ranks.

The relative time spent on teaching and research and research preference do not say very much about the compatibility of both work roles and the possible synergies between them. This will be discussed in the next section.

7.6 Perceptions on the Teaching and Research Nexus

Although teaching and research are the core tasks of academics, there is less conformity about the question whether teaching can exclusively be done by those who also do research or whether these tasks can be separated and assigned to different faculty

without a loss of quality. Given the scarcity of working time and energy, faculty members have to choose between teaching and research activities. They often tend to limit their teaching load in favour of their career perspectives according to the 'differential rewards model' that is prevailing in most systems (Hattie and Marsh 1996). Apart from this research and teaching may require different qualities which may justify a further differentiation of work roles. There is, however, no best way of relating research and teaching as there are various ways in which this nexus can be achieved (De Weert 2009; Jenkins et al. 2007; Visser-Wijdveen et al. 2010).

Research on the connection between teaching and research attempts to find statistical correlations between teaching effectiveness as measured by student evaluations and research productivity as measured by publication counts. In their classical research Hattie and Harsh (1996) found that there is a near-zero relationship between quality of teaching and research at the individual and at the departmental level, suggesting that research and teaching are at best only loosely coupled. Time spent on teaching is not related to teaching effectiveness and slightly negatively related to research productivity. Gottlieb and Keith (1997) who used the 1992 Carnegie survey, however, found a positive relationship between the mean weekly hours spent on teaching with respect to research, suggesting the complementary character of the two activities up to a certain threshold level of diminishing returns where research efforts operate to reduce the quality of teaching.

It can be assumed that the synergy between education and research increases with the level of education. It really matters whether teaching involves basic knowledge in a classroom setting or learning in small groups of students who already master the basics. Particularly at the bachelor's level, student groups are larger, courses are mandatory and the curriculum content is more standardised focusing on a broad range of disciplinary knowledge. Teaching predominantly graduate students, however, is more related to working in a research environment and requires corresponding skills and what Hattie and Marsh (1996) call 'similar personal characteristics' for teaching and research: writing papers and presenting and discussing from a research perspective. In such a situation both qualities of the researcher and teacher are united. If this holds, a negative relationship between research and teaching can be assumed in the first phase of the curriculum, while a positive relationship is more applicable on the advanced level. Neglecting the distinction between undergraduate and graduate education would disturb the relationship between research performance and educational effectiveness. Research might be highly associated with teaching at the graduate level rather than at the undergraduate level. This view is supported by empirical evidence which shows a negative association between international journal publication and teaching quality at the undergraduate level (Shin 2011).

The role of the educational phase on the link between research and education was the focus of a research project at the Faculty of Economics of Erasmus University Rotterdam (Arnold 2007). Comparing data on student evaluations (to measure teaching effectiveness) and research performance (being a member of a Dutch national research school and number of publications), the models show an inversion in the relationship between educational effectiveness and research

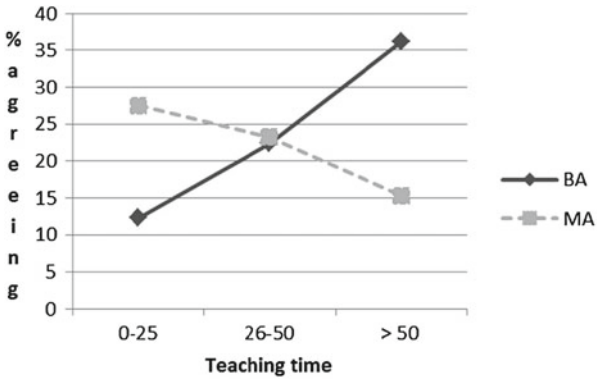

Fig. 7.1 Percentage of respondents agreeing with the statement on the incompatibility of research and teaching by teaching time in BA and MA programs (university respondents, $N=452$)

performances in the later phases of the educational process. While the relationship is negative in the first 2 years, it is significantly positive in the later years. The data indicate that there are excellent teachers who do not belong to a research school and excelling researchers who have a low score on student evaluations. The results can be interpreted in the sense that the relationships between teaching and research skills and time spending are working in the opposite direction and the educational phase affects the strength of the relationship.

Although the CAP survey does not measure educational quality as such, it includes two explicit items on the teaching/research nexus, one negatively formulated and the other positively.

- 'Teaching and research are hardly compatible with each other'.
- 'Your research activities reinforce your teaching'.

For both items the percentages of 1 + 2 agreeing are combined with the proportion of teaching time at the bachelor's respectively in master's programs. This has been divided in three rather equally distributed categories (0–25, 26–50 and over 50 % of total teaching time). Only those respondents are included that indicated to be involved in research.

Figure 7.1 shows how the view that 'teaching and research are hardly compatible' increases in the extent to which the teaching proportion in bachelor's programs increases. For master's programs the reverse is the case where disagreement (with this proposition) goes together with a higher proportion of teaching in master's programmes. Figure 7.2 shows a very identical pattern in the sense of supporting the thesis that the link between teaching and research is stronger when the proportion of teaching in master's programmes is larger.

These findings suggest that teaching one's specialty in some research domain and teaching in undergraduate programs is far away from the principle of the Humboldtian unity of teaching and research. The added value of productive researchers in these programs is the lowest. In this context Clark speaks about the 'increasing gap between frontier knowledge and teachable codified knowledge' (Clark 1995). A more positive link between teaching and research appears

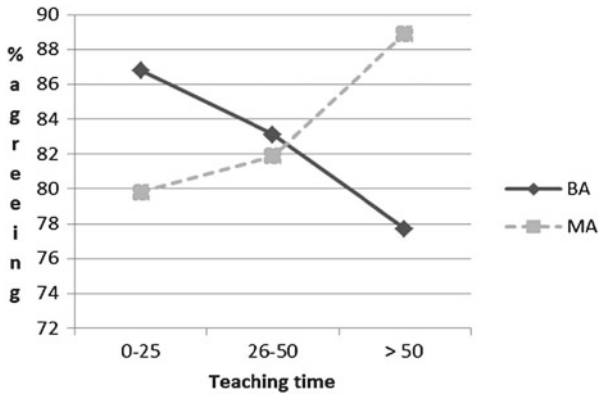

Fig. 7.2 Percentage of respondents agreeing with the statement that research reinforces teaching by teaching time in BA and MA programs (university respondents, $N=431$)

Table 7.4 Views of Dutch UAS faculty on the link between applied research and education (percent 1 and 2 (strongly) agreeing on a five-point scale), by rank

Rank	High ranks	Low ranks
(*N*)	(121)	(221)
Research contributes to the professionalisation of the teaching staff	90	70
Research contributes to curricular innovation	82	74
Research contributes to innovation of professional practice	80	77
Students who are actively involved in research are better prepared for future professional practice	78	51

especially to play a role at the master's level in which productive researchers have a significantly higher score in student evaluations, whereas the added value of productive researchers at the bachelor's level is the lowest (Arnold 2007). This may vary for different subject areas. In disciplines with a hierarchical knowledge structure like in the exact sciences, staff research may be so far ahead of the undergraduate curriculum that a strong connection between the research by faculty and student learning is very difficult to achieve and can only be activated at the graduate level (see for a similar point also Jenkins et al. 2007; Robertson 2007).

The view presented here challenges the policy question to what extent a differentiation in working roles would be desirable, for example, by deploying faculty members who perform high on either research or teaching. General guidelines are difficult to make as this may vary considerably between disciplinary fields, types of institutions and stages of learning. This is also dependent on the kind of connection between teaching and research and how research has to be understood.

In this context the situation of the UAS is illustrative. The Dutch CAP questionnaire included an extra set of propositions especially for UAS faculty members about the link between applied and practice-oriented research and education (Table 7.4).

There is much agreement about the positive link between research and its contribution to teaching and the usefulness of research for students in their later professional life. The higher ranks again are more positive about the significance of research

for the teaching process, but also the lower ranks are predominantly positive. This may allude to their growing involvement in research. Research is conceived here in a rather broad sense, including providing students with systematic research methods and the design of the curriculum around inquiry-based activities and project work. This is quite different from students participating in research projects (mostly on advanced levels) oriented to the development of a deductive research process.

7.7 Professionalisation of Teaching in the Binary System

The positive links between research and teaching as perceived by UAS faculty members question the sharp distinction being made between the research universities and teaching institutions in binary systems. As such the applied research undertaken by UAS can be delineated from university research (De Weert 2011). Boyer's plea for a reconsideration of scholarship is particularly relevant here where the core values and activities of the academic profession are more connected to the practical service than to the academic prestige market. That model emphasises not only teaching but also the application of scholarship in local contexts. Research in the context of application and its relevance for professional practice is a profiling strength of the UAS sector, and reinforcing this type of research is seen as a quality boost to education and curricular innovations. For faculty members this research is increasingly becoming an integral part of their working time.

Regarding universities a stronger functional differentiation between teaching and research does not find much support among faculty members. Dutch university faculty strongly disagree with the statement that 'research funding should be concentrated on the most productive researchers'. Only 25 % do agree with this statement which is the lowest of all CAP countries, with the exception of their colleagues from Canada who have a slightly lower score (23 %).

A sharp distinction between research and teaching institutions would also suggest that for the research institutions teaching is less relevant. On the contrary, Dutch universities have as a response to external pressure turned up the heat on teaching quality. As indicated before, this relates to the current NPM emphasis on efficiency and output with the perverse effects of pushing as many students efficiently through their studies. But it also alludes to the current importance attached by universities to the teaching quality and the acknowledgement that teaching competence requires a qualification in itself.

If we compare CAP data on aspects of teaching quality between universities and UAS, the following picture emerges:

- Regarding the facilities and resources to support the work, the differences between university respondents and UAS are remarkable. University respondents evaluate virtually all facilities higher than the UAS respondents. Apart from specific research-related activities which expectedly are in favour of universities, the teaching-related facilities are at universities higher evaluated than at UAS. This regards classroom, technology for teaching, secretarial support and teaching support staff.

- On the item whether there is 'encouragement to improve their instructional skills in response to teaching qualifications', 49 % of university faculty agreed or strongly agree against 51 % of the UAS faculty.
- On the item whether 'at the institution there are adequate training courses for enhancing teaching quality', almost 60 % of the university faculty agreed or strongly agreed, while the UAS faculty is lagging behind with 47 %.
- On the question 'to what extent the institution is considering the teaching quality when making personnel decisions', 33 % of the university faculty agreed or strongly agreed against the UAS faculty with 44 %.

These findings are indicative of the importance of teaching at universities compared to UAS. Many universities nowadays require from their new faculty to obtain a teaching qualification before they are allowed to practice, and faculty are during their career encouraged to update their teaching skills. The time when it was assumed that a good researcher is automatically a good teacher in the Humboldtian sense is far behind us. If these Dutch figures are compared with those from countries with a similar binary structure (Germany, Finland, Portugal and Norway), it is interesting to observe that the Dutch university faculty has the highest agreement score on all these items of teaching quality. In all the other countries, the university faculty members show lower levels of agreement.

For the Dutch UAS compared to their counterparts abroad, this is also the case except for Germany where the UAS faculty agrees more with the statement that teaching quality is considered for personnel decisions. Likewise, Dutch faculty of UAS are compared to their counterparts in the 'Other HE institutions' in the advanced countries more positive about teaching support staff (35 %) and research support staff (23 %). Only Finland shows slightly a higher score on both items.

7.8 Conclusions

The results confirm that in Dutch, higher education teaching and research continue to be the core working roles of academics. The time spent on research and teaching is in balance whereby all ranks devote slightly more time to teaching than to research. Only the nontenured positions are predominantly assigned a research task. Teaching is not left to teaching-only positions like this is the case in some other countries, but continue to be an important part of the role of tenured faculty in all ranks. Functional differentiation in the sense that a faculty member is allowed to concentrate working time on research or teaching is possible, but only for an agreed period. Most Dutch academics agree that a fair balance between teaching and research should be maintained.

The results suggest that the institutional type remains an important influence on how faculty spend their time. For university faculty research is an essential part of the work load, and the time spent on research has proportionally increased since the 1992 Carnegie survey, whereas for the UAS sector teaching still is the predominant activity. The differences between the institutional types, however, tend to become attenuated for two reasons. One is that teaching in universities increasingly requires

specific qualifications as well as professional development on a continuous basis. The appraisal scheme in the university job ranking system assures that teaching capabilities will be rewarded and that it is difficult to progress in ranks only on the basis of research productivity.

The other major reason is that the UASs, although originally being teaching institutions, have developed their research function mainly in practice-oriented research and that this research should benefit students for their professional preparation. Time spent on research has increased in this sector, particularly for the higher ranks who are explicitly charged with research tasks. For the lower ranks research has a lower priority, but it is expected that their role in research will increase. There is a push coming from inside and outside the UAS sector to increase the research qualifications of faculty members, for example, by raising the number of doctorates among the staff or attracting more staff with research experience from professional practice.

What would this mean for the future of the binary system? The major distinction between research universities and the UAS as teaching institutions looses some of its legitimacy. It will be unlikely that institutions that want to specialise in outstanding teaching and scholarship and others specialising in research—if this would result from the current discussion on institutional profiling—will occur along the binary divide only. Other differentiations are as likely on either side of the binary line.

A policy towards separation of research and teaching tasks has to be considered in a differentiated way. The focus should be on identifying what levels of research and teaching are optimal to enhance the complementarity between them. If the added value of productive researchers at the bachelor's level is low and can only be activated at the graduate level, would this mean that they spend more time on research and teach in graduate programs only? Deploying faculty members who perform one-sided high on either teaching or research at the bachelor's level would be an attractive policy option given the time constraints of productive researchers who are less inclined to invest time in preparing the undergraduate classes. This view has been fuelled by the current trend in Dutch universities to introduce general programs that are increasingly replacing disciplinary programs at the bachelor's level, postponing the specialisation to the graduate level. Adequate measures for teaching quality and various forms of research-based learning are pivotal to explore this issue further.

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Chapter 8
The Scholarly Question in Finland: To Teach or Not to Teach

Timo Aarrevaara, Ian R. Dobson, and Liisa Postareff

8.1 Introduction: The Historical Development of Finnish Higher Education

Contemporary higher education in Finland is a binary system of universities and polytechnics. Whereas the first university in Finland was founded in the seventeenth century, ideas about polytechnics were spawned in the late 1980s, and the first of them opened their doors in 1991. As is evident from Changing Academic Profession (CAP)[1] survey reporting, teaching is an essential part of work in the academy in Finland. The core of teaching is directed towards students undertaking degree studies, but teaching related to universities' social responsibilities such as continuing education is also of great importance. However, teaching is not accorded as much credit in an academic career as research is. That is why young researchers at the Finnish universities focus initially on research activity and publications. In this regard, Finland differs from most of the countries that participated in the CAP survey, as senior academics spend more time teaching than junior academics. It can

[1]The Changing Academic Profession (CAP) survey is mentioned in more detail elsewhere in this volume. In Finland, the CAP questionnaire was administered online between December 2007 and March 2008, rendering 1,452 responses to add to the international CAP database.

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even be said that those academics whose career has a teaching focus will find it difficult to obtain a university tenure-track position. These are achievable only with a research-intensive background. In Finland's polytechnics, the situation is different, since teaching, professional experience and a capacity for research and development are highly sought in recruitment and career advancement.

There is no uniform European university system, and the Finnish university system has been influenced by the German (teaching–research nexus and strong academic seniority), French (state–university relations: strong state direction and public funding) and British Federal principle (grouping separately governed units around a core administrative organisation) (Rothblatt 2006). The Finnish university sector follows the traditional continental European model of a university system, and therefore Finnish universities have much in common with universities in other parts of Europe. Now, at the start of the twenty-first century, European systems have converged and diverged from each other compared with earlier times, but change is a perpetual item on the higher education agenda. In this regard, Finland is following the development of twenty-first-century European higher education, where harmonisation is stronger because of the emergence of European Higher Education Area (EHEA) and European Research Area (ERA).

Expansion of Finnish higher education has come in two waves. The first of these occurred from the 1960s and was built on Finnish regional policy and by increased government funding. In the early 1950s, there were fewer than 15,000 university students, but by 1985, there were more than 92,000 (Statistics Finland, KOTA online, n.d.).

The second phase came through Finland embracing massification (Trow 2000) from the early 1990s. In the Finnish case, however, the approach to massification was facilitated by the creation of a polytechnic sector from 1991. That is, the expansion of higher education in Finland and improved access came through the creation of a binary system; it was not put into effect in Finland by the expansion of universities alone. Of course, the fact that Finland moved from a unitary to a binary system of higher education was in stark contrast with what occurred in some countries, particularly the United Kingdom and Australia. In those countries, major reforms were introduced that established unitary systems from precursor binary systems. In 1992, Finland had over 121,000 university students and 6,900 polytechnic students.

In 2012, the Finnish higher education system is comprised of 16 universities and 25 polytechnics. Three small creative arts universities are to merge in 2013, to reduce the number of universities to 14. The Ministry of Education and Culture maintains a strong controlling influence over higher education. The universities' role is to promote free research and provide higher education based on that research. They also promote lifelong learning, interact with society and disseminate research in society (Universities Act, 558/2009). Polytechnics provide higher education for professional jobs based on the requirements of 'working life'. According to the Polytechnics Act (351/2003), polytechnics should also support the professional growth of individuals and carry out applied research and development that will serve polytechnic education, and support the world of work and regional development whilst taking the industrial structure of the regions into account.

In a nutshell, these few sentences describe the difference in role between universities and polytechnics. The official purposes of these new, multi-field institutions

are to focus on contacts with 'working life', and on regional development (Ministry of Education and Culture, n.d.). Finnish polytechnics offer teaching in first and second cycle degrees, but the right to offer third cycle of doctoral degrees is the specific domain of the universities.

The differences between the two sectors are clear in terms of their different identities. Universities' research responsibilities are extensive, and polytechnics have a clearer duty to respond to the needs of the labour market. This is also reflected in the fact that both universities and polytechnics undertake research. The history and practices in Finland are such that universities' first cycle degrees (at the bachelor level) are usually considered insufficient by the labour market, and almost all university students need to undertake a second cycle master's degree programme in order to be 'qualified' to enter the labour market. This is in contrast with the situation in some other countries, such as the Anglo countries, where the bachelor degree represents the conventional 'barrier to entry' to labour markets. In such countries, bachelor degrees typically take from three to six years to complete. The corresponding first level of degrees offered by polytechnics is accepted by the labour market as an adequate 'qualification', and only a minority of polytechnic students continue to second cycle degree. About 3,500 polytechnic students moved on to second cycle polytechnic degrees in 2011 (Statistics Finland 2012).

Expansion of Finnish higher education in this fashion also led to the diversification of its academic profession. The creation of a new higher education sector meant the creation of an academy not built on the traditions and customs of several centuries. In the career path that is typical in universities, doctoral students make up the lower tiers of the academic workforce. University academics are not required to hold formal teaching. In contrast, becoming a tenured teacher in the polytechnic sector is more formal. Academics appointed as lecturers or principal lecturers in polytechnics must complete a teacher education degree. If they do not hold that degree when they start, they must to do so within 3 years of their appointment. This is laid down in the Decree on Vocational Teacher Training, 352/2003. University teachers are also not required to have work experience outside the university. However, studies in pedagogics have become more popular among the new wave of younger teachers in the university sector in recent years.

The above statements from the Ministry about the role of universities and polytechnics show that the clear intentions of government higher education policies are for the system to both be scholarly and at the same time consider the needs of the market. However, in what is a clear example of isomorphic behaviour in Finnish higher education, it would seem that the polytechnics are seeking to identify themselves as 'universities' (Dobson 2008). Although the term 'polytechnic' is the one that is continued to be used and emphasised by the education ministry, polytechnics now refer to themselves in their English language material as 'universities of applied sciences'. No such re-emphasis has occurred in Finnish or Swedish, Finland's two official languages. Terminology of this type has been adopted by polytechnics in a number of European countries. Germany and Austria also describe polytechnics as universities of applied sciences, and in the Netherlands the terminology used in English is 'university of professional education'. In these countries, 'polytechnics' traditionally provide upper vocational training (for technicians). In the Finnish system, 'universities of applied sciences' offer first and second cycle degrees.

European higher education is changing, and the pressures for this change are also reflected in the development of Finnish higher education. The trend from the Nordic perspective is also related elsewhere in this book concerning the expectations of the European Higher Education Area. European national higher education systems are undergoing integration, which is visible in the elements of harmonisation of degree structures through the Bologna Process. Before the 1990s, higher education was not at the heart of European integration, but it is now among the leading themes of integration and at the same time is an important part of the development of the European knowledge society. The European Union relies on higher education and research relevance for the development of society, which is also reflected in significant investments in the sector's development.

This development is also seen as leading to a diminution of state control and a shift towards market control. In Burton Clark's (1983) terms, the Finnish university system is moving away from the state towards the market, but it is also moving from a strong professional and academic core to a reliance on what Clark referred to as 'strong institutional trustees and institutional administration'. A market model or US-based model has characteristics of limited government regulation and strong diversification of academic institutions. The new context of European higher education requires improved competitiveness between universities, and they have to compete for students and staff. Universities may not be effective actors in this environment, because the rigid office structures and the strong legislative basis have restricted universities' ability for rapid change. Rapid change requires professional management and leadership, but European universities also have a strong collegial tradition of governance.

The Finnish higher education system is characterised by multilevel governance, complex national decision-making and dispersed strong national and regional stakeholder interests in higher education. Attention to this situation has been drawn in several evaluations and reports (see, e.g. Davies et al. 2009), which have suggested many opportunities for higher education as part of the growing importance of the innovation system. For Finnish higher education, European integration has been seen as a natural step to a more accountable and transparent mode of higher education. In Finland, it means that the higher education system in the 2000s consists of several actors including innovation systems, funding and national policies.

8.2 CAP and Teaching and Research in Finland

The CAP survey was completed in 2007/2008 at the time of an interesting transition period for Finnish higher education. From the Finnish perspective, it was a fortunate coincidence that the CAP survey took place during the reforms just at the point where the academic profession in universities was to change its formal status. With the passage of the Universities Act (2009), operational from the start of 2010, university academics ceased to be 'civil servants', and their formal employers became the universities at which they work (Aarrevaara et al. 2009). This change has been the most fundamental change for decades for the status of university academics in Finland, and change is now possible to monitor constantly and compare to the results internationally.

During the changes over 20 years before CAP survey was carried out, the number of university teachers in Finland increased only modestly, from about 7,600 in 1988 to 7,800 in 2008 (KOTA online, n.d.). However, the number of researchers and other university staff increased considerably. The student–teacher ratio in Finland is relatively high in an international context, but it is reasonable to emphasise that the way work is done has changed. It should be remembered that in Finland, 'academic work' was taken to encompass a number of support activities, including enrolling students and organising examinations. These functions became increasingly carried out by para-academic and support staff members, who now have a much greater involvement in broad 'academic work'. Research administration support and providing student study guidance through personal study plans are examples of work in which members of the academic profession work in close conjunction with the occupants of operational administrative positions.

Members of the academic profession have an important role to play in the system of professions, as they have traditionally had a key role in maintaining the system of professions. Research-based knowledge is an important rationalistic view in the private and public decision-making culture of Nordic countries, particularly a trust in knowledge in general and research-based knowledge in particular. The academic profession has a major responsibility for producing and transferring this knowledge base. In Finland, the academic profession refers to persons with academic occupations at higher education institutions; these tend to be in academic departments undertaking academic duties (see Dill 1982). Those with research training (doctoral graduates) who are not working in the academy are in the public and private sectors, working in the trades, the service sector, industry, science administration or libraries.

Academics occupying senior posts in research and teaching in higher education enjoy high prestige in Finnish society. Universities and polytechnics are popular employers in Finland, and recruitment into universities is based on high qualifications, good-quality scholarly work and other academic forms of merit. Recruitment for senior university posts often focuses on international activities and on achievements in basic research. This has also had some negative consequences. First, the transferability of jobs between universities and society at large has been relatively low. This is because to be successful in recruitment to a university typically requires applicants to have engaged in intensive work in higher education. The major emphasis is on basic research, and basic research is typically carried out at universities. Senior positions in research and teaching are also defined quite clearly. They often follow exactly the topics being studied within the universities, but not so much on what industry or public sector research units require.

The situation for academics in the polytechnic sector is somewhat different. As noted earlier, polytechnic teachers must complete formal teacher training and have a minimum of three years' work experience in their field. They must also be willing to collaborate and co-operate with industry and society. Polytechnic academics classified as principal lecturers are also required to hold a postgraduate academic degree.

However, the emphasis on teaching in polytechnics is quite reasonable and is to be expected in the context in which polytechnics were established. In addition, the situation with the overall management of research in polytechnics and the funding of that research has been noted also in another context. The Finnish quality

assurance agency FINHEEC recently published a report on research, development and innovation in the polytechnic sector (Maassen et al. 2012). The evaluation team noted the need for improvement in overall management and funding of polytechnic research before full potential could be achieved. As they note 'The funding situation…. is fragmented and lacks transparency…[and] the overall basic funding level for the research, development and innovation function….is too low. The main Finnish agencies for the public funding of research, development and innovation activities, TEKES and the Academy of Finland lack a clear frame of reference for determining their role in the funding, and therefore further development of [these] activities within the [polytechnic] sector' (Maassen et al. 2012, p. 26). The situation, then, is that research has long been a part of the university tradition, and the infrastructure to support that tradition has long been in place. The polytechnics are still too young to build a research tradition, and perhaps funding agencies and society have different perceptions about research being done in this fledgling set of institutions.

8.3 Data Sources

The results shown here are based on CAP data as at September, 2011. The Finnish CAP survey produced 1,452 survey responses, including 1,115 from university and 334 from polytechnic academics. Some academics that submitted questionnaires failed to answer one or more questions, so the tables in this chapter do not include those respondents. Three respondents failed to indicate whether they worked in a university or a polytechnic, and 23 did not indicate their preference for teaching or research. In light of national statistics on the academic profession, discipline and individual qualifications, the sample from the polytechnics included an over-representation of those holding postgraduate degrees compared with their proportion of the overall polytechnic academic population. As outlined in the Finnish country report on the CAP survey (Aarrevaara and Pekkola 2010), in the universities, the respondents' academic rank, level of education and gender correspond quite well to national statistics.

8.4 Academics' Perceptions of the Teaching and Research Nexus

Table 8.1 provides a summary of the population examined in this chapter. It shows immediately the difference in preference for teaching or research according to sector. Roughly speaking, an 80:20 rule is in operation, but in the case of universities, the 80 refers to research, and within polytechnics, it refers to teaching. Looking at the extremes, from Table 8.1 it is possible to calculate that only 6.6 % of university academics expressed a preference primarily in teaching, whereas only 5.2 % of polytechnic academics expressed a preference primarily for research. Similarly, of university academics, those with a preference for both, but with a leaning towards teaching, were relatively few in number (14.8 %), and only 16.2 % of academics from polytechnics expressed a preference for both, but with a leaning towards research.

Table 8.1 CAP survey, Finland: preference for teaching or research, by higher education sector, gender and seniority

	Universities	Polytechnics	Total
Summary			
Primarily teaching	73	127	200
Both—teaching emphasis	163	130	293
Teaching emphasis—No.	236	257	493
Teaching emphasis—%	21.5 %	78.6 %	34.6 %
Both—research emphasis	489	53	542
Primarily research	374	17	391
Research emphasis—No.	863	70	933
Research emphasis%	78.5 %	21.4 %	65.4 %
Total—No.	1,099	327	1,426
Total—%	100.0 %	100.0 %	100.0 %
Gender			
Teaching emphasis			
Male	21.5 %	77.7 %	32.7 %
Female	21.9 %	79.8 %	36.9 %
Research emphasis			
Male	78.5 %	22.3 %	67.3 %
Female	78.1 %	20.2 %	63.1 %
Seniority			
Teaching emphasis			
Senior	18.8 %	60.9 %	28.4 %
Junior	21.8 %	85.2 %	35.9 %
Research emphasis			
Senior	81.2 %	39.1 %	71.6 %
Junior	78.2 %	14.8 %	64.1 %
Subtotal	79.0 %	21.6 %	66.1 %

Source: CAP survey 2007/8: Question B2: Regarding your own preferences, do your interests lie primarily in teaching or in research?

Table 8.1 also examines the differences between academics at universities and polytechnics based on their preference for teaching or research, and gender and seniority. Looking first at gender, it is interesting to see that there is little difference of opinion between men and women within each type of institution. About 22 % of both men and women at universities had a leaning towards teaching, and about 78 % of women and men at university had a leaning towards research. The pattern among polytechnic academics was almost the reverse of the pattern among university academics: around 78 % of both men and women at polytechnics said they had a leaning towards teaching, with the reciprocal approximately 22 % having a leaning towards research.

Considering seniority, within universities, the distribution between a teaching emphasis rather than a research emphasis was similar to the gender distribution: around 20 % of both senior and junior academics expressed a preference towards teaching, with around 80 % of both groups favouring research. There was, however, a difference between senior and junior academics from polytechnics, with 60.9 % of senior polytechnic academics stating a preference for teaching, compared with

85.2 % of junior academics. The fact of a slight sample over-representation of senior academics in polytechnics, as noted above, could explain this to some extent. The polytechnic emphasis on teaching is also indicative that this activity is a key academic career stepping stone, whereas it is not so for academics in universities. This also goes some way to explaining the absence of academic 'commuting' between sectors: developing and maturing academics from one sector tend not have the requisite background for employment in the other.

These figures make it plain that the primary source of difference is sectoral: the big difference is between universities and polytechnics rather than between men and women or senior and junior academics. On this basis, analysis below will be restricted to considerations of preference for teaching over research, with each type of institution, rather than being based on gender or seniority.

Table 8.2 goes further towards identifying the preferences of Finnish academics for teaching vis-á-vis research, on two dimensions. Looking first at what happens when classes are in session, 18.9 % of university academics undertook no teaching or related activities at all, and 30.6 % spent less than 11 h. These proportions should be compared with 5.7 % of and 12.5 %, respectively, for polytechnic academics. At the other end of the scale, 29.4 % of academics from the polytechnic sector spent more than 30 h per week on teaching and related activities during teaching periods, a proportion nearly three times higher than for university academics (10.3 %).

Looking at research activities, only 7.6 % of university academics spent no hours per week on research when classes are in session, compared with 30.7 % of polytechnic academics. Whereas over 38 % of university academics spent 21 or more hours on research during teaching periods, only 4.1 % of polytechnic academics spent as long as that. According to responses to the CAP survey, 57.4 % of polytechnic academics spent between 1 and 10 h on research.

On average, university academics spent 14.8 h on teaching and related activities when classes are in session, compared with 24.5 h for their polytechnic colleagues. However, with research, on average, university academics spent 19.2 h per week, compared with 5.6 h per week for polytechnic academics. These differences between the sectors are fundamental and indicate clearly the propensity for teaching and research on both sides of the Finnish binary divide.

Outside teaching periods, as one might expect, the amount of time spent on teaching activities declines. In fact, about 87 % of university and academics and 75 % of polytechnic academics spent between 0 and 10 h on teaching. However, the proportion of polytechnic academics that reported spending no hours per week on research activities is actually higher during nonteaching periods. Fewer than 10 % of polytechnic academics spent more than 20 h per week on research when classes were not in session. This figure should be compared with the more than 61 % of university academics that reported spending 21 h or more on research during nonteaching periods.

When classes are not in session, university academics, on average, spent 19.2 h per week on teaching and 26.4 h on research. Polytechnic academics seem more leisurely in nonteaching periods: on average, they spent 8.9 h on teaching and 8.5 h on research, per week.

Of course, there is more to an academic career than teaching and research. In addition to the average hours shown in the table for teaching and research, during

Table 8.2 CAP survey, Finland: hours spent on teaching-related and research-related activities, when classes are or are not in session

	When classes are in session				When classes are not in session			
	Universities	Polytechnics	Universities (%)	Polytechnics (%)	Universities	Polytechnics	Universities (%)	Polytechnics (%)
Teaching								
0 h	183	17	18.9	5.7	266	42	32.8	24.0
1–10 h	296	37	30.6	12.5	438	89	53.9	50.9
11–20 h	225	85	23.2	28.7	85	27	10.5	15.4
21–30 h	164	70	16.9	23.6	16	10	2.0	5.7
>30 h	100	87	10.3	29.4	7	7	0.9	4.0
Total	968	296	100.0	100.0	812	175	100.0	100.0
Average—teaching	*14.8*	*24.5*			*5.6*	*8.9*		
Research								
0 h	74	91	7.6	30.7	36	56	4.3	29.5
1–10 h	323	170	33.4	57.4	118	85	14.2	44.7
11–20 h	202	23	20.9	7.8	169	31	20.3	16.3
21–30 h	139	8	14.4	2.7	191	9	23.0	4.7
>30 h	230	4	23.8	1.4	318	9	38.2	4.7
Total	968	296	100.0	100.0	832	190	100.0	100.0
Average—research	*19.2*	*5.6*			*26.4*	*8.5*		
Average—service	*2.1*	*2.3*			*2.2*	*2.0*		
Average—administration	*4.2*	*5.2*			*4.1*	*5.9*		
Average—other	*3.3*	*2.6*			*2.7*	*1.6*		
Total hours	*43.6*	*40.2*			*40.9*	*27.0*		

Source: CAP survey 2007/8

teaching periods, university academics spent (on average) 2.1 h on providing service (to clients, unpaid consulting and public or voluntary services), 4.2 h in administration and 3.3 h on other academic activities. Outside teaching periods, the equivalent hours are 2.2, 4.1 and 2.7, respectively. University academics, therefore, have a working week of over 43 h during teaching periods and one of almost 41 h when classes are not in session.

In the polytechnic sector, the distribution is different, and there is a considerable difference in the length of the working week in and out of teaching periods. Academics in the polytechnic sector spend 2.3 h on service activities when classes are in session, 5.2 h on administration and 2.6 h on other academic activities. When classes are not in session, polytechnic academics spend 2.0 h on providing service, 5.9 h in administration and 1.6 h on other academic activities. Based on responses to the CAP survey, polytechnic academics, on average, work 40.9 h when classes are in session and 27.0 when they are not.

This looks like a big difference in working hours between university and polytechnic academics, but there is an explanation. The polytechnics were originally created from antecedent upper vocational teaching institutions, and for some teachers, there was a tradition of not being paid for the summer vacation period, for example. Therefore, some teachers were employed under a collective bargaining arrangement whereby they received a higher salary for the teaching hours they worked, but they did not prepare lectures during official working time. Therefore, their annual number of working hours was less. Full-time teachers (and university academics) have an official annual work load of 1,600 h. Even though the polytechnic sector has now passed its twentieth year, some staff remain employed according to older 'vocational style' awards and therefore have a shorter working hours per year.

It should be noted that academics from polytechnics have a major role in regional networking with enterprises, hospitals and municipalities. Their working hours in providing service and other academic activities is therefore more related to teaching than it is for their counterparts in universities.

8.5 Teaching and Research: The Nexus and the Institutional Environment

8.5.1 The Interactions Between Teaching and Research

Having quantified the fundamental differences between academic careers in universities with the one in the polytechnic sector, in these sections, we consider the difference in the perceptions of academics from universities and polytechnics, examining briefly the teaching–research nexus, perceptions of institutional attitudes and the physical environment.

There was variation in the respondents' perceptions concerning the teaching and research nexus, based on responses to the question 'Teaching and research are hardly compatible with each other'. Of the university respondents, over half of those

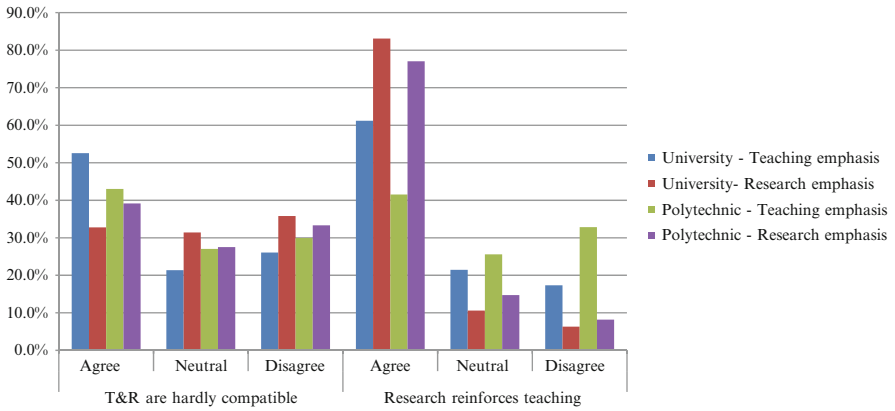

Fig. 8.1 CAP survey, Finland: responses from certain questions from the CAP survey relating to attitudes to teaching and research

with a leaning towards teaching agreed with the proposition, and just over 20 % were neutral on the subject, and about one-quarter disagreed. University academics with a penchant for research saw things slightly differently, with just less than one-third agreeing that teaching and research are hardly compatible with each other. A similar proportion of research-oriented university academics were neutral in their opinion and another approximately one-third disagreed. Among polytechnic teaching-oriented academics, about 43 % agreed with the statement, whereas 27 % were neutral and 33.3 % disagreed. It is interesting to observe that in both sectors, those whose interests lie primarily in teaching perceived the teaching–research nexus more negatively than those whose interests are more in research.

Figure 8.1 also graphs responses to CAP question that sought respondents' opinion that 'Your research activities reinforce your teaching'. Again there is a marked difference between teaching-oriented and research-oriented academics, whether from a university or a polytechnic. About 83 % and 77 % of the research-oriented staff from universities and polytechnics, respectively, agreed that their research reinforced their teaching. Among those with a teaching emphasis in their career, about 61 % of university academics and 41 % of polytechnic academics agreed that their teaching was reinforced by their research.

8.5.2 Perceptions of Institutional Attitudes

To examine the teaching–research nexus in more detail, we looked at selected responses to Question E6, concerning institutional emphasis, and elements of institutional reward systems. The objective in this analysis was to explore whether differences of opinion were driven by academics' emphasis on teaching or research or whether responses seemed to be driven by the sector the respondent was employed in. Results have been summarised in Table 8.3. Respondents were required to answer

Table 8.3 CAP survey, Finland: summary of responses to question: to what extent does your institution emphasise the following practices? (selected)

	Total—No.	Yes (%)	Neutral (%)	No. (%)	Total (%)
E6_5 My institution emphasises research quality in making personnel decisions					
Universities					
Teaching emphasis	203	45.8	35.5	18.7	100.0
Research emphasis	704	50.1	31.7	18.2	100.0
Polytechnics					
Teaching emphasis	209	14.8	35.9	49.3	100.0
Research emphasis	59	10.2	39.0	50.8	100.0
E6_6 My institution emphasises teaching quality in making personnel decisions					
Universities					
Teaching emphasis	207	27.1	34.3	38.6	100.0
Research emphasis	699	25.0	41.5	33.5	100.0
Polytechnics					
Teaching emphasis	221	39.4	28.5	32.1	100.0
Research emphasis	60	40.0	41.7	18.3	100.0
E6_8 My institution emphasises recruitment of staff with experience outside academia					
Universities					
Teaching emphasis	200	11.0	48.0	41.0	100.0
Research emphasis	696	15.5	34.3	50.1	100.0
Polytechnics					
Teaching emphasis	222	50.9	27.0	22.1	100.0
Research emphasis	61	57.4	29.5	13.1	100.0
E6_9 My institution encourages academics to adopt service activities/entrepreneurial activities outside the institution					
Universities					
Teaching emphasis	195	16.4	35.4	48.2	100.0
Research emphasis	695	16.1	37.1	46.8	100.0
Polytechnics					
Teaching emphasis	212	28.8	42.5	28.8	100.0
Research emphasis	60	50.0	21.7	28.3	100.0

Source: CAP survey 2007/8: various questions

according to a five-point scale, from ‘very much’ (1) to ‘not at all’ (5). For the purposes of analysis here, we have aggregated the positive responses (1 and 2) as ‘Yes’ and the negative responses (4 and 5) as ‘No’, with a neutral group in the middle (3).

Responses to the statement ‘My institution emphasises research quality in making personnel decisions’ produced a range of responses from Finnish academics, whether they were from universities or polytechnics and whether their interests lie in teaching or research. Within universities, responses from those with a leaning towards teaching and research were relatively similar. Positive respondents represented 45.8 % and 50.1 % of teaching-focussed and research-focussed academics, respectively. A negative response came from just over 18 % of academics with both orientations.

Among polytechnic academics, there was a difference of about 4 % between teaching- and research-oriented academics and ‘no’ responses from about half of all polytechnic academics, whether focussed on teaching or research. A large proportion of academics from both sectors responded neutrally on this question.

For the statement 'My institution emphasises teaching quality in making personnel decisions', positive responses were similar between teaching-focussed and research-focussed academics, within universities and polytechnics, respectively, but quite different when comparing universities with polytechnics. In universities, 27.1 % of teaching-focussed academics and 25.0 % of research-focussed academics responded positively. With polytechnics, around 40 % of academics responded positively, whether their interests lay in teaching or research. Looking at negative responses, slightly more teaching-oriented university academics (38.6 %) than research-oriented academics (33.5 %) believed their universities did not emphasise teaching quality when making personnel decision. The gap between responses among polytechnic academics was greater. About 32 % of those with a focus on teaching and 18.3 % of those with a research focus believed that their universities did not emphasise teaching quality when making personnel decisions.

Respondents were also asked to rate the statement 'My institution emphasises recruitment of staff with experience outside academia'. Here there was a considerable difference between responses from academics working at universities, compared with those working at polytechnics. Only 11.0 % and 15.5 % of teaching-focussed and research-focussed academics, respectively, agreed that their university sought to recruit from outside the academy. For polytechnic academics, the equivalent figures were 50.9 % and 57.4 %, respectively. Perhaps the main reason for this gap between universities and polytechnics is that in a strict sense, polytechnic teachers are required to have experience in industry, commerce or the service sectors. That was the intention when the polytechnic sector was first established in 1989/1990, but there has no doubt been a drifting away from that as the sector ages.

Negative responses from university academics were therefore higher than for polytechnic academics. About 41 % of teaching-focussed academics said that their institution did not emphasise recruitment of staff with experience outside the academy and 50.1 % of those with a leaning towards research. Fewer polytechnic academics' responses were negative on this point: 22.1 % and 13.1 % of teaching- and research-focussed academics, respectively.

Finally, respondents were asked to comment on whether their institution encouraged academics to adopt service activities/entrepreneurial activities outside the institution. Again, positive responses from university academics were lower than those from their polytechnic colleagues, and negative responses were higher. It would seem that academics in polytechnics are more encouraged to relate with the external environment.

With respect to several of the statements highlighted in this section, the rate of neutrality was quite high. That is, many academics were of the opinion that their university neither promoted nor did not promote the activity in question.

8.5.3 The Teaching and Research Environment

The academic environment is important for many reasons, not the least, job satisfaction. This section compares the opinions of Finnish academics, from both sides of

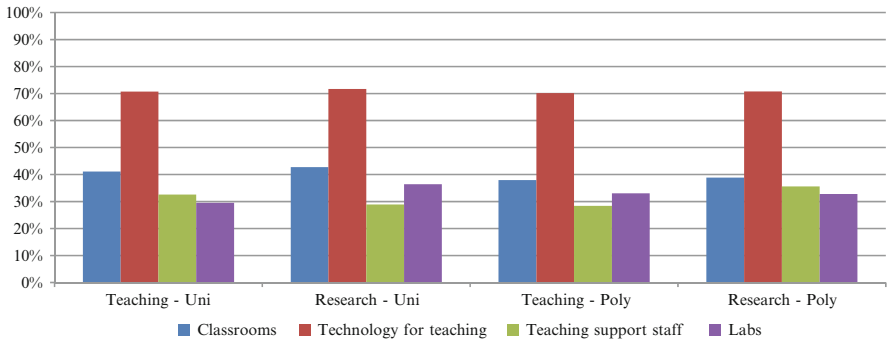

Fig. 8.2 Proportion of academics that evaluated facilities, resources and personnel as 'excellent' or 'good': items affecting the teaching environment

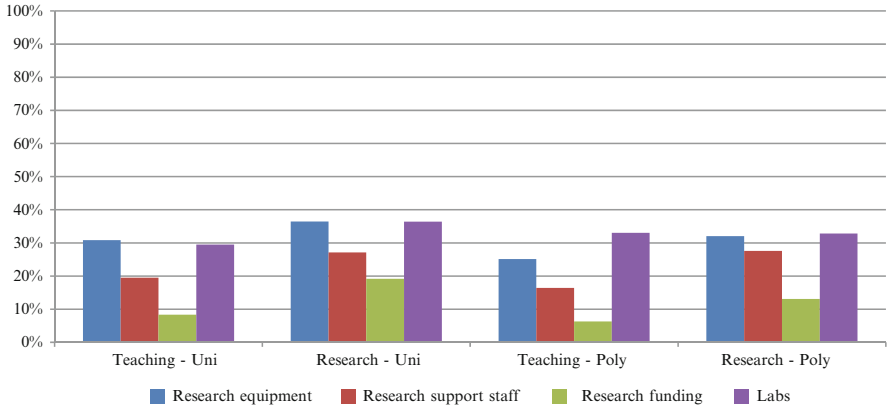

Fig. 8.3 Proportion of academics that evaluated facilities, resources and personnel as 'excellent' or 'good': items affecting the research environment

the binary fence, and according to those academics' preference for teaching or research. The CAP survey had one specific question (B3) that sought academics' evaluation of their physical and support environment. Here we have examined them in three groups, relating to whether this support was primarily for teaching, research, or whether they affected all academics, irrespective of their preference for teaching or research. Figures 8.2, 8.3 and 8.4 show the proportion of academic staff that thought the items in question were excellent or good.

Figure 8.2 considers four items that primarily affect teaching: classrooms, technology for teaching, teaching support staff and laboratories. Although there were differences between the items as to the proportion of academics found them to be good or excellent, there was little difference between sectors or between academics with a stated preference for teaching or research.

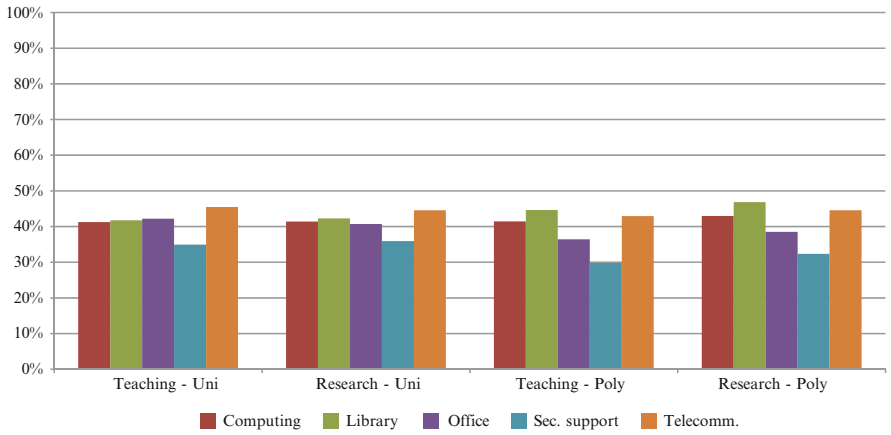

Fig. 8.4 Proportion of academics that evaluated facilities, resources and personnel as 'excellent' or 'good': items affecting the general academic environment

So far as the perception of classrooms was concerned, around 40 % of academics across the board rated them as excellent or good. Not shown on the graph is the fact that only 4–8 % thought classrooms to be poor, indicating a considerable proportion of academics were neutral on the issue.

Around 70 % of academics, again across the board, rated the technology for teaching to be good or excellent.

With respect to the extent of the support they received from teaching support staff, about 30 % of academics rated this support as good or excellent. Unfortunately it is not possible from the CAP survey to work out whether academics' attitudes were a reflection of a perception that there were too few support staff or whether there was something more fundamental about the nature of the support provided. The encroachment of so-called accountability and an increase in the bureaucratisation of higher education mean that many academics now have to do work that they perceive as administrative. Therefore, it is not necessary a reflection on the quality of the support staff themselves that led to this relatively low perception of the level of support provided.

Finally, Fig. 8.2 shows academics' attitudes to laboratories. This item could be a teaching-related item, particularly for academics working in the natural sciences, biomedical science, engineering and technology. However, it is also part of the research milieu, again for academics operating in science and technology. The 'average' perception across sectors and academic preference suggests that around 30 % of academics rated laboratories as good or excellent. This might not seem like a particularly good result, but it is also true that only 7–15 % of academics rated laboratories as poor.

Figure 8.3 considers the research physical and support environment. Overall academic perceptions of support as good or excellent are subdued, compared with

perceptions of the teaching support environment. In particular, few rated research funding as good or excellent, with the most positive response coming from research-preferring university academics. Nonetheless, even for that group, fewer than 20 % thought it good or excellent. Perhaps this is a situation where 'too much would never be enough'. Research funding in Finland is highly competitive, and the success rates in the funding available from the main funding bodies, the Academy of Finland and Tekes are low. In project funding schemes controlled by the Academy of Finland, the success rate for applications submitted for is less than 20 %, and in Tekes schemes, around 23 % (AKA 2011, p. 15).

Academics were not positive in their impressions of research support staff; however, a higher proportion of academics with a research leaning, whether from universities or polytechnics, believed that they received good or excellent support.

More academics rated research equipment and laboratories as good or excellent. Comments on laboratories were made with respect to support for teaching. Figure 8.4 considers support aspects that affect all academics, whether teaching or research focussed. With the exception of secretarial support, around 40 % of academics, across the board, believed their computer and library facilities and their own office space to be good or excellent, and a slightly higher proportion offered the highest ratings to telecommunications (Internet, networks and telephones). Secretarial support was less well regarded, but as stated earlier, it is hard to discern whether this is a perception based on quality or quantity. It could also be related to the relative paucity of staff providing professional secretarial support and the outsourcing of some administrative functions.

Although we have not attempted to go into detail on theories behind the derivation of job satisfaction, it should be noted that most of the variables considered in this section would be considered to be so-called hygiene factors under Herzberg's two factor theory. Hygiene factors relate to facilities, resources, support personnel and perceptions about academic work, management and working conditions (Herzberg et al. 1959; Smerek and Peterson 2007). It is up to university managers to ensure that academics do not become dissatisfied by ensuring that they perceive their jobs as presenting challenges and allowing responsibility and freedom of academic choice.

All in all, academics are happy with their working conditions, infrastructure in general and especially with ICT and teaching facilities. However, there is no evidence that they could have much influence on these conditions. This is probably a very Finnish attitude. They are happy with what they have!

8.6 Discussion and Conclusion

The principal pattern that emerges from the analysis described earlier is that there are considerable differences between the attitudes of Finnish academics, based on whether they are university or polytechnic academics. Perhaps this is to have been expected. The polytechnic sector was established with the prime aims of producing

a labour force ready for the labour market and improving regional access to higher education. Even if academics from both halves of the Finnish binary system undertake research, the preparation of academics for universities typically commences with a form of research apprenticeship, whilst they pursue a doctoral qualification, the fundamental barrier to entry to a career in university academia. The fact that junior academics in polytechnics were less inclined to research than senior polytechnic academics demonstrates that the pattern in the polytechnic sector is different. Polytechnic academics are more likely to be undertaking formal teacher training, this being a requirement on this side of the binary divide.

It seems polytechnic academics' work culture is different from that of university academics due to polytechnic academics having work experience from industry, service or government. In addition, the understanding of the nature of teaching is different due to regulations that require polytechnic academics to have undertaken formal teacher training. For example, they combine classroom teaching and practice in joint projects with industry and government. University teaching takes place in traditional classrooms and laboratories, aided by ICT in educational use.

More important than these arguments is the fact that polytechnics so far have little history, coming into existence as recently as 1991. They also lack the strong discipline-based decision-making that is dominant in the university sector. Therefore, their mode of operation allows for a more dynamic set of actions and reactions than is possible in universities. Higher education institutions are bottom heavy, and institutional strategies often remain strongly linked to discipline-linked rhetoric within academic units. Institutional strategies and policies tend to be relatively weak at the academic unit level. Universities have a long history and strong discipline-based practices, so they are more bottom heavy than polytechnics are. They are research oriented, and research is organised through disciplines rather than through the higher education institutions.

Based on the data drawn from the Finnish CAP survey, it is clear that academics, whether from universities or polytechnics, have a leaning towards either teaching or research. However, the sector academics are in is important, and despite the slow increase of research conducted by polytechnic academics, 78.6 % of polytechnic academics had a leaning towards teaching (see Table 8.1). The reverse was the case among university academics, with 78.5 % having a research leaning. The embryonic nature of 'research' undertaken within polytechnics was also acknowledged in the recent report referred to earlier (Maassen et al. 2012). The report noted (inter alia) that research competence has remained relatively low in polytechnics, and among the impacts of this situation is that the polytechnic sector is therefore less attractive for foreign researchers and well-educated experts. The report sees important challenges in polytechnics efforts to institutionalise a sector-specific research profile.

This chapter has identified the nexus between teaching and research in the Finnish academy but with the assistance of CAP data, has demonstrated that higher education sector is an important variable. Teaching within universities is no longer based as strongly on extensive research; within the polytechnic sector, academics' experience should come from direct workforce interaction before their academic career, supplemented by formal teacher training.

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Chapter 9
Teaching and Research: Perspectives from Portugal

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9.1 Introduction

The purpose of this chapter is to present a descriptive and interpretative approach of the CAP survey results on the Portuguese academics' perceptions regarding the relationship between research and teaching within the division of academic work. Until the 1990s, this relationship has been considered as the core reference of this division, being the main structural component of the social division of academic work and academic knowledge epistemologies. By analysing the academics' perceptions in this field, it can be appraised how far recent changes in the Portuguese higher education, developed under a market, economic and managerial rationality logic, have reached the 'inland' of Portuguese higher education institutions. In fact, studies on the Portuguese higher education field have not entirely addressed this concern, being mainly oriented to system and institutional governance and managements levels (top and middle) (Santiago and Carvalho 2004; Carvalho and Santiago 2010a; Amaral et al. 2003; Santiago et al. 2005; Magalhães and Santiago 2012; Carvalho 2012). To some extent, these studies have left apart the institutional 'shop

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floor' and the relation of academics with what socially, culturally and economically legitimates the teaching and research of the academic profession (including both universities and other higher education institutions). However, conclusions of these studies have pointed out some contradictions. Interpretations and responses given by different institutional actors to changes in governance, management and academic activities reveal distinct ways market devices have penetrated the higher education landscape. We are expecting that the analysis of the CAP results on academics' perceptions over the relationship between research and teaching allows us to contribute both to complement knowledge brought by these studies and to (re) elaborate on the impact of the system and institutional structural changes over the HEIs' micro-level actions and conducts.

In order to expose the general context, this chapter presents, in the first section, an overall synthesis of the main changes emerging in the relationship between research and teaching in the Portuguese higher education landscape, particularly since the 1974 democratic revolution. In the second section, we propose a short description of the 'state of the art' concerning changes in the system and at the institutional levels and of their impact on research and teaching. In the third section, we will analyse, in a descriptive way, some of the main features of the Portuguese academic career, which can help to understand the tensions existing nowadays in the development of academic activities and tasks, namely, between the formal requirements displayed by the law and the reality on the ground. The next section of the chapter summarises the methodological strategies used to define the sample survey and to collect the data. An overview of the results is the subject of the following section of the chapter. Finally, we conclude by stressing the main results and the future directions of research on the relation of academics to research and teaching.

9.2 Teaching and Research in Portuguese Higher Education

The focus on knowledge in the 'Humboldtian revolution' has been, until 1980, the main 'strength' of the development of higher education (HE) systems in Western countries (Amaral et al. 2002; Santiago and Carvalho 2004). This, in turn, has allowed that the connection between teaching and research has been framed as a major reference of academic professionalism. Although research was a late comer into the university, it was institutionalised with the 'revolution', leading to the reconfiguration of teaching.

The Humboldtian 'model' was also the basis for structuring the Portuguese HE system throughout the twentieth century. However, until the democratic revolution of 1974, some reminders of medieval scholasticism persisted in many of the practices of the Portuguese academy. Since the beginning of the twentieth century up to this period, the relationship between teaching and research, although sustained in some political and academic discourses and in the mission statements of some universities (Torgal 2012; Heitor and Horta 2012), was more a symbolic reference rather than a reality. Teaching was the core activity of both universities and academics.

The focus on teaching served a twofold purpose of the ideological dictatorship (Estado Novo). On the one hand, it controlled the formation of a small number of students (in 1974, the number of students in Portugal was only 40,000 in the four universities of the country) that would integrate the country's elite (Torgal 2012; Carvalho 2012). On the other hand, it limited the possibility of forming a national scientific and technological culture. Such phenomena were part of the overall ideological framework of a political and social agenda based on disinterest both in schools and measures to raise the educational level of the Portuguese population (Amaral and Magalhães 2005).

In the late 1960s and early 1970s, there were several attempts to modernise the Portuguese HE system and to build a national science and technology system (Torgal 2012; Heitor and Horta 2012). But only just after the Democratic Revolution of 1974 was it formally possible to institutionalise in the universities the Humboldtian logic for the organisation of academic work, with a particular emphasis on the articulation between teaching and research.

This possibility has emerged with the publication in 1979 of the legal framework for academic careers (Decree-Law 448/79). According to this legal document, along with the reconfiguration of the structure of academic careers, academics were assigned the responsibility to meet the three traditional missions of the university: teaching, research and service to society (Carvalho 2012). This represented an important step towards promoting research. Additionally, it constituted a major step towards renewing teaching and projecting the structure for the future framework of the national scientific and technological system (Heitor and Horta 2012). But above all, it was a watershed in the strategies of professionalisation and (re)construction of the ideology of academic professionalism (Carvalho 2012), apparently free from the stigma of a 'politicised university' under a totalitarian dictatorship (Torgal 2012).

However, the relationship between teaching and research is not consensual in various international studies on the mission of the HEIs (Hattie and Marsh 2004). For some authors, teaching and research are two clashing ideologies on campus relying on different ontologies and epistemologies of knowledge (Barnett 1992, 2003). The public and specialised knowledge promoted by research would be in contradiction with the private knowledge imparted by teaching basically oriented towards the development and benefit of the individual student (Romainville 1997). In this perspective, the complementarity between these two activities would be an idealistic statement of principles on the mission of the university, without a grounding in reality.

By contrast, other studies show that the complementarity between teaching and research is a perspective widely shared by academics (Massen and Van Vught 1996; Santiago and Carvalho 2004, 2008; Santiago 2007; RIHE 2008; Teichler 1996; Thys-Clément and Wilkin 1997; Newman 1994; Quamar 2004; Rousseau et al. 1993). The reasons for this are diverse: the utility of research in fostering teaching skills and vice versa (critical attitude, test ideas, etc.); the researcher as a learner, who allows for a better understanding of student learning; the researcher as someone who has to deal with unresolved problems, which can be transported to teaching; and the like. Those authors seem to indicate eventually that there may be a divergence between the agenda of the state and HEIs, particularly at the level

of its government and top management, and the agenda of academics. Probably the complicity between the state and HEIs and the alignment with the external pressure is more evident than that of the academics who act in the 'heart' of the HEIs. Most scholars, regardless of national contexts and including Portugal (Carvalho and Santiago 2008; Santiago and Carvalho 2012a, b, c; Santiago et al. 2012), continue to support the existence of close links between teaching and research, seeing these links as an important foundation of their culture and professional identity. There may be, at this level, differences between countries (RIHE 2008). Despite these positions by most academics, market pressures and managerialism have created tensions in the horizontal and vertical division of academic work (Santiago and Carvalho 2004). The insistence to dissolve what is internal and external, under the hegemony of market logic and managerialism, can limit the control of academics in the resolution of this tension.

This institutional environment is influenced by a new economy and market rationality, which elects rivalry/competition and the idea of business as its organising principle. Emerging pressures are defining a new specification of professional activities and academic tasks. Largely, this specification endorses productivism, one of the central components of managerialism/new public management (NPM), operating as a framework, based on the assumption that greater specialisation of academic tasks allows an increase in performance in teaching and research. This specialisation would require, as a corollary, the fragmentation and segmentation of the traditional roles of academics. A part of the academic staff (the least productive in research) would devote themselves to teaching duties, while another part of the academic staff (the more productive and entrepreneurial in the production of scientific knowledge) would devote themselves to research tasks.

The main principles for evaluating the performance of Portuguese academics were formalised in 2007 in the new legal framework for HEIs' governance and management (Law 62/2007). The law clearly reflected this 'new philosophy' of neo-Taylorism including the social division of academic work. Several Portuguese HEIs, to a greater or lesser degree, have assumed those principles as an opportunity to reconfigure the relationship between teaching and research, under the belief that greater specialisation of these functions leads to increased productivity, particularly in research.

This plot is much more complex. In fact the definition of performance profiles can also allow the 'management' of academics and their work, based, as we noted before, in their segmentation—the establishment of a body of tenured professionals, the most productive and more dedicated to research and postgraduate teaching; a body of hybrid tenure professionals but with higher workloads; or nontenure, hired part time (Enders 2001). Probably the pressure currently exercised by the 'rankings', or by other external benchmarking, is one of the possible factors that have contributed to efforts to resolve the tensions between teaching and research based on their separation and specialisation. The social prestige achieved in this 'arena' is an important means to gain status in the field of HE and thus also to have easier access to external resources. The rhetoric about the 'battle' of the rankings has been in Portugal an important element of discourse, used by governing bodies and the

senior management of HEIs, to legitimise the reconfiguration of academic work, particularly through the growing autonomy of research when compared to teaching. In this sense, in Portugal, research has become an ideology on campus, which holds a dominant position relative to teaching (Barnett 2003).

However, the pressures for the separation of teaching and research cannot be rooted only in productivism. The growing centrality of knowledge production that has been taking place in the HEIs, the effects of the implementation of the national assessment of research and the pursuit of cost-efficiency are another set of 'forces' that have contributed to the pressure regarding the separation between teaching and research.

The emphasis on research appears to be related also to the process of accumulation of symbolic capital by HEIs. The amount of knowledge produced, as recognised by peers, in particular through publications with international recognition, appears as a determinant factor for achieving the status of a 'research university'. The 'research university' is today (more than in previous periods) the great mythical reference that allows HEIs to emerge from anonymity and the 'periphery' of the field of HE and access to the elite of a stratified system. This emergence is also widely perceived as a determining factor in attracting the best students and reducing dependency on external funding.

The evaluation mechanism for research, which is the responsibility of the Foundation for Science and Technology (FCT), emerges as another one of the 'forces' that has strongly boosted the separation and segmentation of teaching and research. The evaluation of research is essentially based on scientific productivism. Such an emphasis has led to a revision of the relationship between teaching and research into the realm of postgraduate and graduate teaching. Thus, the notions of scientific teaching and scientific socialisation are beginning to be exclusively identified with postgraduate education, while the notion of training, closer to the vocational and professional dimension, is reserved for graduation. In this sense, we can ascertain that there is a risk of Portuguese HEIs abandoning the Humboldtian logic in the organisation of teaching for first-degree courses and relocating it in postgraduate schools, particularly those providing training for the PhD.

The institutionalisation of this division may have profound implications for epistemology, ontology and the social division of labour in academia. In graduate school, the relationship between research and teaching, or rather the teaching of research, includes the possibility of knowledge creation. Students are introduced to the techniques of scientific problem-solving, based on research-oriented teaching. The vertical levels of academic skills are increased through the emergence of an elite who are assigned the role of knowledge producers and project managers in the same discipline or interdisciplinary area.

For graduates, the lack of a relationship between research and teaching leads to an inclination for the application of knowledge, accompanied by a reduction of vertical levels of skills and a flattening of academic activities focused on teaching—curriculum development, systematisation of knowledge and the development of 'systems' of scientific information (de Weert 2001). This division of labour

produces academic statuses reflecting the fragmentation of the academic profession, thus favouring an increase in conflict on campus and contributing to the weakening of control by individual academics of their work.

Finally, restrictions on funding of HEIs and therefore the search for efficiency in raising funds abroad, the 'hunt for dollars', as stressed by Becher and Trowler (2001), emerge as a final incentive to separation and segmentation between teaching and research. On the one hand, HEIs are increasingly dependent on their successful researchers to capture funds for research (public and private), which favours autonomy in research institutions. Moreover, concomitantly, the focus of some academic groups exclusively on teaching may emerge as another important source of fund raising, based on their dedication to the manufacture of marketable education abroad (or classroom training distance), particularly if these 'products' are formatted for the new economy (Slaughter and Rhoades 2004).

We have seen that the changes we have been describing in the institutional environment of HE in Portugal are likely to interfere with the academic division of labour and, consequently, the control mechanisms of action and conduct of professionals. The fragmentation and segmentation of teaching and research weaken the traditional framework of reference for professionalism, built on Humboldtian logic, and induce new specifications in the social division of academic work.

9.3 Changes in Governance and Management and Their Impact on Teaching and Research

The Portuguese higher education system has followed a similar trend to that of HE reforms in many other developed countries (Barnett 2003; Deem et al. 2007; Slaughter and Leslie 1997; Slaughter and Rhoades 2004). First, after the 1974 democratic revolution, a law was approved creating a democratic representative regime as the basic principle for governance and management at the different levels (faculty, school and department). This new regime was based on parity between teachers and students in the composition of local boards (general assembly, executive board and pedagogical board) and also included representatives of the administrative staff. Emerging as a reaction against the former dictatorship, representative democracy and collegiality were thus recognised by all the institutional actors as the main HE structural governance and management principles. Simultaneously, at that time, a major concern of public policies was to invest in HE as an important leadership role in the modernisation of Portuguese society and the enhancement of Portuguese economic development. It was in this context that a binary system (university and polytechnic networks) was implemented with a strong emphasis on the vocational nature of the polytechnics.

Later, the University Autonomy Act (LAU) (Law 108/88) and the Polytechnic Autonomy Act (LAP) (Law 5/90) extended the collegiality and representative democracy principles to all levels of Portuguese higher education. There was not only a reinforcement of the previously institutionalised participation of teachers,

students and nonacademic staff in the decision-making at the basics levels but also an extension of this participation in the central governance and management bodies of the new higher education institutions, which were created by those new laws.[1]

However, the Portuguese HE system, along with other Western ones, has also experienced similar political pressures for change. In the middle of the 1990s, quality, efficiency, accountability and competition started to become important issues although more at the rhetorical level than in terms of effective practical measures (Amaral et al. 2002; Santiago and Carvalho 2004; Santiago et al. 2006). The Humboldtian philosophy, based on the academics' logic, remained, until the late 1990s, the main frame of reference and organising principle of HEIs' power structures (Santiago and Carvalho 2004; Santiago et al. 2006; Carvalho and Santiago 2008). It was only after the end of the 1990s that market and managerial pressures over higher education institutions have became more explicit (Santiago et al. 2006, 2008).

These pressures have derived from several factors: the difficulties associated with the operation of the traditional bureaucratic-collegial model in a massified system (Amaral et al. 2003), as the Portuguese system started to become after the 1980s; the recent financial and economic difficulties of the country leading to cuts in HE public financing; the hegemony of the neoliberal insights in the public sector 'modernisation' governmental policies, which, inevitably, touched HE; the governmental policy emphasis on the HE contribution to the knowledge society/economy (the importance of the vocational programmes for the new 'post-Fordist' market labour and the knowledge transfer to the industrial and service actors) for the purpose of promoting national competitiveness in the global economy; and the space opened to the emergence of new beliefs on how to regulate the academic activities and academics by the formalisation of the national evaluation systems of the curricular programmes (Law 38/94) and of research (Law 91/88).

More recently the new Higher Education Act (Law, 62/2007) proposed a new HEIs governance and management model which represents a rupture with the previous one rooted in the collegial tradition. Among the main traces of this new model that should be highlighted are those that are provoking important changes on the campus: the choice given to institutions to opt for a public institute regime or for a public foundation (regulated by the private law), the creation of a general council (substituting the previous collegial bodies, namely, the senate) with a strong representation of external 'stakeholders' and an extended political and strategic power (however, the academics elected as members remain the majority in this new governance body), the attribution of an executive dimension to the university rector and the polytechnic president and the creation of a management council with an increased power to control the administrative decisions.

[1] Meaning the general assembly (universities) or council (polytechnics), who elected the rector and the president of the polytechnic, and, in the university case, the senate that was the principal governance body and the main locus of the collegial power.

In this context, as reported from other national experiences (Bleiklie and Michelsen 2008; Musselin 2008), the shift from the collegial control of academic work to management control—market competition, productivity, external control of quality assessment and financing restrictions—can potentially weaken the academic profession and its professionalism. In this way, Portuguese academics seem to be losing collective (collegial) and individual power to control their academic work and its conditions—teaching, learning and researching, what and why—and this also represents a weakening of professionalism's appeal in the Portuguese academia.

9.4 Overview of the Portuguese Academic Career

Actually, the academic careers in public HEIs have been stabilised since their initial formulation at the end of 1970s. In accordance with the existence of a binary system, the academic career was segmented in two pathways: the university career (Decree-Law 448/79) and the polytechnic career (Decree-Law 185/81). In the case of the polytechnic subsystem, the entry in the academic career presents some formal differences vis-à-vis the university one, both at the career progression level and in the specification of teaching and research duties. In the two subsystems, the bachelor degree was the minimum requirement to be recruited, while in the university sector, access to the tenure track proceeded only after obtaining a PhD. In polytechnic institutes, this was possible with a master's degree. More recently, a new legal statute (Decree-Law, 207/2009) on the academic career has introduced some changes in these recruitment requirements: The PhD became the minimum to enter both in the university and polytechnic career, and the newcomers have to wait 5 years (experimental period) before they apply for a tenured position, but based on an individual contract instead of a collective one, as it was imposed by the previous statute.

Research activities and knowledge production have a core place in the university academic career, while in polytechnic institutes, due to its vocational character, the engagement in teaching and knowledge application activities were, for the most part, the formal criteria taken to progress in academic rank. The segmentation in the academic career introduced by the creation of the polytechnic career strongly contributes to the fragmentation of academic work and, eventually, to the weakening of the academic profession which no longer has a 'unified' normative, symbolic and scientific frame of reference to build the narratives and ideology appealing to professionalism.

Also in both subsystems, the promotion from one position to another in the academic rank is based on curricular analysis made by a committee and a scientific board and on a new academic credential—'Agregação'—for the access to the top of the career (full professor, in the university case, and co-ordinator professor with 'Agregação' in the polytechnic). Academics from both subsystems can hold a tenured position after 5 years in the auxiliary professor position (university) or

three for the adjunct professors in polytechnic institutes. Scientific productivity (more significant in the university case) is the main promotion criteria. Both in universities and polytechnic institutes, academics were also hired with a fixed-term contract which was renegotiated at the end of each academic year: This was the case of the 'invited professor' (university) and the 'equivalent professor' (polytechnic institutes). Some of them come from the entrepreneurial world and were not considered as 'formal actors' of the academic profession or of the local 'academic community'.

9.5 Methodology: An Overview on Information Gathering and a Summary of Sample Characteristics

The Portuguese team has carried out the CAP on-line survey from October to November of 2008 covering all the academics (from full professors to assistants) and researchers employed in all Portuguese public universities ($n = 14{,}164$) and all public polytechnic institutes ($n = 10{,}116$). The academic staff from the private universities and private polytechnics, as well as from the public military and police higher education institutions, were excluded from our survey.[2] This exclusion was necessary due to the difficulty to control the teaching mobility of the academic staff between these institutions. The researchers employed in the state-independent research national laboratories were also excluded from the survey because, in general, they have no teaching duties. In this study, academic is the term used to classify the professors and researchers employed by public universities and polytechnics in Portugal.

The survey (electronic survey) was mailed (and our e-mail invitation) to all teachers and researchers in Portuguese higher education institutions. This survey strategy was possible due to the collaboration of the central administration of each higher education institution which sent back the survey to their academic staff using their internal web network. The respondents filled out the survey through the web page of the project. As a result of this process, the total number of responses was 1,320. It was expected with this strategy to obtain enough respondents to allow generalisations at the national level. However, it is important to notice that two academic ranking categories (auxiliary professors from universities and adjunct professors from polytechnics) were overrepresented in our respondents. According to the official data from the ministry (OCES 2005a, b), auxiliary professors represented 29 % ($n = 4.150$) of the academics' universe (14.164) of public universities and adjunct professors 20 % ($n = 2.010$) of the polytechnics (10.116) (see Table 9.1).

[2] At the present time, there are 118 higher education institutions in Portugal: 47 universities (15 public, 31 private and cooperative universities, 1 non-integrated university institution; the Catholic university), 65 polytechnics (15 public, 46 private and 4 non-integrated schools of polytechnic institutions) and 6 military and police higher education institutions (4 military and police university institutions and 2 military and police polytechnic institutions).

Table 9.1 Academic ranks of the respondents compared with official data (2005)

Academic rank	CAP sample[a]		Official data[b]	
University	*N*	*%*	*N*	*%*
Full prof.	91	11.3	1,089	7.7
Associate prof.	135	16.8	1,911	13.5
Auxiliary prof.	441	55	4,150	29.3
Assistant	117	14.6	2,548	17.9
Others	18	2.2	4,326	31.6
Total	802	100	14,164	100
Polytechnic	*N*	*%*	*N*	*%*
Co-ordinator prof.	44	12.3	597	6
Adjunct prof.	196	54.9	2,010	19.9
Assistant	114	31.9	1,013	10
Others	3	0.8	6,506	64.1
Total	357	100	1,011	100

[a] Sample data based on the 'Changing Academic Profession' survey (Portuguese version)

[b] Official data based on OCES report (2005a, b)

As a consequence, in this research, as is the case for almost all empirical studies in the social sciences field, which adopts this sort of research strategy, it is difficult to determine how well our sample reflects the Portuguese academics' perceptions on the relationship between research and teaching. Based on the response patterns, one can suppose that many of those surveyed perceived the survey as too long and difficult to answer. For this reason, academics that responded only partially to the survey were not excluded from the sample. Additionally, in Portugal there are few studies on the academic profession and on academic work (see Santiago et al. 2006; Santiago and Carvalho 2008; Carvalho and Santiago 2008, 2010c; Soares 2001; Sousa 2011), and it is difficult to compare the CAP outputs with previous results gathered from other studies achieved within similar topics. In a few cases, it was possible to compare the CAP outputs with a 1995 survey based on the Portuguese scientific community (Jesuíno et al. 1995) even if this survey was much more oriented to researchers and research activities than for the all academics. To sum up, since the survey outputs are close to the conclusions of the few previous similar studies, the diversity in this academic sample seems to support a solid glance and generalisation over the academics' perceptions. But it is also undeniable that some results can be biased, and as so, in this case, academics' perceptions must be approached carefully in an exploratory way.

Looking now for some sample basic characteristics, 72.9 % of the respondents to the CAP survey come from universities and 27.1 % from polytechnics (151 missing values in this item). Besides, the majority of the respondents were men (55 %), which is a number that reflects the national gender composition of the academic profession. In 2005, 43 % (Santiago and Carvalho 2008) of the Portuguese academics were women.

The academic careers in public higher education had been unchanged in the last couple of decades (from the end of the 1970s until September 2009). In accordance with the Portuguese binary system, there are two different careers—university and polytechnics—with a different assignments 'philosophy': more research focused in universities and more teaching focused in polytechnics according to the vocational-/professional-driven objectives assigned to this subsystem. At the time of the survey, the first appointment in both careers was supported in the academic degree (bachelor). The minimum degree required to enter in tenure track was the only difference detectable in the two subsystems—the PhD to the auxiliary professor position in university and the master to the adjunct professor in polytechnic (since the approval of the new national career statute, the PhD becomes also the minimal requirement to enter in the polytechnic career tenure track).

Furthermore, the great majority of the respondents (94 %) are full time, but a relevant percentage of the academics have fixed term but no permanent employment and without a guaranty of a continuous employment prospects (22 %). Few are also continuously employed with no guarantee of permanence (3 %). Before the middle 1990s, this was uncommon in Portuguese higher education institutions.

9.6 Findings: The Relationship Between Research and Teaching, After All…

The empirical work of this chapter focused mainly on the results obtained with blocks and single items of the questionnaire, emphasising the perceptions of academics regarding the relationship between teaching and research or even about other situations that may affect this relationship. Thus, at first, we became interested in analysing the potential tensions between the perceptions of academics on the allocation of their working time between teaching and research and the preferences expressed for either of these activities or their combination. Secondly, we analyse the concepts of 'scholarship' of academics, bearing in mind its centrality in the relationship between teaching and research. Thirdly, based on positions taken by scholars who responded to the questionnaire, we propose a reflection on the institutional control of teaching and research.

9.6.1 Tensions Between Research and Teaching?

When classes are in session, on average, academics perceived that they are spending more hours per week in teaching (*mean* = 20.22) than in research (*mean* = 13.40). Nevertheless, the high value of standard deviation (9.722 for teaching; 9.900 for research) shows that there is a high variability inside each activity for the time academics allocated to it (Fig. 9.1). According with the academics' responses on the proportion of teaching responsibilities in each level of education and training,

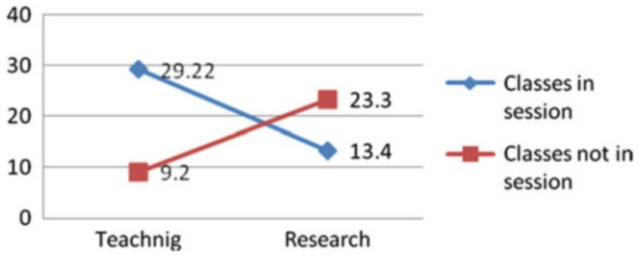

Fig. 9.1 Hours spent per week in teaching and research

one can suppose that the time spent in teaching is mainly devoted, in average, to undergraduate programmes (69.09 %), to master programmes (47.26 %), to doctoral programmes (19.15 %), to continuing professional educational programmes (15.88 %) and others (7.67 %). In the case of undergraduate programmes, there arises a relevant, and expected, statistical difference ($f = 18.552$; $sig = .000$) between academics from universities and polytechnics: 63.28 % and 83.90 %, respectively. These differences are mainly related with the distinction between the two institutions with universities more dedicated to research than polytechnics.

Furthermore, it is important to notice that at the time of the survey administration (2008), only a few doctoral training programmes, with a curricular component, were running in the Portuguese IES. The multiplication of these PhD education and training centres is a very recent phenomenon in Portuguese universities (polytechnics are not allowed to offer PhD's programmes, only professional master's).

Expectable are the differences found in the time spent on teaching and research when classes are not in session—academics, in average, allocated, in average, 9.20 h per week to teaching and 23.30 h to research. Standard deviation, however, still presents a high variability in teaching (7.68) but more in research (12.73). This probably means that there is an undeniable diversity in the academics' experiences in combining teaching and research that needs to be more addressed in future research on the topic. And expected also are the statistical differences found between academics from universities and polytechnics related to hours per week spend on research both when classes are in session ($f = 9.700$; $sig = .000$) and not in session ($f = 14.378$; $sig = .000$). The former spent respectively about 14.08 and 24.81 h per week in research activities, while the latter, 11.57 and 19.44. Similar differences emerge in the proportion devoted by academics from each subsystem.

To sum up, it can be observed that time spent in teaching and research is inverse when classes in or not in session. This may be due to the fact that the time academics spend on lessons and also on administrative and support roles with students does not leave much time for doing research. These academic roles are mainly accomplished when academics do not have lessons.

The 1995 survey (Stoleroff and Patrício 1995) shows that, for the 1992–1995 period, the distribution of the time for research and teaching has followed a similar general tendency detected in the national CAP survey—academics devoted more

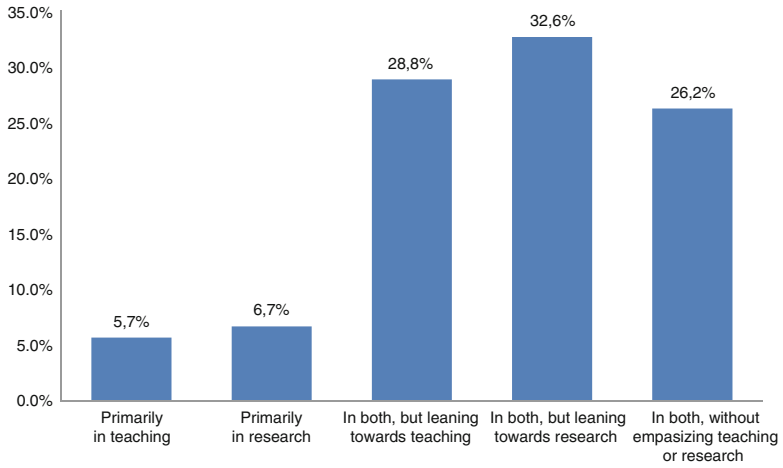

Fig. 9.2 Academics' preference for teaching and research

time to teaching than to research (per day the average of time spent on teaching was 31.5 % and 20.4 % of the surveyed devoted to it more than 50 %). These and the CAP results confirm less and more recent international outputs on the field (RIHE 2008; Bertrand et al. 1994; Blondin 1987; Fabi and Jacob 1986) since academics have the perception that they allocate more time to teaching than to research. In the Portuguese case, this tendencies remain even with the managerial and market pressures over the academics to be more productive in research and the centrality given to this activity for promotions in the academic rank career, as well as the core place assigned to research in the accumulation process of symbolic and economic capital (Carvalho and Santiago 2008, 2010a, b, c; Santiago and Carvalho 2012c). Teaching, according to the academics' perceptions, is still dominant in terms of the proportion of the academic workload. This unbalanced situation can create tensions in the articulation of the academic activities and tasks, being, eventually, the more relevant ones that conflict with undergraduate teaching.

In fact, when academics are asked about their preferences and interests concerning the relationship between teaching and research, even if, in general terms, the way they perceived this relationship seems to be balanced, a slight tendency to favour research (32.6 %) to that of teaching (28.8 %) (Fig. 9.2) can be observed. On the other hand, 26.2 % reported that they have interest for both teaching and research. Only a minority declare to have preference primarily in teaching (5.7 %) or in research (6.7 %).

Once more, differences can be found comparing academics from universities and polytechnics ($sig = 0.001$). The former emphasise more leaning towards research (universities, 35.6 %; polytechnics, 27 %) when they declare that both teaching and research are the subject of their preferences and interests, while the latter (polytechnics, 36.9 %; universities, 25.3 %) stress leaning towards teaching.

Table 9.2 Academics' perceptions on the compatibility between research and teaching

	Str. dis. 1	2	3	4	Str. agr. 5	Total
Teaching and research are hardly compatible with each other	24.1	22.9	24.7	20.1	8.1	*N* = 1,033 (100 %)
Your research activities reinforce your teaching	3.1	6.7	14.3	29.6	46.3	*N* = 945 (100 %)

Notes: Based on the 'Changing Academic Profession' survey data (Portuguese version)
Str. dis. Strongly disagree, *Str. agr.* Strongly agree

The previous findings on academic preferences and interest are in line with the academics' perceptions on possible tensions in the relationship between research and teaching. When asked about the compatibility between these two components of the academic work and the role of research vis-à-vis teaching, the responses of a high proportion of academics are very affirmative: One the one hand, academics strongly disagree and disagree (47 %) on the statement that teaching and research are hardly compatible with each other; even if neutral positions (24 %) emerge as a relevant result, and on the other hand, research activities are recognised as reinforcing teaching (76 %) (Table 9.2).

Summarising these results, it is possible to observe that academics are aware that they are spending more hours per week in teaching than in research. However, those from universities devote more hours to research than those from polytechnic institutes. Besides, almost all who surveyed assume the interconnection of research and teaching. But there emerge, among academics from universities, a slight tendency to undertake research as the most important component of the two activities, while academics from polytechnic institutes stress more teaching. The main objectives assigned to each subsystem—knowledge and research emphasis in universities and the more vocational characteristics of polytechnics—can explain, at least partially, this difference in the time devoted to research. Besides, a high proportion of academics surveyed claim that research and teaching are very compatible (there is no statistical difference between universities and polytechnic institutes), and an impressive majority claims also that research reinforces teaching.

These findings confirm some conclusions of previous Portuguese (qualitative) studies. According to these studies in spite of the governmental and institutional managerial and market pressures to fragment the academic work, the Portuguese academics surveyed seem to keep the Humboldtian set of beliefs and values as the main drivers of their academic professionalism 'ideology' (Santiago and Carvalho 2004, 2008; Carvalho and Santiago 2008).

This is an interesting point to develop further research since the relationship between research and teaching is not a convergent issue in the studies developed around this topic. Some refute this relationship, arguing that each of these two components of the academic work have their own logic and dynamic (Hattie and Marsh 2004) or even that, as ideologies, they are in conflict (Barnett 1992, 2003). On contrary, the analysis of our results shows that the articulation or complementarily between research and teaching is a scenario shared by a large majority of the Portuguese academics included in the sample survey. These conclusions are in line

Table 9.3 Academics' conceptions of scholarship

	Str. dis. 1 (%)	2 (%)	3 (%)	4 (%)	Str. agr. 5 (%)	Total
Scholarship is best defined as the preparation and presentation of findings on original research	3.4	5.7	17.8	35.5	37.5	*N* = 1,031 (100 %)
Scholarship includes the application of academic knowledge in real-life settings	2.6	6.9	13.9	42.6	34.0	*N* = 1,033 (100 %)
Scholarship includes the preparation of reports that synthesise the major trends and findings on my field	2.6	11.6	30.0	38.4	17.3	*N* = 1,023 (100 %)

Notes: Based on the 'Changing Academic Profession' survey data (Portuguese version)
Str. dis. Strongly disagree, *Str. agr.,* Strongly agree

with other studies developed in different national contexts since the 1980s (Massen and Van Vught 1996; Teichler 1996; RIHE 2008; Blondin 1987; Bertrand et al. 1994, among others).

However, our analysis shows also a split between the academics surveyed on the meaning given to research and teaching as interrelated components of their activities and tasks. It seems that the relationship between research and teaching is valued in different ways. In a certain sense, this phenomenon can translate into different views and a certain lack of consensus on the 'models' of the social division and organisation of the academic work around the combination of these core components of the academic professionalism. Eventually, what can be present in the academics' perceptions is a sort of 'modularisation' of the relationship between research and teaching: more emphasis in research, teaching or both. At least partially this can favour the external market and managerial pressures to increase the specialisation and the professional specifications of the academics and their work.

9.6.2 Conceptions of Scholarship

Respondents were also asked for their views on some statements linked to the conceptions of scholarship. These views can be a pertinent insight to analyse the role of academic knowledge in research and teaching. Table 9.3 shows, first, that the locus of research and knowledge as defining scholarship 'in action' is impressive for the large majority of the surveyed—73 % agree or strongly agree that scholarship involves the preparation and presentation of original research. But also, approximately 76 % agree or strongly agree that scholarship includes the application of academic knowledge in real-life settings research. Academics are less likely to agree (38 %) or strongly agree (17 %) that scholarship is best defined as the preparation of reports that synthesise findings in a given field. No statistically significant differences emerge in this topic between academics from universities and polytechnics.

These findings are rather interesting having in mind that the Portuguese higher education environment has since the end of the 1990s been clearly driven to favour a utilitarian and managerial hegemonic conception of the curricula and knowledge production (Santiago and Carvalho 2008). In fact, what emerges from the academics' responses seems to be a sort of hybrid conception of scholarship mixing up diverse epistemologies (Santiago and Carvalho 2004, 2012a, b): free and original academic knowledge (Ziman 1994), shaped in the Humboldtian and Mertonian (Merton 1973) principles and norms of knowledge production and dissemination, and the 'cognitive/instrumental' (Habermas 2006) or 'expert' (Brint 1994) academic knowledge mainly oriented to social and economic problem-solving. The former is linked to an endogenous, disciplinary or multidisciplinary, scholarship dynamics; the latter is also more connected with exogenous criteria which translate the market and managerial pressures teaching and research in the Portuguese higher education landscape (Carvalho and Santiago 2010a; Santiago and Carvalho 2012c).

9.6.3 The Institutional Control of Research and Teaching

The control of academics over research and teaching become institutionalised in the Portuguese higher education system with the implementation of a collegial regime after the 1974 democratic revolution. Academics were accorded by law to have considerable pedagogical and scientific autonomy along with the power to define 'what', 'why' and 'how' to research and teaching. In other words, academics gained the power of self-control both over the structuring of their activities and tasks and the epistemological and ontological dimensions of academic knowledge, mainly based on internal and disciplinary dynamics (Carvalho 2012; Carvalho and Santiago 2010b).

This power seems to have become at risk since the end of the 1990s when, as elsewhere (Deem et al. 2007), market and managerialism/new public management were injected into the Portuguese higher education system and institutions. Collegiality was limited, particularly after the 2007 new Higher Education Act (Law, 62/70), evaluation and quality assessment systems were formalised separately for research and study programmes, and knowledge society/economy became the hegemonic metaphor for knowledge production. This set of issues put strong pressures over both academics' professional actions and conducts, the social division of their work and the epistemologies of academic knowledge. Besides, it seems pertinent to analyse how, in general terms, academics positioned vis-à-vis these changes and, in specific terms, how they perceived the impact of these changes over their work in research and teaching.

When asked how influential they are in helping to shape key academic policies, the academics' survey responses show that this influence is strongly decreasing from the bottom to the top. The majority of academics feel that they are somewhat (43 %) or very influential (12 %) at the department level, and on contrary, they also feel that they lose this power at the intermediated level (faculty/school)—somewhat

Table 9.4 Academics' perceptions on their influence in the institutional decision-making process

	Not at all influential (%)	A little influential (%)	Somewhat influential (%)	Very influential (%)	Total
At the level of department or similar unit	15.1	30.4	42.6	12	*N*=817 (100 %)
At the level of faculty or similar unit	35.7	36.5	23.5	4.4	*N*=801 (100 %)
At the institutional level	57.6	27.2	11.8	3.3	*N*=778 (100 %)

Note: Based on the 'Changing Academic Profession' survey data (Portuguese version)

Table 9.5 Academics' views on institutions management 'styles' and environment

	Str. dis. 1 (%)	2	3 (%)	4	Str. agr. 5	Total
Top-down management style	7.7	11.4 %	33.5	28.4	18.9	813 (100 %)
Collegiality in decision-making process	8.5	18.4 %	36.6	28.9 %	7.5 %	836 (100 %)
Strong performance orientation	13	22 %	35.8	24 %	5.1 %	840 (100 %)
Cumbersome administrative process	3.0	12.9 %	25.7	27.7 %	30.7 %	844 (100 %)
Kept informed about what is going in institution	12.4	21.3 %	28.7	27.8 %	9.8 %	848 (100 %)
Lack of faculty involvement	5.4	12.8	28.7	32.4 %	20.7 %	851 (100 %)
Administration supports academic freedom	8.2	13.2 %	38.2	30.4 %	9.9 %	838 (100 %)
Top-level administrators are providing competent leadership	11.9	14.9 %	30.1	30.3 %	12.8 %	847 (100 %)

Notes: Based on the 'Changing Academic Profession' survey data (Portuguese version)
Str. dis. Strongly disagree, *Str. agr.* Strongly agree

(24 %) and very influential (4.4 %)—and, even more, at the top institutional levels somewhat (12 %) and very influential (3 %). There are no significant statistical differences between academics from universities and polytechnics (Table 9.4).

These tendencies in the academics' perceptions of their prospects for influencing the institutional decision-making processes are only partially confirmed by the characterisation they make of the institutional governance and management 'styles' and environment (see Table 9.5). We are saying 'only partially' because the results are somewhat contradictory. On the one hand, a high proportion of academics surveyed acknowledge that in their institution can be observed a top-down management style (47 %), a cumbersome administrative process (58 %) and a lack of faculty involvement (53 %). But simultaneously, the academics also claim that at their institutions, there is collegiality (36 %), support of academic freedom by the administration (40 %) and competent leadership provided by top-level administrators (43 %). In relation to the access of academics to the institutional information, it can be

observed a spreading of responses along the scale used in the survey. Also, it is important to stress that a relevant proportion of the academics surveyed are neutrally positioned vis-à-vis this set of statements on the HEIs' governance and management 'styles' and environment. Moreover, there is no relevant statistical difference between academics from universities and polytechnics taking each of these statements.

These results show that the academics surveyed express mixed feelings on their characterisation of the management 'style' and environment of their institutions. It seems that they are conscious of the power and leadership concentration at the top and of the lack of involvement of faculty in the decision-making processes. Nonetheless, a relevant fraction of them maintain that their academic freedom is supported by their administrators, though to a lesser extent, that collegiality is present at their institution, as well as that the top level is providing competent leadership, in spite of the cumbersome administrative processes. However, this hybridism is not totally a surprise as it is a point that is detected elsewhere (Deem et al. 2007) in face of the market and managerialist-driven changes crossing different national higher education contexts.

The overall results confirm, in general, other conclusions drawn from qualitative studies on the interpretation and responses from Portuguese academic middle management staff (Deans and Heads) to external and internal market and managerial pressures (Carvalho and Santiago 2010a, b; Santiago and Carvalho 2012c). Facing the institutionalisation of new managerialist archetypes in the higher education environment, which have been translated to the HEIs interior by top governance, the majority of the 'middle managers' academics felt that they have been losing power to intervene in the institutional decision-making processes. Moreover, from these conclusions it is possible also to stress that the collegial-/Humboldtian-oriented model seems to still a symbolic frame of reference for HEIs conduction. But the institutional 'periphery' and intermediate levels seem to be the locus where this model is making sense for academics. As it is claimed somewhere else, the Portuguese academics are 'still academics after all…' (Carvalho and Santiago 2010b).

This last phenomenon can help to understand the academics' perceptions over the internal 'forces' that have the primary influence in the social division and organisation of the academic work. In fact, for the majority of the surveyed, no relevant statistical differences were found between those coming from universities and polytechnics; the power to decide on the different dimensions of the structuring of the research and teaching activities and tasks dwells, primordially, at the basic units (faculty, schools and departments) and in their committees/boards. The exceptions are respectively the definition of the internal research priorities and the evaluation of research (see Table 9.6).

The CAP survey results used in this chapter show that the academics' agendas seem not to be consistent with the political and institutional agendas related to the control of research and teaching. The majority of the academics surveyed seem to ascribe the idea that the remaining collegial and professional power is located at the basic unities and in middle academic boards, namely, in what is related with the

Table 9.6 Academics' views on primary influence over research and teaching issues

	Government or external stakeholders (%)	Institutional managers (%)	Academic unit managers (%)	Faculty boards (%)	Individual faculty (%)	Students
Teaching load	1.2	9.0	35.1	51.6	3.0	0.1
Academic programmes	6.6	15.2	19.7	53.8	4.7	0.0
Evaluating teaching	3.8	19.0	24.4	28.8	4.4	19.7 %
Research priorities	1.5	12.0	22.7	30.1	33.5	0.1 %
Evaluating research	30.7	13.2	16.8	27.4	11.5	0.4 %

Note: Based on the 'Changing Academic Profession' survey data (Portuguese version)

control over research and teaching, including here the organisation of the academic programmes. This range of perceptions is suggesting also that the majority of the surveyed want to keep the 'local' control of this core component of academic work. Basic units (faculty, schools and departments) and their academic boards (or other institutional intermediate academic boards, depending on the HEIs' organisational structures) seem to be viewed as the most important space of professional autonomy in structuring the division of academic work. This potentially implies the upholding of the professional knowledge and endogenous criteria against the intrusion of exogenous managerial criteria on the definition of the academic jurisdictional boundaries.

As we mentioned above, it is important to notice that during the period of the application of the CAP survey, a new Higher Education Act (Law, 62/2007) was approved, being implemented since 2008. This new act came to impose a new institutional governance and management model oriented to enable and empower HEIs to be more committed to a market/entrepreneurial-drive 'self-reconstruction project'. From this period onwards, new evaluation and quality assessment systems were implemented at the national and institutional levels, as well as an accreditation system was created by the newly National Agency for Evaluation and Accreditation of Higher Education (A3ES). We do not know how far this new institutional context, which translates to an increase of internal and external pressures over academics, has changed, eventually, their relation with research and teaching (namely, the balance between these two activities).

9.7 Conclusions

With this chapter, based on the results of the CAP survey, an attempt was made to reflect upon the relation of academics with research and teaching, namely, the combination of the two activities. In Portugal, one can say that the structural location of

the relationship between research and teaching in the core of the academic activities comes only after the 1974 democratic revolution. Before, research was 'marginal' in the Portuguese higher education landscape, with the focus on teaching the main driver of academics' actions and conducts. Conflating with the strong elitist character of the Portuguese higher education system, and of the academic profession (Carvalho 2012), this emphasis on teaching was in line with the 'political university' idea of the dictatorship regime (Torgal 2012). At the time, the devaluing of research and the core place given to teaching translates into two main ideological strategies steaming from the governing dictatorship and which were spread all over the Portuguese society: On the one hand, the advance in scientific and cultural knowledge conflicts with the ideological framework oriented to maintain a low educational level of the Portuguese population (the political and social disinterest for education was one of the main traces of the 'Estado Novo' ('New State') policies); on the other hand, the emphasis on teaching makes easy a narrow training of the relatively small student body (more or less 40,000 students in 1973) in the system (four public universities in the country) which would form the elite of the country.

After the democratic revolution (1974), the relationship between research and teaching was reinforced by the law (Decree-Law 448/79) which introduced the 'Humboldtian revolution' to the Portuguese university landscape. It becomes clear that academics now have to assume the three traditional missions of the university, research, teaching and service to society, along with their duties on institutional governance and academic management at the organisational levels. Later, a similar statute was approved for polytechnics (Decree-Law, 185/81) but with a different 'philosophy' concerning research (and with a different academic career structure—see above, Sect. 9.3), which was replaced by 'experimental developments'. This institutionalisation was not only decisive for the renewing of teaching by research but also because it was an important step to move the academic professionalism away from the stigma of the 'Estado Novo' 'political university'.

However, since the end of 1990s, strong external pressures, arising under the influence of market and managerialism/new public management devices, started to impact the 'heart' of universities and polytechnics. This was also made possible by the increasing hegemony of rhetoric on quality, efficiency, productivity and the like, as well as the emerging tendencies for power concentration at the HEIs' top governance and management. In broad terms, it can be maintained that HEIs top governance and management bodies acted as mediators in the translation of those pressures to the interior of the campus and/or, for some cases, created of their own, anticipatory scenarios (Neave and Amaral 2012) in trying to fit governmental political expectations. In 2007, the new national Higher Education Act (RJIES, Law 62/2007) has come to materialise most of the previous market and managerial narratives by undertaking a reform that enhances market and managerialism/new public management as the main drivers for the creation of a 'new institutional and organizational order'—competition and enterprise/entrepreneurship become the structuring principles of HEIs organisation and functioning. Coincident with these phenomena was the formalisation, at the national level, of the research evaluation system of science and technology, which emphasised productivism in science, and the curricular and teaching evaluation

system (National Agency for the Accreditation and Evaluation of Higher Education) which was built up on the shoulders of techno-bureaucratic and managerial-driven 'philosophy'.

Within this overall context the traditional Humboldtian research/teaching nexus became the target of external pressures to be reconfigured. Probably due to the quest for the label of 'research university'; the attempts to be on the top position of the higher education organisational field, through the accumulation of symbolic, cultural and economic capital; or the beliefs on knowledge society/economy metaphor, research, namely, R&D, starts to be the dominant 'ideology' on the Portuguese campus. At the same time, teaching became increasingly perceived by the lens of the cognitive/instrumental and technical principles. Besides, in recent times, there are emerging inside universities tendencies to institutionalise a new logic in the social division of academic work, particularly visible in the attempts to reallocate the relationship between research and teaching in the postgraduate programmes, leaving aside graduate programmes, and/or to separate these two activities—research tends to be transformed into the territory of the most productive and 'entrepreneurial' researchers mainly affected to research and/or to postgraduate research/teaching activities (predominantly PhD programmes)—and teaching in graduate programmes becomes the 'island' of the less-productive academics in research or of those that 'prefer' to devote more efforts to teaching. The attempts to create a research market, namely, by the institutionalisation of a researcher profession, at the European level, which is the main aim of the ERA (European Research Area), seem to have an influential role in the attempts to reconfigure the relationship between research and teaching both at the national and institutional levels in science and technology and higher education.

In spite of this overall context, the analysis of the CAP results, inserted in this chapter, shows that the academic agenda may not be coincident with the political and institutional agendas. In fact the academics surveyed perceived that they are spending more hours per week in teaching than in research, and this can create tensions between research and teaching if we take into account that leaning towards research is more evident than towards teaching. Moreover, academics assume that scholarship is best defined as the creation and presentation of original knowledge, being also its application to 'real-life settings' an important concern according to their views. But even if research is undertaken as the most important component of the two activities, the majority of the academics surveyed did not find incompatibilities between research and teaching. Rather, almost the totality of them state that research reinforces teaching.

Furthermore, even if academics considered that they have a weak influence on decision-making at the institutional level, this is not the case at the departmental level, where a high proportion of them felt having been very influential. This is in line with their acknowledgement that in their institution a top-down management style is carried out, along with cumbersome administrative process and a lack of faculty involvement. But surprisingly, they also acknowledge that their academic freedom is supported by the administration and that the top level provides competent leadership. In this sense, hybridism seems to be the rule

according to the Portuguese academics surveyed with respect to most aspects of institutional governance and management. However, the picture seems to be more complex. The majority of the academics still assert that the primary influence on research and teaching issues is the faculty boards and that the evaluation of teaching as well as the definition of research priorities still is more or less under the control of their organic units or individuals. This may signify that Portuguese academics, apparently, still keep the collegial and individual control of the social division of academic work.

Our analysis of these set of CAP survey results shows that the managerialist/new public management devices, which have begun to colonise Portuguese higher education state policies, have not until now had the expected impact at the 'heart' of the HEIs, at least on academics which were involved in this study. However, further research is needed on this subject aiming to improve our understanding on the gap between political expectations and institutional and academic agendas on changes in higher education. But this quest has to be much more oriented by qualitative than quantitative approaches. Qualitative strategies allow the capturing of details and substantive experiences on the academics' relation with research and teaching that cannot be evidenced by surveys which mainly target general facts and phenomena.

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Chapter 10
Teaching and Research of Korean Academics Across Career Stages

Jung Cheol Shin, Jisun Jung, and Yangson Kim

10.1 Teaching and Research in Korean Higher Education Contexts

Korea has a long history of higher learning institutions. Its history traces back to 394 CE when Goguryeo, one of the strongest countries during the Three Nations Period, established *Taehak*, the great learning. Although it is quite difficult to make a direct connection between the classic higher learning institute and the modern university, there is certainly a historical linkage between them. Shin (2012) conceptualized higher education development in Korea in relation to two other factors—Confucian tradition and economic development. The Confucian tradition has functioned as the cultural heritage of higher education development in modern Korea, and there is a direct linkage between Confucian higher learning institutions and the modern university. For example, *Sungkyunkwan* University, one of the well-known Korean universities and ranked at 400 by Shanghai Jiao Tong, was established in 1398 6 years after the establishment of *Choson* Dynasty. The Sungkyunkwan University was transformed to a modern 3-year university in 1895 and reopened in 1946 after independence from Japan in 1945 (http://www.skku.edu/eng/).

Building on these traditions, Korean higher education developed with a strong influence from Western higher education after the establishment of modern higher education institutions in the late 1800s when Western missionaries began to preach Christianity. Many modern colleges were established at that time by Westerners,

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especially US missionaries. Examples are the well-known Korean universities Yonsei University and Ewha Women's University. In addition, Japanese higher education left Korea with a legacy of the modern university during the Japanese colonial period (from 1910 to 1945). Many colleges (most of them were 2-year vocational training-focused colleges) were established during the colonial period and reopened as comprehensive universities after liberalization in 1945 (Lee 1989).

At that time, as during the Japanese colonial period, the main goal of the classic higher learning institution was to be a teaching institution. The role of higher education institutions remained the same until 1960s. However, this changed in the 1970s when the government began to emphasize research as an engine for economic development. The Korean economy began to shift from a labor-intensive economy to a focus on heavy and chemical industry in the 1970s. The Korean government established the Korea Institute of Science and Technology (KIST) in 1966 as an incubator of research and development for economic development.

New trends emerged in the late 1970s when the government established the Korea Science and Engineering Foundation in 1977 and the Korea Research Foundation in 1981. The Korea Science Foundation was established to support science and engineering research and the Korean Research Foundation for pure and basic research—primarily in social science and humanities. In addition, the Korean government launched a project to facilitate and upgrade research facilities in the 1970s. For example, in 1987, they began to support research in private universities by providing special funding for upgrading lab facilities and to support experiments in engineering and natural sciences. They also supported research by providing additional salary for research and by supporting sabbatical leave abroad from 1975 onward. Although the research support was not enough to conduct large-scale research, the initiatives made it clear that the government was placing emphasis on university research.

This emphasis on research has been remarkable since the late 1990s when the Korean economy evolved into a knowledge-based and high-tech economy. A good example is the Brain Korea 21 (BK21) project which is a special research funding project to support university research (Shin 2009a). The project was launched in 1999 and the Korean government implemented its second round in 2006. As well as the Brain Korea 21 project, the government adopted a series of special research funding projects—Humanity Korea in 2008, Social Science Korea in 2010, and World-class University in 2008, for example. These policy initiatives have significantly contributed to the improvement of academic research productivity. Many international comparative studies (Shin 2009b; Cummings 2011; Cummings 2012) have highlighted the rapid growth of research productivity of Korean academics. Since the early 2000s, patents of Korean academics have increased dramatically as well as publication in international journals.

Because of the dramatic changes in government policy, Korean academics formulated different perceptions about teaching and research depending on their level of experience and seniority. For example, research was not a critical factor in faculty hiring and promotion for the "old generation," hired before the mid-1990s, but it is critical for the faculty hired in the 2000s when Korean government adopted aggressive

performance-based research funding policies, including the BK21. Many universities upgraded their faculty hiring and promotion criteria, and tenure became harder to obtain in many universities. The American mantra of "publish or perish" has become a general rule for many Korean academics (Shin and Jang 2013). In this context, the generation gaps have two dimensions—one caused by age and career experience and the other by government policy initiatives. This chapter will therefore focus on how teaching and research are perceived differently and how Korean academics conduct teaching and research differently across academic generations.

10.2 Background

This section briefly introduces related literature to guide the interpretation of our data and findings.

10.2.1 Institutionalization of "Publish or Perish" in the Late 1990s

Research productivity has been emphasized for both academic and administrative reasons. With the development of technology-based industry in the late 1970s and 1980s as the Korean economy shifted from heavy and chemical industry to a technology-based industry (Shin 2012), industrial development in automobiles, semiconductors, and shipbuilding required a new knowledge base. Another reason was to assure transparency of faculty hiring and promotion. By the 1990s, many Korean universities considered more than academic performance when hiring professors. Media reports about hiring scandals resulted in government guidelines (*Guidelines for Academic Personnel*) which outlined the required number of publications for hiring and promotion. This policy motivated academics to actively publish journal papers.

The Korean government also began to aggressively invest in research and development (R&D), thus improving both the quality and quantity of research. During the last three decades, the research and development fund has increased more than 30 times nationwide from 1,155,156 Million KW (approximately US$ 1 billion) to 37,928,599 Million KW (approximately US$ 33 billion) (Ministry of Education, Science and Technology 2010). Currently, the share of R&D of total GDP is 3.5 % which is among the highest in the OECD countries (Shin 2012). Although the largest share of the R&D expenditure is used by the industrial sector (75 %), university researchers have also benefitted (11 %) by the increased expenditure (OECD 2011). It is clear how much the Korean government emphasizes R&D compared with the total higher education budget when public expenditure on R&D is compared with the higher education budget which was only 0.6 % of total GDP in 2010. In these circumstances, Korean academics are relatively well supported in

the conduct of their research. This R&D fund is the main driver of academic research in Korea.

In response to these policies and initiatives, Korean universities began to require higher number of publications when hiring or promoting faculty. Universities did not pay much attention to faculty productivity until the mid-1990s when the Korean government launched a comprehensive education reform based on neoliberalism. Since then, performance-based evaluation and funding mechanisms have been deeply influenced by government policy. As a response to these changes, universities adopted course evaluation and academic performance evaluation. Some leading universities including Seoul National University also began to require ISI-listed journal publications for faculty hiring and promotion. Based on their experiences of publishing in international journals, some Korean universities or academic organizations began to publish journals listed in Thomson Reuter (Shin and Jang 2013). This changed the landscape of research from knowledge borrowing to knowledge production.

As a result of these initiatives, Korean academics became much more research productive as highlighted in many international comparative studies. The ISI data show that Korean academics published 8 times more papers in 2010 (40,391) than in 1995 (5,283) (data from Web of Science). As well, patents registered by Koreans in the three major patent office (USA, Europe, and Japan) have dramatically increased in the past 10 years from 1,638 in 2001 to 4,785 in 2010 (OECD 2011). Although a vast majority of patents are owned by industrial sectors, the share of universities in the ownership has been increased a lot. Korean academics also publish many articles in domestic journals that are not listed in the ISI.

This strong emphasis on research has had a negative impact on teaching, however. In many universities Korean academics are evaluated by research productivity rather than by teaching quality (Shin 2011a). Although government and institutional policies have contributed to academic research productivity, the strong research orientation harms college teaching. This has caused a serious problem because there is no commonly accepted mission classification between Korean universities where most of universities (four or more years of higher education institutions) identify themselves as a research university (Shin 2009b). Because most 4-year higher education institutions emphasize research productivity, the research productivity of Korean academics is the highest among the 19 countries in the CAP data.

This strong research orientation clearly has a cost, namely, the sacrifice of teaching especially undergraduate teaching. Teaching is less valued by the government and universities, although many universities establish teaching and research centers and student counseling offices. Recognizing this, the Korean government launched a teaching support project in 2008. However, research still has priority in most Korean universities because university and the faculty are evaluated and rewarded on the basis of research productivity. Although there is controversy on the nexus between teaching and research, many studies (e.g., Marsh and Hattie 2002) report that there is no or near-zero association between teaching and research. In addition, because of the strong research orientation, the level of job stress is the highest among the CAP participating countries. This is because academics have to limit their family and leisure time in order to increase their time on research (Shin 2011a).

10.2.2 Academic Activities by Career Stages

Faculty activities—teaching, research, administration, and service activities—differ by their academic career stage. According to the literature, academics' career stages are classified by different criteria, e.g., age (e.g., Shin 2011a; Jung et al. forthcoming), job experience (e.g., Bayer and Dutton 1977), job entry year (e.g., Evans 1995), or their academic rank such as junior and senior (e.g., Teichler 2011). Although the criteria and the findings of each study differ, there are some findings shared by all researchers. First, early career academics tend to focus more on research than on teaching and administrations (e.g., Akerlind 2008; Dowd and Kaplan 2005). Early career academics focus on research because they are not established in their discipline areas. Second, at a certain point in their career stage ("critical point"), they began to diversify their interests from research to administration and service on campus or off campus. The critical point is tenure status in the US contexts (Tien and Blackburn 1996) or habilitation in the German contexts (Kehm 1999).

Many academics begin to shift their attention from research to teaching after the critical point. They use their knowledge that they produced and/or obtained through their research in the classroom. The classroom teaching of mid- and late-career professors differs from when they were junior professors. In their junior careers, they use some content knowledge which they have not fully internalized which is why their classes are sometimes difficult to understand (Boice 2010; Kugal 1993). This changes in mid-career when they have begun to accumulate knowledge in their areas and they are better able to communicate with their students in and out of the class-room. As well as moving toward teaching, academics begin to get involved in service activities in their department, college, or university (e.g., Blackburn and Lawrence 1986) because they have a better knowledge about their university and are well networked with other colleagues on campus.

This shift in academics' interests and activities is closely related to the faculty evaluation and reward systems. In the USA, junior academics are expected to concentrate on research. Research productivity is a critical factor in tenure evaluation in most US research universities (Boyer 1990; O'Meara 2005). After tenure, academics have the freedom to choose to concentrate on administration and services if they wish or on teaching and research. Academics in the USA tend to choose one or more functions from the four categories of teaching, research, administration, and services. This is institutionalized through the evaluation and reward systems (e.g., O'Meara and Rice 2005). In many US universities, the administration and service workloads of junior professors are protected by senior professors, but this is not the case in Korean academic society (Shin 2011a).

10.2.3 Teaching and Research Practices by Career Stages

Teaching and research preference differ not only by career stages but qualitatively. For example, the teaching of junior academics differs from the teaching

activities of senior academics. The authors conducted a pilot study which showed how student course evaluations differ by career stages across subject areas. The data were collected from an undergraduate course in Fall 2010. According to the data, the level of satisfaction of undergraduate students declines as the age of instructors increases (Shin 2010). In general, students are not satisfied with the content or the instructional methods of senior instructors. This may relate to the fact that these instructors do not pay much attention to teaching having received tenure. On the other hand, junior faculty tends to have strong commitments to teaching, having been exposed to new theories in their field and taught in innovative instructional environments utilizing various teaching methods (Shin 2011a).

Junior academics tend to develop their research interests based on their courses or their dissertation topics. Their academic research is often an application of their dissertation. This has been frequently observed in publications by junior professors. On the other hand, senior academics tend to explore a wider view in their research as they are better networked with their colleagues (e.g., Katz and Martin 1997; Smeby and Try 2005). As a consequence, the research productivity of junior faculty is lower than that of the senior faculty. However, this can vary according to context, affiliated disciplines, etc. In Korea, for example, junior academics are relatively well networked with foreign scholars because they are research active and they develop their research interests with their colleagues abroad (Shin and Jang 2013). On the other hand, senior academics are less motivated to maintain their research because they enjoy job security. Readers are reminded that there is no post-tenure review in Korea.

According to previous studies, faculty productivity is bimodal, so that academics in mid-career (early associate professor rank) and mid-senior career (mid-career as full professor) academics are highly research productive (Bayer and Dutton 1977; Blackburn and Lawrence 1986). This may be similar in the Korean context. However, early career academics may be more research productive than senior academics because most of the pressure for publication falls on junior professors. Many Korean universities apply new faculty hiring and promotion criteria that are more stringent than before (Shin and Jang 2013). Rigid rules for junior professors and loose rules for senior professors coexist in many Korean universities leading to wide gaps in research productivity between them.

10.3 Data and Analytical Strategy

10.3.1 Data

The data for this chapter are from the Changing Academic Profession (CAP) collected in 2008 when a Korean team joined the CAP project. The survey was administrated through an online survey, and the sample was randomly selected from the Korean Research Foundation database (the foundation has been renamed the

National Research Foundation of Korea after the foundation merged with the Korean Science Foundation in 2008). The survey return rate was 13.2 %. Although the return rate is relatively low, it is similar to other countries that used an online survey in the CAP study. The Korean CAP data include 900 cases from 52,737 academics who are affiliated with bachelor degree-granting Korean universities. The data closely represent Korean academics by gender, rank, age, academic discipline, and institutional mission.

10.3.2 Analytical Strategy

Our primary goal of this chapter is to analyze how academics differ in their teaching, research, service, and administration across their career stages. The career stages are classified by the age of Korean academics. Although age has limitations to represent career stages, it is relatively easy to understand, and the classification is not quite different from the classification by other criteria such as job experience, entry cohort, or their rank. The age is classified by the three stages—early career (40 or under 40), mid-career (41 through 55), and late career (over 55). The three career stages used interchangeably with junior for early career and senior for late career depending on contexts.

In addition, we pay special attention to how these actives differ by their academic discipline. The higher education literature found that academic activities differ by their discipline areas (e.g., Biglan 1973; Braxton and Hargens 1996; Shin 2011a). The disciplinary differences were theorized as "paradigms" by Kuhn (1962), and many scholars (e.g., Becher and Trowler 2001; Muis et al. 2006) have been studied on how paradigms differ by disciplines. Biglan's study (1973) is a well-known empirical study that supported how Kuhn's paradigms are embedded in the US university context. According to Biglan (1973), academics differ in their belief about academic activities, their research methods, ways of researching, dissemination of research outputs, and their ways of working with their students. Biglan (1973) proposed three types of academic disciplines: hard vs. soft, pure vs. applied, and life science vs. nonlife sciences. Among the three typologies, the hard and soft dimensions are most frequently applied in academic research to classify academic disciplines.

The hard disciplines are the natural sciences, engineering, and medical sciences; the soft disciplines are arts and humanities and social sciences. The hard disciplines have a single paradigm, while soft disciplines have multiple paradigms. Because of the differences, hard and soft disciplines differ in their epistemology, research methods, research collaboration, and their ways of disseminating their research outputs. Academics in soft disciplines tend to emphasize teaching as well as research, while their colleagues in hard disciplines emphasize research. Their classroom teaching also differs by discipline. Academics in hard disciplines prefer lecturing because they have a single correct answer; on the other hand, academics in soft disciplines put more weight on classroom discussion because there are multiple answers

depending on contexts (Shin 2011a). However, these disciplinary differences differ by context. For example, Korean academics have a strong preference for searching out correct answers. This tendency has been socialized through their long-standing exam experiences that consisted of multiple choice tests.

This chapter will focus on how academic activities differ by their disciplines as well as by their career stages. Specifically, it will focus on how academics differ in:

- Their preference for teaching or research and how they allocate their time to different activities
- Their use of teaching methods and contents
- Their research collaboration
- Their research performance
- Their combinations of teaching, research, and service activities

10.4 Academics' Preference and Time Budget Across Career Stages

Academics shift their preference between teaching, research, administration, and service according to their career stages. Although the CAP data is a cross-sectional data, it shows how academics differ in their relative preference between teaching and research and also how they allocate their time differently to these activities. Korean academics in their comparison with Carnegie survey of 1992 increased their research preference from 55.7 % in 1992 to 68.0 % in 2008 which is the second highest increase in research preference after Australia. These changes were caused by the government policy for facilitating research. Between the two surveys—1992 and 2008—the Korean government adopted various policy initiatives to improve research productivity. These initiatives were fruitful, as shown in many international comparisons. On the other hand, these changes were made possible by sacrificing classroom teaching. Korean academics reduced their time on teaching from 21 h per week in1992 to 21 h in 2008.

Korean academics differ in their preference for research by their career stages and their academic disciplines, as shown in Fig. 10.1. The preference for research among junior academics is strong in hard disciplines, but their preference is continuously moving toward teaching when they became mid- and late-career professors. This is because universities have set high research standards in their hiring and promotion criteria for junior professors, and as a result junior academics demonstrate strong research preferences. However, the trends differ in the soft disciplines. Mid-career academics display a stronger preference for research than junior or senior academics. Academics in soft disciplines weigh teaching more than their peers in hard disciplines. As a result, their preference for research is relatively lower in their early career stages, but they became more research active in their mid-career stages. The academics in the soft disciplines are expanding their preference from teaching to research in their mid-career. Junior academics in soft disciplines tend to teach content researched by others but begin to teach content they themselves have researched in their mid-career.

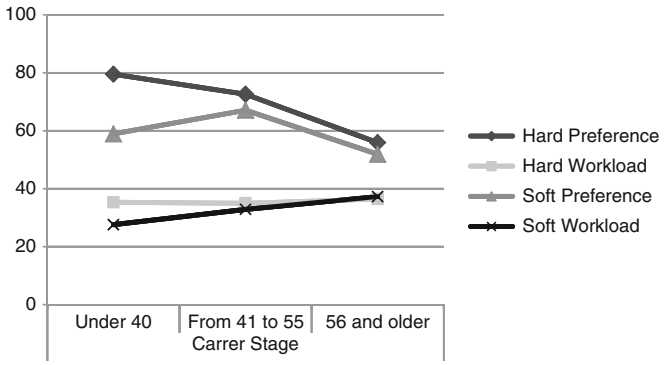

Fig. 10.1 Research preference and time for research (Notes: (1) Preference: Proportion (%) of academics that responded "primarily in research" and "both, but leaning toward research." (2) Workload: Proportion (%) of research hours among total working hours per week when classes are in session)

On the other hand, academics are continuously maintaining their time on research across their career stages including in the soft disciplines. The interpretation of this is quite complicated. Although senior academics reduce their preference for research, they do not reduce their actual time on research in hard disciplines. This can be interpreted from two ways. First, Korean academics have a strong perception that "scholarship" is research regardless of whether the research is discovery of new knowledge or simple application (even replication research is conducted by many academics). The second factor is related to policy. Most Korean universities adopted performance-based incentive schemes. The incentives are different from annual salary schemes and operate as an additional incentive scheme in the national university systems (this is different in private university). Therefore, senior professors tend to spend most of their time on research although they don't prefer research and they enhance their research productivity by publishing in domestic journals rather than international journals, which is more difficult.

10.5 Teaching Activities Across Career Stages

This section focuses on the teaching practice of Korean academics. The CAP survey includes two categories of teaching-related questions—teaching method questions and teaching content questions.

10.5.1 Teaching Methods

Most Korean academics use lecturing as their main instructional method. This is similar in many other countries including the USA. We broke the data down by

Table 10.1 Instructional method by career stages

		Under 40	From 41 to 55	56 and older
Hard	Practically oriented	79.5	80.1	82.4
	Value oriented	42.6	55.6	75.8
Soft	Practically oriented	71.6	72.4	77.8
	Value oriented	67.4	69.7	79.6

Note: Instructional method: Proportion (%) of academics that responded "Yes" to the question: "During the current (or previous) academic year, have you been involved in any of the following teaching activities?"

disciplines and career stages (see Table 10.1). The lecturing is broadly used as the main teaching method across career stages and disciplines. This implies that academics deliver most of their teaching using conventional instruction methods even though instructional theory and technology have developed enormously since the early twentieth century. In addition, academics use individualized instructional and project-based methods to supplement conventional lecturing. This suggests that lecturing may not fade away despite the advances in instructional technology and theory.

There are differences between the hard and soft disciplines in their adoption of supplemental teaching methods. In the soft disciplines, individualized instruction is used more frequently than project-based learning, while the relative preference for individualized or a project-based method differs by career stages in the hard disciplines. Here, a question arises as to why academics in the soft disciplines frequently use individualized than project-based methods. This is related to the content being taught. Teaching content is more easily individualized in the social sciences and humanities. Senior academics use these supplementary instructional methods less frequently, which suggests that senior academics are less aggressive in adopting new instructional methods. The perception that senior academics are less innovative in their teaching is supported by the data.

Interpreting the preferred teaching method is more complicated in the hard disciplines than in the soft disciplines. Academics in the hard disciplines prefer either individualized instruction or project-based instruction depending on their career stages. Mid-career academics tend to prefer an individualized learning method, while junior and senior academics prefer project-based learning. The question is what the project-based and individualized learning means in the hard disciplines. The mid-career academics produce internalized knowledge through their research activities; in addition, they have enough teaching experience to individualize their classroom teaching. On the other hand, junior academics are not well enough established to teach their course by individualized teaching which requires teaching experience and confidence about the content based on their research. Mid-career professors are more prepared to teach a course based on an individualized method.

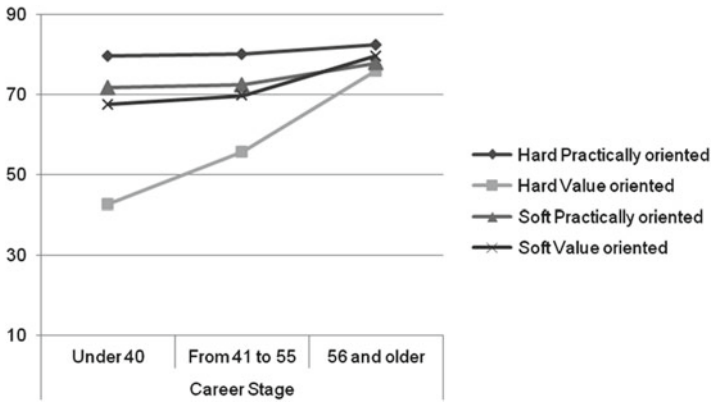

Fig. 10.2 Teaching content in classroom (Notes: (1) Practically oriented: Proportion (%) of academics that responded "strongly agree" and "agree" to the question: "Practically oriented knowledge and skills are emphasized in your teaching." (2) Value oriented: Proportion (%) of academics that responded "strongly agree" and "agree" to the question: "You incorporate discussions of values and ethics into your course content")

10.5.2 Teaching Content

Academics in the hard disciplines teach more practically oriented content than their peers in the soft disciplines; on the other hand, academics in the soft disciplines put more emphasis on ethical topics in their classroom teaching than their peers in the hard disciplines (see Fig. 10.2). These disciplinary differences support the general perception that the knowledge in soft disciplines has a relatively strong value orientation, while the knowledge in hard disciplines is more practical. However, according to the CAP as academics age they tend to emphasize practical dimensions and values. More in-depth studies are needed to interpret this. In our contacts with Korean academics, we note that junior academics tend to share knowledge according to "what the textbook says," while senior academics tend to focus on "what the knowledge means in the real world." Senior professors tend to think more about the "meaning of knowledge" and "meaning of teaching," while junior professors tend to try precisely transmitting predetermined knowledge to their students. Senior professors put more weight on practical knowledge rather than simply transmitting known knowledge, and they emphasize ethical dimensions as a "human being" in their classroom.

The senior professors know "what to teach" in their class, but they don't pay much attention to "how to teach" their students. This has implications for institutional leaders. The generational differences might need to be considered in designing faculty career development programs. The junior academics are encouraged to contextualize their knowledge in the social contexts and senior academics to apply new instructional methods and strategies in their classroom teaching. There are

huge generation gaps between senior and junior academics and between students and professors in terms of their perceptions, activities, and even value orientations. These dimensions should be considered in classroom teaching and designing teaching content.

10.6 Research Activities Across Career Stages

Academic research activities differ by disciplines and by career stages. This section will focus on how academics differ in their research approach, their research collaboration, and finally their research productivity in terms of their disciplines and career stages.

10.6.1 Research Approach

The distinction between pure and applied research has been discussed in many academic discourses as well as policy practices. A serious discussion about basic and applied research can be traced back to Vannevar Bush (1945) who argued that the university should be in charge of "basic" research, the industrial sector of "applied" research, and government of "development." However, the distinction between basic and applied research is ambiguous and controversial. In reality, the National Science Foundation supports applied as well as basic research. Similarly, the Korean Research Foundation merged science and engineering research with social and humanities research in 2008 to make research funding management more efficient. Nevertheless, there is still a distinction in the minds of academics between basic and applied research.

Another issue to discuss is about the goals of academic research. Is the research for commercial purposes or social betterment? This is another critical question to consider. Academic research was for not-for-profit purpose and for public use. In his definition of scientific knowledge, Robert Merton (1972) proposed four features where one feature is the noncommercial and nonexclusive use of scientific knowledge. However, this has been changing dramatically since the early 1980s when the Bayh-Dole Act was enacted in the USA. Through the Bayh-Dole Act (passed in 1980), the exclusive use of scientific discovery is protected by law even though the research is funded by federal taxes. Many academics, especially in science, technology, engineering, and mathematics (STEM) areas and biomedical areas, are actively involved in commercially oriented research. On the other hand, the economic benefit of humanities and social sciences research is relatively minor, and academics are less commercially oriented in these disciplines.

Academics in soft disciplines prefer to conduct basic rather than applied research, while academics in hard disciplines prefer to conduct applied research (see Table 10.2). Academics in hard disciplines tend to prefer commercially oriented research, while

Table 10.2 Research approach by career stages

		Under 40	From 41 to 55	56 and older
Hard	Basic	65.3	57.3	51.5
	Applied	77.7	80.2	82.4
	Commercially oriented	23.1	38.1	59.4
	Socially oriented	12.7	18.2	36.7
Soft	Basic	55.3	66.6	64.2
	Applied	77.7	69.4	57.4
	Commercially oriented	12.6	6.5	22.2
	Socially oriented	47.3	52.2	48.0

Note: Proportion (%) of academics that responded "very much" and "much" to the question: "How would you characterize the emphasis of your primary research this (or the previous) academic year?"

academics in soft disciplines prefer socially oriented research. These differences between the hard and soft disciplines in academic research represent what is happening in current academia. In recent years technology transfer has become a core part of the benefit generation for universities, especially highly reputed universities. On the other hand, many academics in the soft disciplines are interested in social betterment through their research. In their view, academic research is not to benefit either academics or their institution but for social betterment in general.

The disciplinary differences become more marked as academics move through the career stages. Academics in hard disciplines lean more toward applied research, but the reverse trend is identified in the soft disciplines where they move toward pure and theory-based research. The question arises as to why academics change their perspective on research. One explanation is that academics in the soft disciplines tend to pursue theory development later in their career, while academics in hard disciplines tend to focus on making a practical contribution (applied) to society through their research. This means that academics in the soft disciplines display a strong theory orientation, while those in the hard disciplines have a strong practice orientation by the time they have become senior academics. This dimension has rarely been reported previously because earlier research has not broken down the data by career stages.

Interestingly, academics in the hard disciplines became more commercially and also socially oriented when they became a senior. This is related to the fact that they are more likely to prefer to a practical orientation. On the other hand, academics in the soft disciplines demonstrate different patterns in their commercial and social orientations: junior academics are more commercially oriented, then less so in mid-career, and finally more so in their late career. This is difficult to interpret. On the other hand, their social orientation is the opposite of their commercial orientation. One interpretation is that most junior academics, who have been trained in a foreign university (readers are reminded that more than 40 % of Korean academics have earned their PhD from a foreign university), have a strong orientation toward commercial research; however, they became less commercially oriented in their mid-careers but more commercially oriented in their late careers to prepare their economic life after their retirements.

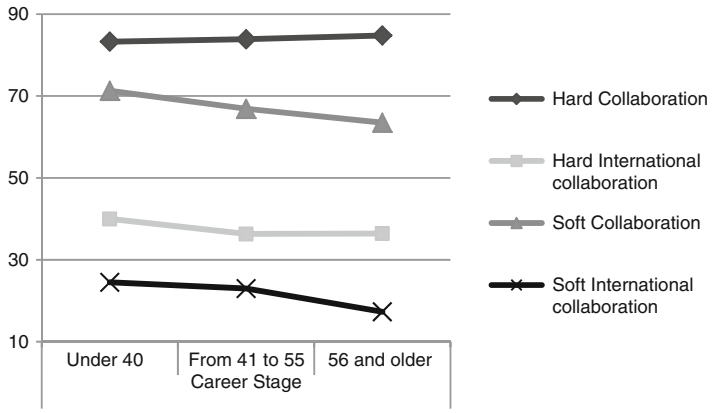

Fig. 10.3 Research collaboration across career stages (Notes: (1) Collaboration: Proportion of academics that responded "Yes" to the question: "Are you working individually/without collaboration on any of your research projects?" (2) International collaboration: Proportion of academics that responded "Yes" to the question: "Do you collaborate with international colleagues?")

10.6.2 Research Collaboration

Many academic researchers have found that academic collaboration is a significant factor in explaining academic productivity. Collaboration contributes to academic productivity in two ways. First, there is a synergy effect through collaboration especially between academics in different disciplines. Because of this, research funding bodies in many countries encourage collaborative research across different disciplines. Second, collaborative research produces more papers and citations by its very nature. Two academics working independently who each produce one paper produce for a total of two papers; however, the two professors could produce more than two papers if they collaboratively publish papers. This type of collaboration will produce more citations than single authored publications.

Academic researchers also differentiate between domestic and international collaboration. In most cases, international collaboration is highly valued (e.g., Abramo et al. 2008) because it usually leads to international publications and thus enhances the institutions' reputations internationally and contributes to global rankings. According to Shin and Cummings' study (2010), international collaboration has significant effects on international journal publication, while domestic collaboration does not. Similar findings were reported by Kyvik (2003) in the Norwegian context. Our question now is whether there is a difference in international collaboration between disciplines and between academics at the different career stages.

In terms of research collaboration, Korean academics in the hard disciplines more actively collaborate with their peers than do those in the soft disciplines (see Fig. 10.3). The patterns of collaboration differ by career stages. Senior academics in the hard disciplines are more active than those in the soft disciplines. This may be related to funding support in Korea. The National Research Foundation of Korea

Table 10.3 Research productivity across career stages

		Under 40	From 41 to 55	56 and older
Hard	Books & Book Ed.	0.96	2.33	4.89
	Articles	14.53	17.51	22.70
	SCI articles	8.20	9.07	7.20
Soft	Books & Book Ed.	1.85	2.95	3.41
	Articles	10.19	9.98	6.43
	SCI articles	2.24	1.67	1.65

Note: The number of publication in the past 3 years (from 2005 to 2007)

has dramatically increased research funding through various schemes, but the funding mainly favors collaborative research, which in most cases is led by senior academics. The funding opportunities are mainly in the fields of hard disciplines which provides senior academics in these fields with more funding opportunities and opportunities to collaborate with colleagues than their peers in the soft disciplines.

Interestingly, junior academics in Korea are more internationally collaborative than their senior colleagues according to the CAP data. Many Korean universities require international journal publications when they hire new faculty. These requirements are placed on the junior academics, while senior academics enjoy job security, as previously discussed. Senior academics are less research active than their junior colleagues, and they are reluctant to actively get involved in international collaboration which requires more time and energy than domestic collaboration. Most partners in international collaboration are research productive which means that they expect Korean scholars to be research active also. Finally, language is a serious barrier for senior academics wishing to engage in international collaboration, even for those who have earned their PhD from a foreign university.

10.6.3 Research Productivity

Research productivity also differs depending on affiliated disciplines, career stages, family environment, gender, etc. Recent studies have focused on academic disciplines and career stages (see, e.g., Shin and Cummings 2010). According to the CAP data, academics in the hard disciplines publish more journal articles, while academics in the soft disciplines publish more book publications (see Table 10.3). This is similar across CAP participating countries. This does not mean however that academics in the hard disciplines are more productive nor that academics in the soft disciplines are less productive. Academics in each discipline have different preferences in how they disseminate their research. The academic productivity measuring systems—publications and citation systems—have been developed in the hard sciences, but the system is weak in the social sciences and humanities. Unfortunately, these disciplinary differences have not been taken into account by many policy initiatives that rely on quantified publications and citations when assessing how productive an academic is.

Academic productivities also differ according to how long one has been an academic. In Korea, senior academics publish more papers in domestic journals or books, while junior academics publish more in international journals (so-called "SCI" journals). Interpreting the data becomes quite complicated because there are interaction effects between international journal publication, book, and domestic journal publication (Shin 2011a). This may be related to the fact that junior academics are required by hiring and promotion policies to publish in international journals. On the other hand, senior academics publish articles in domestic journals and books in response to the institutional requirements for research. The increase in numbers of books published as academics move up the seniority ladder is similar to data for other countries, including the USA.

The differences across disciplines and career stages should be given serious consideration by institutional policymakers. As discussed, junior academics' preference is for research while senior academics' preference moving toward teaching. A recommended policy is to assign more research to junior academics and a greater teaching load for senior academics. If academics spend more time on research, their time on teaching is generally reduced. Institutional leaders should make a strategic decision to maximize organizational effectiveness in teaching and research, but this is rarely given any consideration by Korean universities. Most place the emphasis on more number of publications in order to enhance their institutional rankings.

10.7 Nexuses Between Teaching and Research Across Career Stages

The nexuses between teaching and research are controversial issues between higher education researchers. Conventional German systems emphasize a research-driven teaching approach, and this model has strongly influenced many higher education systems globally. But while research is well integrated with teaching at the graduate level, it is not necessarily so at the undergraduate level. Two interesting studies were recently published in the journal *Studies in Higher Education*. An empirical study in a Korean university by Shin (2011a) found a negative association between teaching and research at the undergraduate level when the research productivity is measured by international journal publication. On the other hand, Horta and his colleagues (2012) found a positive nexus in US higher education settings. While the difference may be attributable to research designs, the conflicts between the two studies show how complicated the nexuses are.

The complexity between teaching and research nexuses may be caused by the fact that the nexuses differ by their career stages, academic disciplines, their preference between teaching and research, etc. Fortunately, the CAP data enable an analysis by academics' career stages and their affiliated disciplines. In addition, the CAP data included a survey question that asked whether research and service activities contribute to their classroom teaching. According to the CAP data, research and service activities contribute more in the soft disciplines than in the hard

Table 10.4 Nexus between teaching, research, and service across career stages

		Under 40	From 41 to 55	56 and older
Hard	Research → teaching	78.9	87.7	73.5
	Service → teaching	44.7	56.6	51.5
Soft	Research → teaching	82.1	88.3	85.2
	Service → teaching	55.3	63.0	58.5

Notes: 1. Research → teaching: Proportion (%) of academics that responded "strongly agree" and "agree" to the question: "Your research activities reinforce your teaching"
2. Service → teaching: Proportion (%) of academics that responded "strongly agree" and "agree" to the question: "Your service activities reinforce your teaching"

disciplines, suggesting that academics in soft disciplines better incorporate their research and service into their classroom teaching than their colleagues in hard disciplines (see Table 10.4).

When comparing Korean academics with the 19 countries in the CAP data, it is interesting to report that they incorporate their research into classroom teaching relatively well. Korean academics scored the highest in agreeing with the question of whether their research reinforces their classroom teaching. If we combine this finding with the data on the research productivity of Korean academics, we conclude that they are most research productive in terms of per faculty publication and that their research is well incorporated into their classroom teaching. However, this conclusion needs to be accepted cautiously because it is based on the academics' perception. Korean academics have a strong perception that teaching should be based on their research, but how that research is incorporated into their teaching needs to be reexamined through in-depth studies.

In his study, Shin (2011a) tested an association between different types of research productivity (international journal publication, domestic journal publication, and book publication) and teaching quality measured by classroom evaluations. He found that publications in book and domestic journals are better incorporated into their teaching, while international journal publication is not. Again, the complex relationship between teaching and research should be reexamined in follow-up studies.

10.8 Concluding Remarks

The Korean academic environment is one of rapidly changing in the world and is accompanied by policy initiatives designed to enhance the global competitiveness of Korean universities. Because of the policy initiatives, Korean academics have become the most research productive per capita among the 19 higher education systems included in the CAP study. This increased research productivity is the basis of the high-tech industry in Korea. Nevertheless, there are negative sides to this rapid growth of research productivity. The strong research orientation has resulted in high student tuition (Shin 2011b), professors teach fewer classes than before, and

the quality of research is sometimes questionable despite an increase in the number of publications. Finally, academic systems are becoming homogenized by evaluation and reward systems, and most universities adopt a normalized rule (e.g., number of publications and citations) as a main indicator of success.

As this chapter has pointed out, academics in the hard disciplines differ in their perception, activities, and even performance from those in the soft disciplines. For example, academics in the hard disciplines prefer to publish journal papers, while those in the soft disciplines prefer books. The differences between the hard and soft disciplines are related to the differences in knowledge production systems across disciplines. For example, biomedical sciences produce over 40 % of the total Thomson Reuter listed journal articles. Further, academics differ in their perception, activities, and productivities across their career stages. Although the career stages we applied in this chapter are simple (junior, mid-career, and senior career), we suggest policymakers and institutional leaders consider the different dimensions across career stages in their national and institutional policymaking.

Although the CAP data have enabled up to open the academic "black box"—teaching and research activities—our findings have limited generalization because the data are based on self perceptions. Follow-up studies based on more in-depth interviews and observation will provide better internal information on what the academics really believe, their activities, and their productivities. Special attention should be focused on how and why academics alter their preference in terms of their career stages, how they choose their teaching methods, and what they teach in their classroom. Another area of interest is how they interact with their students across their career stages. As well as teaching activities, academics' research activities are also of interest to higher education researchers. Topics that should be explored further include how do academics develop their research topics, why and how do they collaborate, how do they select their journals for publications, how are they evaluated and rewarded, and how do they incorporate their research and teaching.

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Part III
Teaching Focused Systems

Chapter 11
The Divergent Worlds of Teaching and Research Among Mexican Faculty: Tendencies and Implications

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11.1 Introduction

While the academic profession and its associated work are recognized as central to higher education, the function which has been associated with faculty work since its early times is teaching (Altbach 1991). Identified as the "key" profession, it is recognized as such because of its training function in relation to all other professions (Perkin 1987). Research is, on the other hand, a relatively recent development in the history of universities (Perkin 1991). Nowadays, however, higher education confronts, coming from society, a greater expectation of relevance, which includes the training of highly skilled personnel for a knowledge-based economy, research both in terms of the production and the application of knowledge in a relatively short period of time, and the enrichment of technologies currently in use by different sectors of society (Brennan 2007).

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Given the importance of teaching and research activities for higher education institutions, it is most relevant to analyze the relationship between these two central activities of academic work. In this paper we will explore this relation for the case of Mexican faculty. The paper is organized in four sections. In the first one, and in a brief manner, we will discuss the way in which teaching and research might be related, as well as the way in which such relationship might be studied. In the second section we will provide a brief historical and contemporary context of Mexican higher education, paying particular attention to current public policies relevant to academic work. At the end of this second section we propose, because underneath it runs a trans-intstitucional continuoa of prestige and compensation, an academic ranking scheme based on the academics' membership in the National System of Researchers (SNI, Sistema Nacional de Investigadores) and his/her highest degree (HD), which we identify as the SNI-HD academic rank. This ranking system will be used to organize the information that constitutes the third and core section of the chapter. In the third section we will deal with the way in which Mexican academics view their work, and data will be presented on faculty activities, use of time and productivity, academic preferences and notion of academic work, recognition and compensation, personal characteristics and, finally, job satisfaction and commitment. It will be argue that teaching and research activities serve to differentiate two academic worlds that, in the case of Mexican higher education, are increasingly drifting apart. The paper ends with a recapitulation of the information presented and a small set of reflections based on it.

11.2 The Teaching-Research Relationship

While it is commonly recognized that teaching and research, together with service, are at the core of higher education institutions and, therefore, are central components of academic work (Bowen and Schuster 1986; Boyer 1990), it is also now more commonly recognized that doing both with a high level of involvement and quality in the same institution or by the same individual along its entire professional career is not the rule (Clark 1987; Rice 1996). Additionally, it must be kept in mind that teaching and research admit various ways of being interpreted and implemented as a function of the discipline in which they take place (Becher 1989). So it is to be expected that the teaching-research relationship might vary depending upon the involved institution (e.g., undergraduate focused vs. graduate concentrated), the discipline, and the individuals, including their career stage. In this chapter we will center upon global individual differences, leaving for another moment the analysis of institutional, disciplinary, and stage-related dimensions.

Three general perspectives can be identified regarding the potential relationship between teaching and research in higher education at the level of individual academics (Fairweather 2002; Marsh and Hattie 2002). The first one states that teaching and research are mutually reinforcing and, in line which such a position, faculty can be highly productive in both activities. A second position maintains that there is actually an inverse or competing relationship between research and teaching,

particularly at the undergraduate level, where both activities compete for the limited time, resources, and energy that a faculty member has for doing his/her work (Leisyte et al. 2009). Finally, a third position holds that teaching and research are unrelated and, therefore, an academic can be productive in one aspect without necessarily being productive in the other. This last position is probably the one more consistent with Boyer's (1990) proposition that there are four types of scholarship that, although sharing a common substantive theme and requiring all of them intensive and high-quality work, differ in their emphasis on the teaching, integration, discovery, and application of knowledge.

In analyzing the potential relation between teaching and research, it is possible to proceed in at least two ways. In one manner, measures of teaching and research productivity are identified, and, afterwards, correlations between the selected measures are estimated to test the nature of the relationship under study. A second way to proceed is to identify groups of academics, for example, faculty that can be identified as teachers, researchers, or administrators (Villa-Lever 1996), or those fully and marginally involved in research versus teaching activities (Gil-Antón et al. 1994), and afterwards look how measures associated to teaching and research might vary between the identified groups. This last approach is the one we will follow in this chapter. More specifically, the starting assumption will be that research and teaching "productivity" are inversely related (Fairweather 2002; Marsh and Hattie 2002) and, thus, both activities can be captured, at least for the current Mexican situation, by way of a single classification scheme, which we propose can be considered a de facto ranking system. The work will be done taking into account only full-time faculty ($N_T = 1775$) sampled according to a procedure described in previous work (Galaz-Fontes et al. 2008, 2009).

11.3 Mexican Higher Education

Higher education in Mexico has a long tradition, as the first university dates to the sixteenth century with the creation of the Royal and Pontifical University of México in 1553, which in turn found support in the arrival, 1539, of the first printing press in our country (Torres-Mejía 2003). Since the creation of the leading modern universities of México, the National Autonomous University of México (UNAM) in 1910, the National Polytechnic Institute in 1936, and later other public universities historically associated to nineteenth-century higher education institutions, Mexican higher education has passed through significant changes in its teaching and research. Such evolution has been significantly related to the social commitment *ethos* of the public university and, as well, its close links to the construction of the modern Mexican State (Ordorika and Pusser 2007).

The main features of the current Mexican higher education emerged during the second half of the past century and, as a system, was composed mainly of institutions dedicated primarily to teaching. In addition, there were a few institutions dedicated to scientific research, but they represented a small proportion in the national tertiary education system, despite the creation of National Council for Science and

Technology (CONACYT, Consejo Nacional de Ciencia y Tecnología) in 1970. In order to analyze in some detail the more recent transformations of Mexican higher education, this section is divided into three parts: recent developments and present situation, current higher education public policies identifiable as the central drivers of change related to teaching and research activities, and, finally, the SNI-highest degree academic rank system that serve as a reference point to organize and discuss the data presented afterwards.

11.3.1 Recent Developments and Current Status

Mexican higher education changed substantially since the 1950s in three main dimensions: size, territorial decentralization, and diversification. The change in size is clearly evidenced by the increase in the number of students, institutions, and faculty; the decade of 1970 has been highlighted as the period of greatest expansion of the system (Gil-Antón et al. 2009; Rodríguez-Gómez 2010). So, while in the early 1950s México had 23 higher education institutions with the enrollment of 30,000 students, during the 1970s the students population enrolled in undergraduate programs increased by more than three times, from approximately 233,000 in 1970–1971 to 731,000 in 1979–1980 (Rodríguez-Gómez and Ordorika 2011). While in the late 1970s students represented an enrollment rate of 10 % relative to the 19–23-year group, by 2007 they constituted about 27 %. Another growth indicator is the fact that from 1990 to date, the higher education student population doubled, going from 1.2 to 2.8 million students, representing a change from 15 % to 28 % in terms of enrollment (Rodríguez-Gómez 2010). The number of institutions was also associated with this expansion. As early as the decade of 1970, there were about 115 higher education institutions (HEIs), while in 2007 the number had risen to a total of 2,314 institutions. Finally, the number of faculty augmented from 25,000 in the 1970s to 279,886 in 2007 (SEP 2008).

The changes just described did not only represent numbers. Mexican higher education also changed along other more qualitative dimensions: student body composition in terms of gender, socioeconomic status, and cultural diversity; type and geographical distribution of public and private HEIs; and, as a general context for the above aspects, institutional and system-wide planning and administration, as well as a new way by which HEIs were financed by the state (Rubio-Oca 2006). From the 1980s, the system maintained the same growth dynamics based on two factors: the presence of private higher institutions and the creation of new types of institutions in the public sector. More specifically, the decade of the 1990s is the period of greatest growth in student enrollment in private institutions compared to public ones, as their students made up about 30 % of the total system enrollment (Rodríguez-Gómez 2010).

Enrollment in higher education has gone through a decentralization process that has impacted the distribution of students in the geography of the country. From being concentrated in Mexico City during the 1950s, student enrollment had

decentralized towards the states, up to the point that the highest percentage of students enrolled now in them. Along with the decentralization of the system, diversification of institutions has been another dimension along which the transformation of Mexican higher education has taken place during the last two decades. More specifically, this change was achieved by creating new types of institutions: technological institutes, polytechnic universities (since 2003), and intercultural universities (since 2004). During the 1990s the number of new institutions reached nearly 100, with the largest number being technology oriented (Rodríguez-Gómez and Ordorika 2011).

Because the expansion of higher education during the 1970s demanded a huge increment in the number of faculty, academics were frequently incorporated into permanent positions independently of their fragile academic profile. For example, around one third of all new faculty hired during that expansion period had not obtained yet a licensure degree, and nearly another 50 % only had such a degree (Gil-Antón et al. 1994).[1] With the economic downturn of the 1980s, the Mexican State faced a higher education system in which faculty had serious limitations in their professional profile but also were severely underpaid, as by the end of the 1980s, faculty salaries have shrunk to around 40 % of its previous levels (Gil-Antón 2002).

Mexican authorities faced a dilemma in trying to solve such situation. They could provide, on the one hand, a general increase in faculty income and, at the same time, create conditions for significantly promoting academic work and/or, on the other hand, create programs targeted at high-performance academics in order to solve their income situation and, at the same time, send a message regarding what was considered an appropriate expected profile and work among academics. Public authorities at the highest level choose to follow the second option, and so it was that faculty merit-pay programs appeared in Mexican higher education, the National Researchers' System (SNI, Sistema Nacional de Investigadores) was established in 1984 being the first of its kind. It was expected to be temporary, but it was actually the seed for future merit-pay programs that are discussed below.

11.3.2 Public Policies and Programs Targeting Teaching and Research

At the core of the above changes, it is possible to identify, as it has already been hinted, a new set of public policies that have organized the relationships between the state and public higher education (Rodríguez-Gómez and Casanova-Cardiel 2005). In the context of decreasing public financial support, evaluation, accountability,

[1] The licensure degree is the Mexican equivalent to a nongraduate bachelor's degree. However, the licensure degree is closer to a first professional degree, as it emphasizes professional practice, as the name of the degree testifies to.

efficiency, and performance-based funding are now central concepts in the way Mexican higher education was coordinated by federal agencies and managed at the institutional level (Mendoza-Rojas 2002; Díaz-Barriga et al. 2008). The central actors and major components of higher education, students, faculty, academic programs, and institutions themselves, have been subject to a diversity of assessment processes since the early 1990s. We describe next the evaluation programs alleged to have had more influence on the teaching and research activities of academics.

First, at the institutional level, there is the Integral Program for Institutional Improvement (PIFI, Programa Integral de Fortalecimiento Institucional), a program with funding implications for the institution in which faculty work. In this program the profile of the faculty, particularly that of full-time academics, is most relevant and influences the attainment, beyond a base-level funding assigned to the HEI being evaluated, of additional funds critical to the development of the institution at question. At the center of the PIFI program are the concepts of academic capacity, defined by faculty's characteristics (highest degree, membership in SNI and PROMEP, and the "consolidation" level of the academic bodies in which they participate), and academic competitiveness (licensure and graduate programs accredited). PIFI includes other aspects of the functioning of an HEI (administration and infrastructure, to name two more), and so it has become central to institutions, to the extent that public funding based on student enrollment and faculty body is kept barely at a survival level, and additional financial resources are contingent upon academic and management performance, at least upon that reported in the documents and formats handed in to the federal Undersecretariat of Higher Education.

Second, at the level of assessment of academic programs, accreditation of licensure programs is considered an important component of the effort to ensure academic quality in Mexican higher education. The strategy has been to motivate institutions to earn accreditation from a group of independent agencies supervised by Council for the Accreditation of Higher Education (COPAES, Comisión Nacional para la Acreditación de la Educación Superior). In an effort to make such motivating more effective, since 2000 the Mexican State has funded incentives for public institutions that obtain accreditation for their academic programs. According to Rodríguez-Gómez and Ordorika (2011), by 2008 just over 1,000 programs had already received accreditation. Accredited programs represented 28.4 % of the 4,000 undergraduate programs offered at public universities in Mexico. Additionally, 222 (10.2 %) of the 2,169 academic programs offered by nonuniversity public institutions were accredited. For institutions it is very important to have accredited undergraduate programs, as this factor is heavily considered in the evaluation of the PIFI program, with definitive funding consequences for each institution. As it would be natural to expect, the characteristics of the faculty, including its amount relative to the number of students attended, are highly important for licensure programs to attain accreditation.

The National Graduate Program Register (PNP, Padrón Nacional de Posgrados de Calidad) is one of CONACYT's core programs, and its main purpose is to increase the quality of graduate programs. Being positively evaluated in such program implies, among other things, the availability of scholarships for students of the program in question. So PNP does have strong funding consequences for the

program and, indirectly, for the institution. As in the accreditation of undergraduate programs, a central aspect evaluated by PNP is the profile and performance of the faculty involved in a graduate program.

Finally, in the case of academics, there are four programs that affect them in a direct way: the SNI program already mentioned, the Program for the Improvement of the Professoriate (PROMEP, Programa de Mejoramiento del Profesorado), Academic Bodies (ABs), and, finally, institutional merit-pay programs (IMPPs). Two of the above programs, SNI and IMPPs, provide faculty with additional personal income for the period in which the academic is part of such programs. PROMEP and ABs, on the other hand, provide funding for infrastructure and complementary support for research-related activities. SNI is a national program run by CONACYT; it evaluates a faculty member on the basis of his/her research productivity and awards a monthly scholarship depending upon the level (out of four) in which his/her performance locates him/her. In addition to its personal income impact, SNI has become increasingly important for securing research funds. A central aspect of SNI is that the evaluation that supports the program is done by highly recognized peers, so it is the most prestigious of these programs, and it even influences strongly the outcome of the other three programs. The income provided by the already mentioned scholarships, although maintained along 3 years and even more, is not permanent, and the level of it can be reduced depending upon the evaluation performed at the renewal of the scholarship.

IMPPs, in contrast to SNI, are programs run at the institutional level. Although some HEIs provide extra funding for their programs, their financial support comes largely from the federal government. Also, while the rules and provisions under which these programs operate are dictated by the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público), it is not uncommon to find HEIs making adjustments to these programs in response to their particular realities (Cordero-Arroyo et al. 2003). As stated, IMPPs also provide additional personal income, although, when compared to SNI, on the basis of shorter time periods.

PROMEP is a national program that provides individual faculty with a one-time only stipend, while ABs provide support groups of faculty to improve their quality or "level of consolidation" (Urbano-Vidales et al. 2006). In general, such funds are labeled and are usually used for equipment, infrastructure, and research-related activities. The participation in these programs, however, has become increasingly important to HEIs as faculty's involvement in them influences powerfully licensure program accreditation, and PIFI considers it in an important way in its evaluation scheme. CONACTY, on the hand, has started recently to consider it as a factor in the decision of awarding research funds to a particular academic.

It should be noted, however, that associating funding to the evaluation of performance introduced powerful incentives for higher education actors to reach performance criteria in order to attain needed or expected levels of funding and its associated prestige. This situation has caused problems to Mexican higher education, as in the initial stage of the implementation of such programs, there was no evaluation culture to secure the prevalence of quality in the educational processes underlying the involved evaluations (Estévez-Nénninger 2009). So, for example,

some academics, confronted with the pressure of holding a graduate degree in order to attain a higher scholarship level, decide to obtain a graduate degree in institutions with questionable credentials, if not openly diploma mills.

11.3.3 The SNI-Highest Degree Academic Ranking System

Boyer (1990) warned of the need to rethink the roles of the teacher-researcher and proposed four dimensions for analyzing academic activity, all equally important: discovery, integration (both form the basis of research), application (service function involving technology transfer and consultancy), and teaching. Other authors have argued that teaching and research are often conducted in accordance with common rules, that the quality of their joint performance can be expected to be high, and that the degree of involvement of academics in the same institution or by the same individual over his/her academic career is constant (Clark 1987; Rice 1996).

The involvement and commitment of faculty in teaching and research and how these two activities are related has been recognized as something that can be diverse and varies according to the institution of labor affiliation (Clark 1987), membership in a discipline (Becher 1989), and the stage of academic career of individuals (Rice 1996). The analysis in this chapter will be based upon the differences that can be identified among academics, so differences between institutions, disciplines, and career stages will be left pending for further research. Furthermore, we will analyze the relationship between teaching and research through a process of identifying, first, groups of academics and thereafter analyze how the identified groups differ or are similar in relation to measures associated with teaching and research. Under this same logic, Gil-Antón et.al. (1994) compared groups of full-time academics and marginal part time; Villa-Lever (1996) explored differences between faculty that could be classified as teachers, researchers, and administrators, and more recently Galaz-Fontes et. al. (2010) proposed a classification scheme based on the degree of involvement in academic teaching and research activities. Because it has been found that the importances attached to the performance in each function are inversely related (Fairweather 2002; Marsh and Hattie 2002), both activities can serve as extreme points in one continuum that can help identify Mexican academics in the new classification scheme (Galaz-Fontes et al. 2010).

The analysis carried in this work classifies Mexican FT faculty according to, first, their participation in the National Researchers' System (SNI, Sistema Nacional de Investigadores) and, second, to their highest academic degree (HD). This ordered double consideration served as the basis for the SNI-HD ranking system. As membership in SNI is attained through a national peer-review process that focuses on published work, academics that declare to be SNI members, by necessity strongly research oriented, were located at the SNI rank, the highest. Out of the 1,698 FT faculty members that answered the pertinent survey items, 366 (21.5 %) were at the SNI rank level. Out of the 1,409 academics that did not reported to be SNI members, 240 (14.1 %) reported to have, as their highest degree, a doctorate or a postdoctorate.

All of them were classified as Non-SNI Doctors. Non-SNI academics holding up to a master's degree (765, or 45.0 %) were then classified as Non-SNI Master's, and, finally, Non-SNI Licensure faculty (327 or 19.3 %) were identified by not being an SNI member and, at the same time, by holding a licensure degree at the most (327 or 19.3 %). Using highest degree as a second classification criterion was considered reasonable because of the importance given to it by institutional academic regulations that usually assign less teaching and more research responsibilities to the faculty with the highest degree and rank and, most importantly, by the way in which recent public policies support faculty activities through specific institutional funding schemes (Rubio-Oca 2006). The order found in the results that are reported here justifies further, and most definitively, the use of the two criteria considered.

11.4 Teaching and Research Correlates of the SNI-HD Ranks

Having defined a faculty ranking system based on SNI membership and highest degree (SNI-HD), in this section we will analyze the relationships between teaching and research, having the proposed SNI-HD ranking as a background. The analysis presented is organized in six subsections. First, we will deal with academics' research and teaching productivity and, associated to it, with the way in which academics use their time. Second, differences in academic preference and the notion of teaching are considered. Third, income and recognition are looked at. Fourth, we observe how job satisfaction and commitment varies with the SNI-HD ranks, and, finally, several personal characteristics are explored in their relationship to those same ranks.

11.4.1 Research and Teaching Productivity, Use of Time

Table 11.1 shows, for each SNI-HD rank, the mean of a typical research productivity index based on the number of various academic publications and conference presentations for the last 3 years. As it can be observed, differences in the mean number of reported publications for the last 3 years are considerably and statistically different between each successive rank, ranging from a mean of 2.3 publications for Non-SNI Licensure faculty to a mean of 17.1 publications for SNI members. Non-SNI Master's and Non-SNI Doctorate academics reported means of, respectively, 5.9 and 10.8 publications. As it can be observed, the rank ladder created discriminates quite acceptably research productivity.

Table 11.1 also presents data on the average weekly hours that surveyed faculty reported to invest in research activities. Once again, differences are in the expected order, considerably and statistically significant for each successive rank. So, while Non-SNI Licensure academics reported a mean of 4.2 weekly hours devoted to research, the corresponding figure for SNI members was 20.3 h per week, with

Table 11.1 Academic publications in the last 3 years and weekly hours devoted to research activities, by faculty's SNI-HD rank ($N_T = 1{,}775$)

SNI-highest degree rank	Academic products[a]			Weekly hours in research		
	n	Mean[b]	SE	n	Mean[c]	SE
Non-SNI Licensure	267	2.3	0.3	283	4.2	0.4
Non-SNI Master's	711	5.9	0.3	697	7.4	0.3
Non-SNI Doctorate	237	10.8	0.8	224	11.8	0.6
SNI members	364	17.1	0.8	335	20.3	0.6
Total	1,578	8.6	0.3	1,539	10.2	0.3

[a]Index built by adding directly the number of academic books authored, books edited, journal papers, book chapters, research monographs, and conference presentations reported for the last 3 years

[b]$F_{3,1575} = 125.527$, $p < .00001$, Eta = 0.439, Eta Squared = 0.193

[c]$F_{3,1536} = 223.697$, $p < .00001$, Eta = 0.552, Eta Squared = 0.304

Table 11.2 Weekly hours devoted to classes and to teaching activities in general, by faculty's SNI-HD rank ($N_T = 1{,}775$)

SNI-highest degree rank	Weekly hours devoted to classroom instruction			Weekly hours devoted to all teaching activities[a]		
	n	Mean[b]	SE	n	Mean[c]	SE
Non-SNI Licensure	283	14.7	0.6	283	24.4	0.7
Non-SNI Master's	697	14.0	0.3	697	23.5	0.4
Non-SNI Doctorate	224	11.6	0.4	224	21.3	0.7
SNI members	335	8.0	0.3	335	15.2	0.5
Total	1,539	12.5	0.2	1,539	21.5	0.3

[a]In addition to classroom instruction, this category includes class preparation, grading, and tutoring students

[b]$F_{3,1536} = 62.212$, $p < .00001$, Eta = 0.329, Eta Squared = 0.108

[c]$F_{3,1536} = 57.948$, $p < .00001$, Eta = 0.319, Eta Squared = 0.102

Non-SNI Master's and Non-SNI Doctorate academics reporting, respectively, means of 7.4 and 11.8 h per week. So, as SNI academics reported investing more of their time in research activities and, at the same time, reported a larger number of academic publications than faculty reporting not being an SNI member or holding a lesser degree, the way in which these two variables behave provides acceptable concurrent validity, from the research dimension side to the SNI-HD ranking system built; the higher the SNI-HD rank of an academic, the larger and more productive his/her research activities.

Having documented that the SNI-HD ranks correlate highly with commonly used measures of research productivity (number of publications) and effort (time involved in research activities), Table 11.2 presents data related to the relationship between SNI-HD ranks and teaching activities. Specifically, for each SNI-HD rank, Table 11.2 shows the mean number of hours that faculty reported to be involved in classroom instruction and, on the other hand, the mean number of total hours devoted to teaching activities in general, which include not only classroom instruction but also activities such as class preparation, grading, and tutoring students.

As it can be observed, weekly hours devoted to classroom instruction and to teaching in general are very similar in each case, for Non-SNI Licensure and Non-SNI Master's faculty (approximately 14 h in the first case and 24 h per week in the second). It seems, then, that teaching responsibilities (classroom instruction) and teaching involvement (teaching activities overall) are little affected by whether an academic holds, as its highest degree, a licensure or a master's degree. In contrast to this teaching invariance, it might be recalled that Non-SNI Master's faculty reported investing more hours to research than their Non-SNI Licensure colleagues (means of 7.4 vs. 4.2 h per week) and, additionally, they also reported more publications (means of 5.9 vs. 2.3 publications during the last 3 years).

While there was practically no change in time devoted to classroom instruction and teaching activities when comparing Non-SNI Licensure and Non-SNI Master's faculty, Non-SNI Doctorate academics reported, on average and when compared to Non-SNI Master's, about 2 h less per week of classroom instruction and, as well, of teaching activities in general (11.6 vs. 14.0 and 21.3 vs. 23.5 h per week, respectively). On the other hand, Table 11.2 also shows that SNI members reported, compared to their Non-SNI Doctorate colleagues, nearly 4 h less of classroom instruction and, moreover, about 6 h less of global teaching activities (8.0 vs. 11.6 and 15.2 vs. 21.3 h per week, respectively). The previous figures show that, while not as strongly as with research measures, the SNI-HD ranks correlate quite well with time measures of teaching and teaching involvement. On the other hand, it appears that Non-SNI Master's, in comparison to their Non-SNI Licensure colleagues, are more involved and productive in research while, at the same time, maintain a high level of involvement in teaching.[2] Moving to a higher SNI-HD rank and, ultimately, becoming an SNI member, however, takes FT faculty to a situation in which there is a significant exchange between research and teaching involvement, to the extent that they become more involved in research while, at the same time, they reduce their involvement in teaching activities. It seems clear, then, that for a good number of academics, the relationship between teaching and research is such that they do not report doing it at the same time with high levels of performance.

In the same way that with research activities, it is also important to incorporate a measure of teaching productivity going beyond an effort measure. In this sense an informative measure of teaching productivity is the number of students attended during the current academic year. Non-SNI Licensure and Non-SNI Master's academics reported attending more than 100 students in licensure programs. In contrast, Non-SNI Doctorate faculty reported to attend, on average, 79 students, while SNI members reported a mean of 40 students being attended by them at the same program level. So the higher the level of research involvement as implied by the SNI-HD rank of the faculty, the lower the number of students attended at the licensure level ($F = 63.501$, $p < .0001$, Eta = 0.332, Eta Squared = 0.110). On the

[2]The majority of countries participating in the CAP International Study reported that their faculty invest less than 20 h per week in teaching activities overall.

contrary, the relationship between research involvement and the number of students attended at the master's level is direct when comparing Non-SNI Licensure academics to Non-SNI Master's, then to Non-SNI Doctorate, and finally to SNI faculty members (means of students attended, respectively, of 0, 5, 12, and 10; $F = 37.097$, $p < .0001$, Eta = 0.257, Eta Squared = 0.066). A similar pattern, although with lower numbers, is also observed between the relation of research involvement and students attended at the doctorate level ($F = 20.628$, $p < .0001$, Eta = 0.193, Eta Squared = 0.037). So a higher level of involvement in research is associated with attending fewer students at the licensure level, but with more students at the master's and doctorate levels. The "more" students involved at the graduate level, however, represent a small amount, particularly at the doctorate level, as compared to the licensure level. Notwithstanding this situation, these figures speak of a mutually reinforcing relationship between teaching graduate courses and tutoring graduate students on the one hand and research on the other. However, this relationship is relatively small compared to the relationship between SNI-HD ranks and hours spent in research activities, as evidenced by the fact that the Eta Squareds reported for the relationship between the SNI-HD ranks and students attended at the master's and doctoral levels are considerably lower than the one reported for the relationship between SNI-HD rank and hours involved in research (0.066 and 0.037 vs. 0.304).

11.4.2 Academic Preference and the Notion of Teaching

In this subsection, we describe the relationship between the SNI-HD ranks and academic preference and the notion of teaching held by different academics. While 36.0 % of Non-SNI Licensure faculty reported an exclusive interest in teaching, 21.9 %, 10.8 %, and 0.8 % of, respectively, Non-SNI Master's, Non-SNI Doctorates, and SNI academics reported the same. Conversely, 20.8 % of SNI members expressed an exclusive interest in research, while 6.6 %, 3.0 %, and 1.6 % of, respectively, Non-SNI Doctorates, Non-SNI Master's, and Non-SNI Licensure academics reported the same preference. It is interesting to observe that Non-SNI Licensure and Non-SNI Master's faculty do not differ in terms of interest when "in both teaching and research, but leaning towards teaching," is considered (46.9 % vs. 47.9 %, respectively), while they did differed in relation to an interest in both activities when giving preference to research (15.4 % vs. 27.2%). This last alternative was selected by 51.9 % and 70.9 % of academics in the SNI Doctorate and SNI ranks (Pearson chi-square$_9$ = 552.546, $p < .0001$, Eta directional towards preference = 0.535). Thus, attaining a higher degree has an incremental effect, in each step forward, in the interest in research when both teaching and research activities are considered. Interest in teaching when both teaching and research are considered, on the other hand, decreases only when a doctoral degree has been obtained, and diminishes even further for SNI academics (from 47.9 % to 30.7 % and 7.5%, respectively). It appears, then, that this result is consistent with the previous result regarding how interest in teaching changes less than

involvement in research when comparing academics from the Non-SNI Licensure and Non-SNI Master's ranks. However, the data also shows that academic preference is associated with the SNI-HD ranking: the higher the rank, the more preference for research than for teaching.

Table 11.3 presents data relative to the way Mexican FT academics understand scholarship and the associated nature of academic work. For various statements having to do with several topics, the percentages of respondents that stated to agree or strongly agree with them are specified. As it can be observed, the data show that academics in different SNI-HD ranks reported different ways of looking at scholarship and academic work. While Non-SNI Licensure, Master's, and Doctorate faculty stress teaching and tutoring as the core of scholarship, SNI academics are somewhat less prone to such statement (70.1 %, 73.0 %, and 66.7 % vs. 60.1 %, respectively). It is quite interesting that the assertion "scholarship includes an application dimension" generates high levels of agreement (83.7 % overall), from 79.0 % for Non-SNI Doctorates to 90.0 % for Non-SNI Master's, but again, less SNI academics agree on this assertion (72.4 %). Such figures most surely are related to the fact that Mexican higher education has been traditionally oriented towards the training of professionals. So, while according to Boyer (1990), the scholarships of teaching and application are highly regarded overall, the scholarship of integration (preparation of synthesis reports) is somewhat less seen as part of scholarship by survey respondents (64.8 % overall). The scholarship of research, on the other hand, is seen, overall, by a lower percentage (58.7 %) of respondents as the best way to define scholarship. As expected, SNI members agree considerably more with such a perspective than Non-SNI Licensure faculty (72.1 % vs. 52.4 %, respectively). In addition, SNI do not agree as highly as the other groups do, particularly compared to Non-SNI Master's, with the view that faculty in their discipline have a professional obligation to use their knowledge to address societal problems (57.0 % vs. 82.3 %, respectively). Why SNI academics expressed such view when compared to academics in other SNI-HD rank? Has the dynamics of becoming an SNI member and retaining such status reached a point in which "reality" has moved into a secondary plane? Or is it that SNI academics consider that generating and applying knowledge is a set of tasks difficult to perform by the same person? Finally, there is a low general agreement (11.6 % overall) with respect to teaching and research being incompatible, something that runs against the data previously presented, which shows, quite unambiguously, that for a vast majority of Mexican FT faculty, teaching and research are very difficult to do at the same time, particularly for those doing their teaching mainly at the undergraduate level.

The levels of agreement reported over two more statements show, from another perspective, that faculty in each of the SNI-HD rank see academic work from different points of view. Specifically, it appears that the quality of teaching and research is judged depending on the rank they hold in the SNI-HD ladder. So, for example, while only one in ten of Non-SNI Licensure faculty agrees or strongly agrees with the assertion "faculty with higher degrees do better teaching than faculty without those degrees," four in ten of the Non-SNI Doctorate or SNI academics reported the same. On the other hand, while three out of ten Non-SNI Licensure academics

Table 11.3 Percentages of FT Mexican faculty that reported to agree or strongly agree with various statements having to do with the nature of scholarship, by SNI-HD rank ($N_T = 1{,}775$)

		Teaching-research involvement classification				
Statement	N[a]	Non-SNI Licensure	Non-SNI Master's	Non-SNI Doctorate	SNI members	Total
Scholarship is best defined as teaching and tutoring students	1,667	70.1	73.0	66.7	60.1	68.8
Scholarship includes the application of academic knowledge in real-life settings	1,673	85.2	90.0	79.0	72.4	83.7
Scholarship includes preparation of reports that synthesize the major trends and findings of my field	1,656	58.8	69.0	67.2	59.6	64.8
Scholarship is best defined as the preparation and presentation of findings on original research	1,663	52.4	55.9	55.5	72.1	58.7
Teaching and research are hardly compatible with each other	1,679	12.4	11.0	13.5	11.0	11.6
Faculty in my discipline have a professional obligation to apply their knowledge to problems in society	1,680	78.4	82.3	77.2	57.0	75.3

[a]This N refers to the total number of surveyed academics that answered the question. Percentages for each TRIC group are calculated in relation to the number of academics within each such group

accept that the best research is carried out by SNI members, seven out of ten of this last group expressed the same opinion. These figures, along with those of Table 11.3, speak of a faculty body that is not homogeneous in terms of the nature of scholarship, academic work, and the credentials to perform it at higher quality levels.

11.4.3 Recognition and Compensation for Academic Work

This section focuses on data related to faculty's participation in two individual incentive and recognition programs in addition to SNI. The various SNI-HD ranks serve to differentiate participation of faculty in institutional incentive programs, which have been largely under the control of higher education institutions and which, like SNI, provide faculty with a monthly additional income. Thus, while 32.8 % of Non-SNI Licensure academics reported to participate in such incentive programs, 72.7 % of SNI academics take part of them (Pearson chi-square$_3$ = 114.918, p < .0001, Eta directional towards program participation = 0.261). The federal Program for the Improvement of the Professoriate (PROMEP, Programa de Mejoramiento del Profesorado), although not providing a monthly installment like institutional incentive programs or SNI do but rather constituting a recognition program targeted mainly to faculty in state public institutions who have obtained at least a master's degree, is also sensible to the SNI-HD ranking system. Only FT faculty working in public state institutions (n = 705) have been considered in this analysis, as the PROMEP program has been mainly targeted at such institutions (Urbano-Vidales et al. 2006). The results show that while 33.0 % of Non-SNI Master's academics participate in the PROMEP program, 58.2 % and 84.1% of Non-SNI Doctorate and SNI academics, respectively, participate in it (Pearson chi-square$_3$ = 174.721, p < .0001, Eta directional towards program participation = 0.498). In short, participation in these recognition programs seems to be associated to faculty's highest degree and, at the same time, involvement in research, rather than in teaching.

Having observed that recognition for faculty involvement in research activities is stronger than that provided for being involved in teaching, the question could be asked about the extent to which such recognition, in addition to that associated to highest degree, makes a difference in income. Table 11.4 presents data relevant to this question. As it can be observed, the more research-involved SNI-HD ranks, which are also those with the highest degrees, receive the highest mean contractual income: $24,465 and $22,458 Mexican pesos (MP) for Non-SNI Doctorate and SNI academics versus $17,703 and $19,622 MP for Non-SNI Licensure and Master's faculty. The difference between the lowest and the highest paid rank (Non-SNI Licensure and Non-SNI Doctorate groups, respectively) is around 38.2 %. The situation with income from incentive programs, however, is quite more differentiated. While Non-SNI Licensure faculty earn, on average, an extra $1,309 MP per month, Non-SNI Master's earn $3,553, Non-SNI Doctorates receive $6,670 MP more per month, and, finally, SNI members obtain $24,221 MP more every month! Actually, it can be observed that SNI academics, on average, have a larger income from the

Table 11.4 Mean monthly income (current Mexican pesos) from various sources for FT Mexican faculty, by faculty's SNI-HD rank ($N_T = 1{,}775$)

SNI-highest degree rank	N	Contractual income		Incentive programs' income		Total income[d]	
		Mean[a]	SE	Mean[b]	SE	Mean[c]	SE
Non-SNI Licensure	318	17,703	557	1,309	220	21,134	741
Non-SNI Master's	751	19,622	365	3,553	273	26,390	634
Non-SNI Doctorate	237	24,465	732	6,670	665	33,802	1,118
SNI members	330	22,458	541	24,221	959	48,768	1,413
Total	1,636	20,523	257	7,734	328	30,954	519

[a] $F_{3,1632} = 26.077$, $p < .0001$, Eta = 0.214, Eta Squared = 0.046

[b] $F_{3,1632} = 368.766$, $p < .0001$, Eta = 0.636, Eta Squared = 0.404

[c] $F_{3,1632} = 146.406$, $p < .0001$, Eta = 0.460, Eta Squared = 0.212

[d] Total income incorporates other income sources, so it is larger than the sum of the contractual and incentive programs' income, which integrate both institutional and external merit-pay sources

incentive programs in which they participate than from their contractual income ($24,221 vs. $22,458 MP, respectively). Putting together all income sources, Table 11.4 shows that the total monthly income varies from a low of $21,134 MP for Non-SNI Licensure to a high of $48,768 MP for SNI members, a difference of 130.8 %! The very interesting thing about this income differentiation identifies two points of interest. First, it favors largely research involvement and, second, it is based largely on the additional income provided by incentive programs.

Incentive income comes from both internal and external institutional sources. While the external federal incentive program known as SNI was created first, in 1984, and was targeted at faculty doing research, internal institutional merit-pay incentives were developed several years later and intended to compensate faculty mostly devoted to teaching (Cordero-Arroyo et al. 2003). Notwithstanding such intentions, the data just presented shows that research is by far the activity that is recognized by incentive programs as a whole, showing that institutional programs have not been able to counterbalance the additional compensation first awarded to research. Additionally, such data also shows that as FT Mexican faculty increase their professional qualifications (highest degree) and their involvement in research, the less stable is their income, as their average contractual share of their total income diminishes from 83.8 % to 74.4 %, then to 72.4 %, and finally to 46.1 % for Non-SNI Licensure, Master's, Doctorate, and SNI academics members, respectively. Is this a planned outcome of federal and institutional policies currently in place? Is this a long-term "healthy" situation for faculty, institutions, and Mexican higher education in general?

11.4.4 Job Satisfaction and Commitment

The findings related to the way in which faculty of the various SNI-HD ranks responded to questions about their perspectives on the academic profession and job satisfaction in general are next described. Irrespective of whether academics are

teaching or research oriented, only one in ten faculty agrees or strongly agrees with the statement that, if they had to do it again, they would not become an academic. Consistent with such responses, almost nine out of ten academics reported a high or very high level of overall satisfaction with their current job. It appears, then, that Mexican faculty are satisfied not only with their current job but also with their profession in general. Notwithstanding this situation, surveyed faculty reported some level of tension in their jobs, which grows somewhat as research becomes their main activity. So, while 18.1 % of Non-SNI Licensure academics agree or strongly agree with the statement that their job is a source of personal strain, 28.7 % of SNI academics reported the same (Pearson chi-square = 32.152, $p < .01$, Eta directional towards statement = 0.096). As it happens with institutional merit-pay systems, faculty's SNI participation is based upon a performance assessment done every certain number of years, with a real possibility of having a negative evaluation, which would represent not receiving, at least for the following year, the additional income that SNI provides, which in case of SNI members can represent, together with the income from their institutional merit-pay, more than half of their income. In addition to this situation, a lower percentage of SNI members, when compared to other SNI-HD ranks, reported to be tenured (e.g., 70.7 % vs. 81.9 % of Non-SNI Doctorate academics). Probably associated with both of these situations, a small percentage (about one in ten overall) of Mexican faculty evaluate negatively the convenience for a young person to begin an academic career in their field, but, again, this opinion is stronger for SNI academics than for Non-SNI Licensure (22.0 % vs. 9.0 %, respectively) (Pearson chi-square = 59.017, $p < .0001$, Eta directional towards statement = 0.144).

The CAP survey also asked about the level of affiliation of FT faculty in relation to their academic discipline, their unit of assignment (faculty, school, department, etc.), and their institution. The results show that for Mexican FT faculty, all levels of affiliation are high, ranging from 89.8 % of respondents stating a high or very high affiliation with their unit of assignment to 93.6 % reporting the same for their institution and, lastly, to 97.3 % stating such affiliation levels with respect to their academic disciplines. Despite the above results pattern, SNI academics reported somewhat lower levels of affiliation for both their unit of assignment (81.0 vs. 94.4 % when comparing SNI and Non-SNI Licensure faculty) (Pearson chi-square$_{12}$ = 79.592, Eta directional towards statement = 0.199) and to their institution (89.1 % vs. 95.6 % in the case of SNI and Non-SNI Licensure academics) (Pearson chi-square$_{12}$ = 66.950, Eta directional towards statement = 0.167).

11.4.5 Personal Characteristics Associated to the SNI-HD Ranking System

Having presented data relative to the discriminatory capacity of the SNI-HD ranking relative to various measures of research and teaching, as well as in relation to academic preference and work recognition and income, we now turn to ask whether academics in the various SNI-HD ranks differ along some personal characteristic.

Table 11.5 Gender and age characteristics associated with each rank of the SNI-HD ranking system classification (N_T = 1,775)

	Gender[a]		Age[b]		
SNI-HD rank	*N*	% Female	*N*	Mean	SE
Non-SNI licensure	322	30.4	321	49.3	0.6
Non-SNI masters	758	41.6	753	49.7	0.3
Non-SNI doctorate	238	31.5	236	51.4	0.6
SNI members	356	30.6	352	49.3	0.5
Total	1,674	35.7	1,662	49.8	0.2

[a]Pearson chi-square$_3$ = 21.047, $p < .001$, eta directional towards gender = 0.112
[b]$F_{3,1658}$ = 2.900, $p < .05$, eta = 0.072, eta squared = 0.005

Table 11.5 presents data on gender and age relative to the four SNI-HD ranks. As it can be observed, female participation is higher among Non-SNI Master's faculty (41.6 %), while the rest of the SNI-HD ranks has a female participation of around 30 %. A lower percentage of Non-SNI Doctorate reported being female, but also females are more teaching oriented, as a higher percentage of Non-SNI Master's, relative to the overall female participation rate, are women (41.6 % vs. 35.7 %, respectively). In relation to age, Table 11.5 shows that, despite the fact that all four SNI-HD groups have a similar age average, around 49.3 years for Non-SNI Licensure and SNI members alike to 51.4 years for Non-SNI Doctorate faculty, this last SNI-HD is around 2 years older than the other SNI-HD ranks.

We also consider in the analysis the SNI-HD rank and the period in which the implicated faculty first entered the academic profession, as defined by having had their first FT or half-time appointment in a higher education institution. There has been little change between the first entrance period considered (up to 1982) and the last one (1999–2008) for all the SNI-HD ranks, except for the Non-SNI Doctorate (Pearson chi-square$_9$ = 17.515, $p < .05$, Eta directional towards period of entrance = 0.073). So, of all Non-SNI Licensure faculty, 26.6 % entered the academic profession up to 1982, but 28.9 % did so during the last period considered. Given the teaching orientation of academics at such rank, it is natural to conclude that enrollment growth and, on the other hand, a low offering of personnel with higher degrees are influencing such dynamics. Moreover, the fact that 31.6 % of the Non-SNI Doctorate entered the profession up to 1982, while 19.0 % has come into higher education during the last period, speaks that many of these academics obtained their doctoral degree while already working in the profession. A point of interest here is why these faculty members, even though they have obtained their doctorate, which is a prerequisite to enter SNI, are not yet members of it.

The information related to the highest degree with which faculty in different SNI-HD ranks first entered the academic profession is described next. The current highest degree has been obtained, to a considerable extent, with faculty already been employed. Thus, 63.3 % of Non-SNI Master's faculty entered academic profession with a licensure degree, while 50.9 % of Non-SNI Doctorate did the same. It is interesting to observe that of all SNI academics, 42.1 % entered the academic

profession already holding a doctorate, while 23.6 % of Non-SNI Doctorate faculty entered the profession under similar conditions (Pearson chi-square$_6$ = 543.694, $p < .0001$, Eta directional towards highest degree = 0.536). It would appear, then, that obtaining a doctorate while already working in the profession is associated with conditions that make it more improbable to enter SNI, despite the fact that additional income that faculty members of SNI receive. Could it be that Non-SNI Doctorate faculty have engaged more significantly in teaching and that they prefer not to make the exchange in such work in order to gain entrance into SNI? Could it be that such faculty, having obtained their doctorate while they were already working, have not had working conditions that allow them to perform as to gain access to SNI? Could it be that the doctorate that these faculty obtained did not provide the immediate necessary training and academic capital that allow them to enter SNI? Or could it be that many Non-SNI Doctorates obtained their degree in order to be eligible to receive more incentives, but are not really interested in becoming researchers according to SNI criteria? Given the efforts targeted at increasing the highest degree level of in-service faculty, these questions are central in analyzing the public policies associated to such efforts.

11.5 Concluding Comments

What have we learned from our exploration of the teaching-research relationship based on the SNI-HD ranking system? In the first place, it has been shown that teaching and research activities and academic productivity of Mexican faculty behave quite orderly in relation to the proposed ranking system, which captures significant variations of these two central aspects of academic work. Based on the level of training and research performance of Mexican faculty, as well as the relevance assigned to highest academic degree by public and institutional policies, the SNI-HD ranking system was built to be closely associated with highest degree and, on the other hand, with the membership to the National Researchers' System (SNI), which is a nationwide merit-pay system based on proven levels of research productivity (referred publications essentially). It is our contention that the proposed SNI-HD ranking constitutes a supra-institutional academic rank system for all FT faculty working in public HEIs: it constitutes a series of stages, it requires time and meeting a set of criteria, and, finally, it has associated to it an increasing set of benefits, most obviously prestige and income.

Second, comparisons of academics in different SNI-HD ranks showed that, in the Mexican case and beyond a certain level of teaching activity (around 8 h of classroom instruction and an additional seven of complementary teaching activities), teaching and research activities are inversely related, particularly at the level of undergraduate academic programs. The same holds for productivity measures like number of publications reported in last 3 years and number of undergraduate students attended during the current academic year. When considering number of graduate students, however, there are signs of a positive relation between teaching

and research. The intensity with which graduate teaching takes place, however, is so low that it does not modify the general relationship between teaching and research. Mexican higher education system confronts a very important challenge in terms of increasing student enrollment rates from about 30 to 50 and even 60 % within the next 10 years, but, at the same time, there is an increasing pressure for academics to increase their contribution in science and technology (ANUIES 2012). The data presented should be considered in the design of an appropriate strategy, as it shows that left to its own dynamics, more teaching implies less research.

Third, faculty members that are more involved in research are more recognized and, moreover, have a larger income than faculty more involved in teaching. The extra income, however, is based in a disproportionate way on income coming from merit-pay systems. Of these, the most important, the SNI membership, is administered at the federal level, so research-oriented faculty are faced with the challenge of having to respond to two, not always aligned, sets of rules in order to maintain their status. This might be related to the fact that, despite high levels of affiliation to the unit in which they work and to their institution, SNI members reported lower commitment levels to both of them than Non-SNI Licensure academics. Such arrangement, on the other hand, has an important negative side effect. Because such an important percentage of an SNI member income comes from the corresponding federal agency, they are forced to be more attentive to the dynamics of such agency than to the dynamics of their local institutions. There is evidence, in this respect, that in many HEIs local academic life, including particularly faculty participation in the governance of the institution, is not being attended properly by SNI members.

Associated with the way it is structured and its growth, Mexican higher education has kept bringing in faculty without a doctorate or, even more so, without a master's degree: four out of ten new faculty members hired during the 1999–2007 hold a licensure as their highest degree, while only two out of ten hold a doctorate. This dynamic is creating and reinforcing two worlds of scholarship that, afterwards, institutions and governmental agencies will try to integrate by various professional development programs which, because they are targeted at so large a number of faculty members, will require significant amount of institutional resources. However, the question remains to what extent these two worlds will be compatible given that one responds to an institutional teaching-oriented reality while the other is more related to an external agency decided to increase research.

Given the public agenda of the federal government in trying to reach an enrollment rate of 60 % by the year 2020 (Tuirán and Avila 2011), it is very important to promote an open discussion about the implications that such growth can have. In particular, such growth could separate more the teaching and the research worlds, much to the detriment of all those involved in higher education and society in general.

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Chapter 12
Research and Teaching in a Diverse Institutional Environment: Converging Values and Diverging Practices in Brazil

Simon Schwartzman and Elizabeth Balbachevsky

12.1 Introduction

Brazilian higher education is a well-known case of extreme diversity. Not only the private sector is huge, answering for 74 % of all undergraduate enrolments,[1] but, in both private and public sectors, one finds a large variety of institutional arrangements and profiles. Beyond the divide between public and private sectors, the most obvious difference is that between universities and nonuniversity institutions.[2] In 2010, among 2,738 institutions, only 190 held the status of universities, of which 101 were public. In spite of the small number, universities, both public and private, answer for 52 % of all undergraduate enrolments. Huge universities are found both at private and public sectors. Public universities tend to be better endowed and institutionalized, with 84 % of the academics holding full-time contracts, while private universities tend to offer less adequate academic environment, with only 37 % of their academics holding full-time appointments. Nonuniversity institutions are mostly

[1] Ministry of Education, Higher Education Census for 2010.

[2] To be considered a university, a higher education institution has to meet a series of requisites related to the number of professors with doctoral degrees and full-time contracts and at least two doctoral and four MA degree programs. Public universities can be created by law, but private institutions can only accede to university status after a formal assessment and approval by the Ministry of Education. Degrees provided by university and nonuniversity institutions have the same legal value; universities, however, have the autonomy to create new course programs, while nonuniversity institutions depend on case-by-case authorizations.

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private (92 %) and tend to show an even poorer institutional environment: in this segment, only 17 % of the academics have access to full-time contracts.

These differences provided by official categories do not tell the full story. In fact, universities can differ widely in terms of their commitment to graduate education and research, as well as in the quality of the "undergraduate" or professional degrees they provide. Among public universities, only a few are strongly oriented toward graduate education, with more than 30 % of all enrolments at this level. Most public universities (and all public nonuniversity institutions, as well as all nonuniversity institutions) are dedicated to provide 4- and 5-year professional degrees in the social, health, and technical fields, as well as teacher education (there is no undergraduate education in Brazil in the American or English sense). To better deal with this variety, this chapter makes use of own typology: research-intensive universities, public regional universities, mass-oriented private institutions, and elite private institutions.

12.1.1 Research-Intensive Universities

The degree of involvement with graduate education (master's and doctoral programs) is the best indicator for measuring the institutional commitment to research. In fact, as pointed out by the literature (Oliveira 1984; Durham and Gusso 1991; Balbachevsky and Schwartzman 2010), the process of institutionalization of research in Brazilian universities is closely linked with institutionalization of graduate education. Universities with strong commitment to graduate programs provide better institutional environment and infrastructure, attracting the best scholars in the country. Thus, they are also best positioned to secure access to the resources available for supporting research. This self-reinforcing process has introduced a strong differentiation among public universities, creating a small number of research-intensive universities, including, among others, the state universities of São Paulo and Campinas and the federal universities of Rio de Janeiro and Minas Gerais.

12.1.2 Public Regional Universities

Most other public universities, whether supported by the federal government or by states, are in practice teaching institutions, where academic life tends to gravitate around professional programs. They offer good contracts (full time with a small teaching load) but poor support for research, both in terms of infrastructure and in terms of prestige and recognition attached to it. Graduate education and research are small endeavors, usually confined to a small number of departments, and regional issues tend to be placed at the top of their research agenda (Coutinho et al. 2003). These universities also play a relevant role in competence building at regional level. Examples would include the state universities of Bahia and Rio de Janeiro and the federal universities of Ceará and Juiz de Fora.

12.1.3 Mass-Oriented Private Universities

In the private sector, there are some institutions that are nonprofit (including denominational universities and some institutions supported by local institutions), but most of them are for profit, including both small, family-owned institutions and large universities with shares listed in the stock market. Regardless of the differences in size and legal status, most of these institutions are confined to a kind of "commodity-like" market, where the gains are mainly sought in improving the institution's operational scale. Most of the increase in higher education enrolment that took place in Brazil happened in this mass-oriented segment of higher education institutions. Examples include the Universidade Paulista (UNIP), Universidade Luterana Brasileira (ULBRA), and the Estàcio Group, a holding of many institutions totally about 260,000 students.

12.1.4 Private Elite Institutions

The last two decades also witnessed strong processes of differentiation and stratification in the private sector with the growth of a segment of prestigious elite institutions catering for children from affluent families. Some of these institutions are modernized Catholic universities or other denominational institutions; others are lay institutions. All of them emphasize their ability to offer high-quality programs with a focus on the new skills demanded by the upper segments of the labor market, particularly in professions such as law, management, and economics. They are mainly undergraduate, professionally oriented institutions but also provide MBAs, some graduate programs. These institutions value their academic staff's degree and research reputations because these are quality signs in the market they operate. They tend to be highly innovative both in teaching—adopting new learning technologies and innovative problem-oriented undergraduate programs—and in exploring their staff's competence to offer good-quality teaching and consulting services. Examples include the Fundação Getulio Vargas in Rio de Janeiro and São Paulo, the Catholic Universities of Rio de Janeiro and Porto Alegre, and the Insper Institute in São Paulo.

12.1.5 Public Research Institutes

In our survey, we included also a small number of nonuniversity research institutes that are supported by the Brazilian Ministry of Science and Technology and other government agencies. Some of these institutions can also provide doctoral degrees. Examples are the National Institute of Applied and Pure Mathematics (IMPA) and the National Institute for Space Research (INPE).

These institutional differences have relevant consequences in the way academics in Brazil organize their daily lives and how they perform their core activities, research, and teaching. In the next sections, we will explore these differences in more detail.

This article is based on the data from two surveys of the academic profession in Brazil: one carried on in 1991, as part of the Carnegie Foundation comparative survey, and the other in 2007, within the CAP project. All surveys used representative samples of Brazilian academics teaching in institutions granting bachelor degrees. No restrictions were made regarding the kind of contract the academic holds with her/his institution. In Brazil, most academics in private institutions hold part-time appointments, while their counterparts in the public sector usually hold full-time appointments. Nevertheless, given the sheer dimension of private sector in the country's higher education, it would not make sense to exclude academics with part-time contracts from our sample. The only major difference between the samples is the inclusion of a small stratum of academics working at federal research institutes in the 2007 survey.

12.2 Research Profiles

Both in 1992 and 2007, we asked the academics whether their priority was teaching, research, or both. In the Humboldtian model, they should give priority to research and place teaching in second place. In fact, there was a significant increase in the priority given to research between those years, but there are many that still give priority to teaching over research or to the exclusion of research (Table 12.1).

The decrease in the number of academics declaring to give priority to teaching only in all categories is an evidence that the notion that academics should do research has become dominant even in places where, in practice, research does not

Table 12.1 Priority to teaching or research, 1992–2007

	Year	Priority given to teaching (%)	Both, emphasis on teaching (%)	Both, emphasis on research (%)	Priority given to research (%)
Research institutes	2007	0.0	10.2	46.9	42.9
Research universities	1992	10.6	36.6	47.2	5.6
	2007	2.6	35.6	55.2	6.7
Public regional universities	1992	21.4	39.8	37.1	1.7
	2007	6.1	42.2	45.2	6.5
Private elite universities	1992	15.7	38.2	40.4	5.6
	2007	9.9	40.4	44.4	5.3
Mass private institutions	1992	24.4	45.7	28.7	1.2
	2007	12.3	49.3	34.5	3.9

Sources: 1992- Brazil, The Carnegie Foundation International academic profession
2007- FAPESP/CAP project Brazil 2007

Table 12.2 Degree of commitment with research activity by type of institution (2007)

Degree of commitment with research	Type of institution					
	Public research institutes %	Public research universities %	Public regional universities %	Private elite institutions%	Private mass institutions%	Total %
Full researcher with international connections	55.1	29.9	11.8	15.8	2.3	13.3
Full researcher with only domestic connections	14.3	24.4	15.5	9.4	4.9	11.8
Doing research and publishing without support	22.4	31.0	44.6	33.3	37.4	36.9
Doing research without support and without publishing	4.1	8.6	11.1	13.5	16.4	12.9
Not active as a researcher	4.1	6.1	16.9	28.1	39.0	25.2
Total (100 %)	49	197	296	171	487	1,200

Scale's reproducibility index: 0.94 (Source: FAPESP/CAP project. Brazil 2007)

really take place in any significant scale. In part, this is related to the sheer growth of proportion of academics with doctoral degrees; but the priority given to research by persons without a doctoral degree also increased in all kinds of institutions, suggesting that the Humboldtian ideal became accepted as the way things should be, while teaching as a priority lost its legitimacy. However, in 2007, there were still a significant number of academics in private and public institutions that gave no priority to research.

To state that one's priority is research does not say much about how this research is being done and how intense is one's research work. Besides doing research with some regularity, academics should be able to bring research findings to the attention of a wider audience, which means usually to publish these findings (Fulton and Trow 1975). In Brazil, researchers should also have the skills and experience to compete for external support for their research activities, since it is not usual for higher education institutions to set aside their own resources for research. In the 2007 survey, a number of questions were asked that provided information about all these dimensions. When combined, these dimensions allow for the construction of a scale measuring the level of the academic's commitment with the research role. This scale is shown in Table 12.2, which ranks the research activity of Brazilian academics from a non-active role through a fully professionalized researcher with active international connections (i.e., academics reporting success in securing

external resources for their research, publishing results, and developing partnership with colleagues abroad or publishing in collaboration with colleagues from abroad). Between these extremes, we were able to identify academics performing research with external support and publishing, but connected only with the domestic community of peers; academics doing research and publishing without external support; academics doing research without publishing and external support; and, finally, academics who were not active as researchers.[3] This result can be taken as an indicator of the strength and coherence of Brazil's core research policies implemented by federal and states' level agencies.

This table shows that, only in public research institutes, more than half of the academics fully perform the role of researchers, reporting success in both publishing and securing external funds for their projects, as well being actively connected with their peers outside the country.

In research universities, only 29.9 % of the academics hold the same profile, while other 24.4 % are fully professionalized as researchers but are not able to sustain active international collaboration. In regional universities, only 27.3 % of the academics reported success in publishing and securing external resources for their research activity and only 11.8 % reported ties with the international community. On the total, 44 % reported doing research and publishing without access to external support and 11.1 % do research without publishing. Finally, 16.9 % report no research activity.

The profile for the private elite institutions in this dimension is very similar, but here the proportion of academics not active as researchers is larger, 28.1 %. At the private mass-oriented institutions, fully professionalized researchers (either with or without international connections) are almost nonexistent, while the number of totally inactive researchers rises to 39 %. Most of the academics working at institutions of this kind either do research without publishing or, if publishing, are no able to secure external support for their projects.

Table 12.3 below explores the relationship between the degree of commitment with research and the formal academic rank in research institutes, research universities, public regional universities, and private elite institutions.

The pattern varies greatly from one type of institution to another. At one extreme, the association is not significant in research institutes where most of the academics tend to have a highly active profile with international connections. At the other extreme, there is also no significant association between rank and profile in the private elite institutions. Here, probably, the emphasis on teaching makes the differences in research commitment less relevant for the career in the institution.

It is only in public research-oriented universities and public regional universities that one finds significant associations (the observed chi-square is, respectively, 16.1, sig 0.01, and 55.8, sig.: 0.00). In research universities, the association follows the expected pattern: the higher the degree of commitment with research, the higher the academic rank. Thus, while 56.5 % of the full professors are also full-fledged

[3]The index of the scale's reproducibility is 0.94, which means that in 94 % of the cases, our scale estimates the correct answers given by the interviewers to all questions used in its construction.

Table 12.3 Patterns of commitment to research, academic rank, and institutional environment

Type of institution		Academic rank			
		Full professor	Associate professor	Junior	Total
Public research institutes	Full-fledged researcher with international connections	58.8 %	69.2 %	42.1 %	55.1 %
	Full-fledged researcher with only domestic connections	11.8 %	7.7 %	21.1 %	14.3 %
	Partially professionalized researcher	17.6 %	23.1 %	36.8 %	26.5 %
	Not active	11.8 %			4.1 %
	Total	17	13	19	49
Public research universities	Full-fledged researcher with international connections	56.5 %	28.9 %	19.2 %	29.6 %
	Full-fledged researcher with only domestic connections	26.1 %	25.6 %	21.2 %	24.5 %
	Partially professionalized researcher	8.7 %	40.5 %	51.9 %	39.8 %
	Not active	8.7 %	5.0 %	7.7 %	6.1 %
	Total	23	121	52	196
Public regional universities	Full-fledged researcher with international connections	6.3 %	18.2 %	4.3 %	11.9 %
	Full-fledged researcher with only domestic connections	6.3 %	22.1 %	9.7 %	15.6 %
	Partially professionalized researcher	45.8 %	55.2 %	61.3 %	55.6 %
	Not active	41.7 %	4.5 %	24.7 %	16.9 %
	Total	48	154	93	295
Private elite institutions	Full-fledged researcher with international connections	14.8 %	15.4 %	16.3 %	15.8 %
	Full-fledged researcher with only domestic connections	7.4 %	11.5 %	8.7 %	9.4 %
	Partially professionalized researcher	48.1 %	46.2 %	46.7 %	46.8 %
	Not active	29.6 %	26.9 %	28.3 %	28.1 %
	Total	27	52	92	171

Source: FAPESP/CAP project. Brazil 2007

researchers with international connections, this proportion drops to 28.9 % among the associate professors and to only 19.2 % among the junior academics. At the other end of this scale, the proportion of full professors displaying profiles that indicate sporadic commitment with research (because of either lack of support or lack of published products) is only 8.7 % but reaches 51.9 % among the junior staff. As one would expect, academics fully inactive in this dimension are seldom found in these universities, regardless of the rank (6.1 %).

The association between rank and commitment with research in regional universities runs against the expected pattern described above. While only 6.3 % of the full

professors display a profile that could be described as mature and internationalized, this percentage grows up to 18.2% among the associate professors, falling again to 4.3 % among the junior staff. The proportion of mature researchers with only domestic connection is also higher among associate professors (22.1 %) than among full professors (6.3 %) and the junior staff (9.7 %). So it seems that in regional universities commitment to research tends to be stronger among academics occupying intermediate positions in the academic rank.

The explanation for this unusual pattern is that, while in research universities, holding a PhD degree is almost a necessary condition for ascending to higher ranks (associate professorship and full professorship); this is not altogether true for academics in regional universities. Here, virtually all (94.8 %) associate professors hold a PhD degree, but only 39.6 % of the full professors have similar degrees.

This picture arises from the recent evolution of public higher education in Brazil. Since the end of the 1990s, the number of students completing doctoral studies in Brazil has been steadily growing. In 2010, there were 64.5,000 students enrolled in doctoral programs, and 11.3,000 students were awarded with doctorate degrees. Since 2003, also, the number of new positions at federal- and state-owned universities has been growing constantly. Combined, these two trends mean that a new generation of better-qualified academics is filling the places newly opened at public sector.

In most public institutions, holding a doctoral degree automatically grants access to the rank of associate professor, but not to full professorship.[4] The number of full professorships is limited, and access to full professorship requires passing through an open public concourse. Only the most competitive institutions are able to preserve the requirement of a doctoral degree for candidates ascending to full professorship. In the past, for most of the public sector, the lack of academics with the desired qualification induced special rules that bypassed the need of a doctorate for ascending the academic career (for in-depth analysis of academic career in Brazilian institutions, see Balbachevsky 2011). Thus, in regional institutions, many members of the older, less-qualified generation are now full professors, while the new, better-qualified generation, holding enough academic credentials for competing for research funds, is stuck in the middle of the career rank.

Both institutional environment and academic degrees are relevant for understanding the academic's commitment with research. In each type of institution, academics with doctorate tend to be more involved in research, while most of the academics without doctorate are not active in this dimension. Institutions where almost all faculty holds a doctorate degree (as in research universities and research institutes) tend to display a more dynamic research environment. But the inner institution's environment creates its own constraints for research. While 69.5 % of the doctorate holders working in research institute reported success in securing external resources for their research and 58.2 % among doctors at research universities, this

[4]Only São Paulo state-owned universities (USP, UNICAMP, and UNESP) require a postdoctoral degree similar to the known German habilitation for the position of associate professor and full professor.

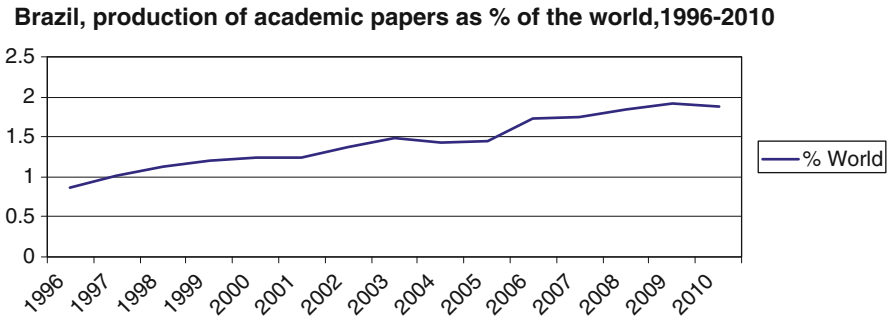

Fig. 12.1 Brazil, production of academic papers as % of the world, 1996–2010 (Source: The SCImago Journal and Country Rank, http://www.scimagojr.com/index.php, based on the Scopus data base (Elsevier))

proportion drops to 40.4 % among academics with doctorate working in regional universities and to 29.8 among their colleagues of the elite private institutions. In the private mass-oriented sector, the proportion of doctors reporting access to external resources for their research is only 15.3 %.

12.3 Scientific Productivity

Efforts to increase the number of doctor's degree holders in research-oriented graduate programs have led to a constant increase in the number of papers published by Brazilians in the international literature.[5] The international presence of Brazilian science is still very small—1.8 % of the world's total—but is by far the largest in the Latin American region, 51 % of the regional total in 2007 (Fig. 12.1).

However, this production is concentrated in a few institutions. In our sample, 50 % of the published articles in the last 3 years came from just 11 institutions. Besides, there is very little in terms of patents. On average, the academic productivity of doctors in research institutes is higher in all items, and they also show more published articles than conference papers, which prevail in other institutions.

Doctorate holders in the research institutes not only publish more, but most of their published articles are peer reviewed and international in character—published abroad, in another language than Portuguese, and in partnership with researchers from other countries. Doctorate holders attached to public research universities are one step below, but their profile is not very different from those working at public regional universities. The productivity for doctorate holders in the private sector is significantly smaller, as one should expect, given the more precarious conditions they have for doing research in their institutions (Fig. 12.2).

[5]Data from The SCImago Journal & Country Rank, http://www.scimagojr.com/index.php, based on the Scopus database (Elsevier)

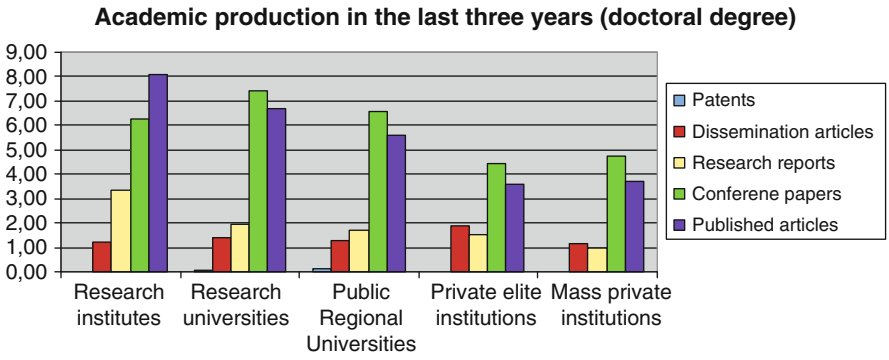

Fig. 12.2 Academic production in the last 3 years (doctoral degree holders) (Source: FAPESP/CAP project. Brazil 2007)

12.4 Institutional and External Constraints on Research

Most research in the country is supported by external research agencies. Academics without a doctoral degree, mostly in private institutions, have to rely more on resources provided by their own institutions, which have less resources but are less demanding in terms of their requirements for academic quality. Brazilian science is mostly supported by national resources, but academics with higher credentials are more able to get resources from abroad.

The institutional context affects also the different priorities of the researchers. Compared with the other institutions, research in the institutes is more theoretical and more international in scope and orientation; in private institutions, it tends to be more applied and practical and also more socially oriented, reflecting the fact that most researchers in these institutions are in the social sciences (Table 12.4).

The main external constraint the academics perceive on their research work is the increased pressure to get external funding for their work; they feel that these pressures, both for high scientific productivity and practical results, are threats to the academic quality of their work. Clearly, researchers in research institutes feel these pressures more than those in universities. Otherwise, the only main difference among institutions is the priority private institutions place on applied and commercial research and the restrictions they place in the publication of results from private-supported research.

Another perspective on the external constraints can be obtained by looking at who assesses the work done by the academics. Most of the assessment refers to teaching and is done both by institutional authorities and students. At the other extreme, services are not assessed systematically by anybody. Regarding research, in most cases, and particularly in public research universities, assessment is collegial. In private institutions, as well as in the research institutes, institutional authorities—head of departments and officers—have a much

Table 12.4 Emphasis of main research projects

	Research institutes	Research universities	Public regional universities	Private elite institutions	Private mass institutions	Sig
Social, to improve society	3.44	2.82	2.46	2.76	2.26	0.000
International in scope and orientation	2.66	3.26	3.61	3.04	3.99	0.000
Applied, practical	2.72	2.19	2.07	2.11	1.95	0.001
Basic, theoretical	1.74	2.49	2.41	2.57	2.47	0.002
Commercial, technological transfer	4.42	4.15	3.98	4.01	3.92	0.188

Source: FAPESP/CAP project. Brazil 2007

1—strong emphasis; 5—no emphasis

stronger say. In private mass institutions, there is little assessment by external reviewers, and almost half of the respondents say that assessments, if any, are done by themselves.

12.5 Teaching

Teaching at undergraduate level is an experience shared by almost all Brazilian academics. In fact, in all institutions, almost all academics (95 %) reported teaching responsibilities at this level. The only exceptions are those in research institutes, where teaching responsibilities are usually confined to graduate education (both master's and doctoral programs). In research institutes, 69.2 % of the academics reported teaching responsibilities at master and doctoral level. Among them, 29.7 % declared also responsibilities at undergraduate level (performed in another institution, since research institutes do not offer undergraduate programs). Another 10.3 % of researchers from these institutes reported teaching at undergraduate and master's programs.

While teaching at undergraduate level is a common experience, teaching at doctoral level is more restrict and tends to concentrate in more research-oriented environments. Besides teaching in undergraduate programs, 42.4 % of academics in research universities declared teaching responsibilities also at master's and doctoral levels. This percentage drops to 15.9 % and 16.5 % among academics working at, respectively, public regional universities and elite private institutions and is 1.9 % among academics at mass private institutions. Giving classes at master's programs is a more widespread experience: in research universities, 52.3 % of the academics reported responsibilities at this level. The proportions of academics with similar experience in public regional universities and private elite institutions are 36.8 and 36.0 %, respectively. In mass private institutions, this figure is almost insignificant: only 7.0 % of academics working in these institutions reported teaching responsibilities at this level.

On the other hand, having their teaching responsibilities confined to the undergraduate level is a rare situation among academics attached to research institutes (14.4 %). It is more frequent among academics working at public research universities (46.1 %) and represents the experience of most academics working both at public regional universities and private elite institutions. Almost all academics working at private mass institutions reported this profile.

When we focus our attention on the range of experiences open to academics with doctoral degrees, it is possible to see how institutional environment imposes severe constraints over their teaching experience. In total, 73.0 % of the doctorate holders working in research institutes have responsibilities in doctoral programs. In research universities, this proportion is 46.9 %, while at regional universities and private elite institutions, the percentages are, in the same order, 23.3 and 26.1 %. But only 4.6 % of doctorate holders in mass private teach at doctoral level, while 80.7 % of these professionals are confined to undergraduate level.

Another relevant dimension to be explored regards the way academics distribute their working time among different kinds of tasks relevant to academic life. Time devoted to teaching was reported by almost the entire sample, the only exceptions being a small number of academics that informed being in sabbatical period at the time of the interview (2.6 %). The number of academics reporting time spent in other activities is more varied. Only 77.1 % reported time spent on research, 26.3 % reported time spent on services, and 58.5 reported time spent on administrative tasks. Research and administrative duties tend to be performed by most academics from more research-oriented environments but, by a more restrict number of academics in others, are more undergraduate-oriented environment. This difference is related with the greater collegiality found in the former institutions, contrasted to the more hierarchical governance that marks the environment in the private sector (Balbachevsky and Schwartzman 2011).

As one would expect, teaching tends to monopolize the academic time in the more teaching-oriented institutions. Only among academics working in research institutes, the amount of time spent on research is greater than the time spent on teaching. Among academics from all other institutions, the reported time spent on teaching is larger than the amount of time spent on research-related activities. As one would expect, the less research oriented the institutional environment, the more time the committed to teaching-related activities, vis-a-vis the time spent with research. Nevertheless, one should note that only in public institutions, activities related with the academic life occupy more than 40 h per week. Academics in private sector tend to spend less than 40 h per week in academic-related activities, which means they have spare time for other, nonacademic activities. Finally, classes in undergraduate level are in average larger in private than in the public sector.

Finally, when asked to express their views regarding different dimensions related to teaching, the responses provided relevant clues about institutions' priorities and the extent of changes experienced by Brazilian higher education in recent years. First, academics in public institutions are skeptical about the support they get from their institution for improving their teaching skills and to the extent in which good teaching skills impact upon their performance evaluation. Academics from private

sector (both from elite to mass institutions) tend to be more positive in this dimension. Practical skills is a topic emphasized by most academics in their courses, but is less relevant for academics from the research institutes, probably because of the importance of graduate education in their teaching activities. Surprisingly, academic ethics and discussions of issues related to academic work are more often addressed by academics from the private than those from the public sector. While all academics tend to agree that international perspectives are a relevant focus for courses content, they tend to give negative answers when asked if they perceive an increase in the number of international students in their classes. While research is perceived as more relevant for teaching in public institutions, relationship between services and teaching tends to be better evaluated in private sector, which is also an important distinction related to the core differences that separate the academic world in public and private environments. As showed above, most academics in the private sector have their professional life revolving around the academic world. In private sector, part-time contracts allow academics to regularly assume professional commitments outside academy, and this wider market experience is often promoted by institutions as being a differential regarding the training they offer to their students, as more fitted to the needs of labor market (Balbachevsky and Schwartzman 2011).

Lecturing is the most widely practice reported by academics from all institutions, with 96 % doing it. Lecturing is usually coupled with individualized instruction, a strategy promoted at institutional level since its existence is taken as an important indicator of teaching quality as accessed by the Ministry of Education's institutional evaluation. Other practices, such as learning in project groups and practice instruction, are more commonly used in the public sector, while less reported by academics from the private sector.

Face-to-face interactions outside of class and exchange of e-mails are channels of communication with students frequently reported by our interviewees. Academic's involvement in developing programs and material is reported by about of 40–50 % of academics, regardless of the type of institution they work. Experience with ICT-based learning and distance education was very seldom reported by academics from all institutions. Nevertheless, it is worth to note that the frequency of positive answers to these items among academics from the private sector is substantially higher than among those academics in the public sector. This pattern may be due to the known resistance public universities have shown to these strategies (especially to distance education) in Brazil.

In the assessment of academic performance, teaching is the most frequent dimension in all Brazilian higher education institutions. In 2007, only 6.5 % of all academics reported that their institutions did not evaluate their teaching practices. This frequency should be contrasted with the one of 44.1 % of negative answers to similar questions proposed to the 1989's sample. The magnitude of growth in positive answers provides a relevant clue regarding how the regulatory framework of higher education in Brazil has evolved in the last 15 years. In fact, it was during this period that the Ministry of Education introduced major instruments related to institutional evaluation, most of them related to teaching. In 1994, the Ministry of Education took the first steps toward an effective evaluation of undergraduate courses. From

1995 to 2002, it implemented a National Evaluation of Undergraduate Programs (Schwartzman 2004). It was a mandatory exam, where the performance of all graduating students in the same career path was measured nationwide. Even though individual students' scores were not made public, the average performance of students in each institution was widely publicized and won great media coverage, with strong impact over public opinion. In 2002, a new party, with more leftist orientation and strong links with unions and social movements, ascended to power with the presidency of Luiz Inácio Lula da Silva. In his electoral campaign of 2002, Mr. da Silva had charged against the National Evaluation of Undergraduate Programs, which was also opposed by unions from the public sector. Once elected, however, he did not dare to erase the evaluation procedures that had attained great visibility in the near past. Instead, the new government created a whole new system of quality assurance for higher education, giving strong emphasis to self-assessment by the institutions and replacing the existing National Evaluation by a similar exam, called ENADE (Exame Nacional de Desempenho dos Estudantes—National Assessment of Student's Performance). In 2004 ENADE was coupled with a very complex system of institutional evaluation called National System of Higher Education Evaluation (SINAES), where teaching performance—indirectly evaluated through ENADE, as well as some indicators about institution's profile—is used to evaluate the institution's performance and, in the case of the private sector, to grant permits to other undergraduate programs.

Students are the most frequently referred stakeholder in teaching evaluation process in all kinds of institutions. Nevertheless, the practice of asking students to evaluate their teachers is more frequently reported by academics from the private than from public sector. In private sector, teaching evaluation is more usually perceived as linked to institutional hierarchies, mostly by an attribution of the immediate supervisor—the head of the academic's department or unity—which is congruent with the more hierarchical and centralized style of decision making that characterizes private institutions (Balbachevsky and Schwartzman 2011).

12.6 Conclusions: Converging Beliefs, Diverging Practices

This overview of the way the Brazilian academics relate to teaching and research activities shows that the efforts, started in the 1970s, to turn the academics in Brazil into researchers have succeeded in part in terms of beliefs, but do not seem to be converging in practice. Today, more than in the past, academics believe that they should have a doctoral degree and get involved in research, and the incentives created by the national authorities go in that direction. However, in practice, only a minority of researchers in research institutes and in research-intensive public universities can meet these values and incentives. For the others, the alternative is either to give up, and place more emphasis on teaching, or to make some gestures signalling their adherence to the research ideals—attending conferences, writing research reports, and trying to publish an article every year so. The need to comply with the

research ideal, and the inability to do so, is a fertile ground to accommodation and cynicism, which can affect the quality of the missions higher education institutions are supposed to perform—teaching, research, and services.

This is clearly not a good situation, and the solution to the problem does not seem to consist in pouring more resources and effort of turning each of the academics working in Brazilian higher education into a researcher. The best policy would be to concentrate the research effort in places and institutions where good-quality and relevant research can really take place and to give renewed status, prestige, and support for the functions of general education and teaching for the professions, which was, and remains, the main objective of higher education.

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Chapter 13
Current Challenges Facing the Academic Profession in Argentina: Tensions Between Teaching and Research

Mercedes Leal and Mónica Marquina

13.1 Introduction

In the last 20 years, the academic profession in Argentina has been under severe stress as a consequence of a higher education reform conducted by the government. The changes—made in the light of hegemonic neoliberal thought—put into question the conceptions about how knowledge of the highest level is produced and distributed and tended to modify not only the general framework in which the academic profession develops but also the material and symbolic conditions of academic work resulting in the emergence of new styles of performance and professional development strategies.

How are duties distributed? How the different roles are made compatible? Which are the academics' preferences? What does it mean to teach and do research at the same time? These are some of the questions this chapter will try to answer so as to provide a panorama of the academic profession in Argentina.

The chapter proposes a study of the tensions between teaching and research functions in the work of Argentine academics on the basis of the analysis of their perceptions regarding their employment relationship, the relationship with their disciplines of origin, and the organization of academic work. This analysis is based on the results of the survey the Changing Academic Profession (CAP) administered to 826 teachers from different academic disciplines and fields of national universities in Argentina in 2008.

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13.2 Argentine Academic Work Profile (Based on Teaching Practice)

The Argentine university where academic tradition is mainly oriented toward teaching has been the axis around which the academic activity has spun. Even when the 1918[1] reform introduced functions such as research and extension as constituents of the academic work, the teaching activity based on the principle of *academic freedom* could be preserved as prestige, and teaching gives identity to Argentine academics for about a century. In turn, research began to develop as a parallel activity in rather small academic circles both in terms of number and fields of knowledge and was carried out in specialized research organisms that had little contact with the universities despite sharing institutional spaces and infrastructure.

Framed within an accelerated process of massification of higher education, the 1960s were marked by transformations in the curricular structures and the prestige that teachers and researchers achieved. Likewise, the appearance of a new competitive mechanism to get access to an academic position brought about a generational renewal of professors. The increase of full-time jobs resulted in the figure of the teacher-researcher in a university environment conceived for scientific and intellectual creation. However, this integrated activity developed more intensely within those disciplines that counted with a research tradition, namely, the basic sciences both hard and soft (Becher and Trowler 1989).

The subsequent growth in the academic staff in Argentinean universities accompanied an enrolment explosion though that growth involved mainly the figure of a professor whose activities were limited exclusively to teaching. The democratic period in the 1980s doubled the number of university professors which made it possible to cope with the ever-increasing demand coming from low-income students. However, the academics were largely part time, and this increase took place, mainly, in one of the most demanded areas: the social sciences.

The reforms of the 1990s, which will be referred to further below, found an academic profession based mainly on teaching which was, in most cases, carried out under the responsibility of assistants or teachers with little academic background, without postgraduate degrees, and coming mostly from other work fields. Within the context of the times, these professionals saw university teaching as an additional income. On the other hand, there were a few academics (especially from the areas of Natural Sciences and Mathematics) who evinced a steady and substantial research activity.

[1] The 1918 reform was a large-scale students' movement that took place in Argentinean universities and influenced the rest of Latin America. It aimed at the updating of contents, the opening of job positions to a new generation of professors, as well as the inclusion of alumni, students, and teachers in the university governance. The reformers' main complaints concerned the backward state of the scientific field and teaching system. The lack of renewal of the teaching staff foreshadowed the continuance of outdated contents together with an encyclopedic and theoretical approach as well as a rigid organization of disciplines.

We are confronted, thus, with a large number of academics who built their profession around class work and developed their identities and ethos (Clark 1992) in the relation knowledge-student, so far distinct profession-related features and at the same time a source of prestige and personal pride. Faced with a competitive and credit-based scenario, these professionals had to acquire and develop new competences and strategies.

13.3 Characteristics of Access to and Promotion in the Academic Career

The prevailing type of organization of the academic work in Argentinean universities, especially in the most traditional ones, is the chair (or "cátedra") in which the academic career is made up of a number of positions organized hierarchically, the main categories being those of teaching assistant and professor. Supposedly, teachers in the first category are in charge of coordinating practice work groups whose members also attend the lectures given by professors. Other institutions are organized following the departmental structure in an attempt to move away from the rigidity and verticality of the "cátedra." Nevertheless, the different levels of the teaching posts do not vary much and in most cases keep a vertical work organization.

A teaching position at university is obtained through the mechanism of "concurso de antecedentes y oposición" (a selection process involving a competitive examination of background, a lecture, and an interview assessed by a board of judges). To that purpose, the institution publicizes the availability of a job position and the selection is made by a board of peers (holding a higher position to the one offered) who has the task of assessing the candidates' curriculum vitae, interviewing them, and evaluating the class given, the topic of which has been previously chosen by lot from the contents of the subject syllabus. In the case of the position of professors, the job stability provided by the "concurso" will last 5–7 years, after this period a new public contest takes place. In the case of the teaching assistants, the period of job stability is of 3 years. During this time the professor cannot be removed from his position—only under extreme circumstances—and he acquires "university citizenship"; that implies that he can take part in the institutional governance system by choosing or by being chosen to perform various roles. Thus, the complexity in the mechanism of "concurso" ensues from a twofold implication regarding academic policy and institutional incidence (Marquina and Fernandez Lamarra 2008).[2]

[2] Such complexity sheds light on many current problems in the governance of the biggest and most traditional universities. In many cases the percentage of teachers assessed in due time through the mechanism of "concurso" is low, not only because of the complexity of the mechanism itself but also due to political decisions that delay or move up the "concursos" what has the potential to determine the political composition of university government.

13.4 Research-Oriented Policies of the 1990s

The government that took office in 1989 implemented a political agenda for the university sector that was clearly framed within the international trends of the times, that is, highlighting the efficiency of institutional management and teaching quality improvement. These policies concerned certain measures which modified the work of university professors, their socializing mechanisms and practices creating a "type" of academic who was expected to have a high postgraduate training and to perform teaching and research activities at the same time. In this context, academic activity started to be assessed in terms of research productivity; different regulations and economic incentives were introduced creating a model of academic work that, until that moment, had been limited to some specific disciplines.

In 1993, the National Teacher–Researcher Incentive Program was one of the highlights among these policies. It was designed to promote an integrated approach to the academic track, to contribute to the increase in research-related tasks at university, and to encourage retraining among the teaching staff aiming at a greater dedication to university activity (Ministry of Education 1994). Within a context of really low salaries, this incentive meant an improvement in the income of teachers who voluntarily adhered to the program, met certain requirements, and complied with preestablished standards of achievement based on the acquisition of new academic work skills. Apart from material compensation, whose value varied throughout the program, this mechanism entailed the establishment of a system of symbolic rewards that gave researchers a hierarchal category assigned by academic peers who gathered to evaluate the activity of each teacher-researcher in the program. As a result, by means of the systematization of the information regarding academic activity, the government set up a new quality control mechanism for the group of state-funded university teacher-researchers which has varied in number since its implementation.[3] These new regulations—homogeneous and external to the institution—began to shape a new "type" of academic who would be oriented toward postgraduate training, research, and teaching, all of which would establish a new "academic working model" that would greatly impact a task structure which gradually becomes more fragmented and diversified.

The new options to obtain the necessary funds for research or for the specific development of programs—assigned to institutions or research groups in a competitive manner—have become common practice on the part of the Ministry of Education. Such new funding modalities have had an impact on the academic activity in so far as the multiple and competitive calls for access to funds have created practices such as project design, form filling, and elaboration of reports as part of initiatives that do not necessarily correspond with institutional aims and priorities but rather with government policies (Marquina 2007).

[3] Presidential Decree Nº 2427/93 for the creation of the Incentive Program specifies that, out of the totality of positions within the university system, which is estimated at a hundred thousand (100,000), only 15 % takes part in research activities.

The new skills that stand out from these new competences are the ones that allow the solution to the ever-growing difficulties that arise from the multiplicity, simultaneity, and immediacy of the tasks to be performed under conditions sometimes far from adequate. Adding an activity like research to the tasks of many academics who until then had developed their activity mainly in the field of teaching resulted in both a stimulus and a demand to develop specific competences in order to comply with new academic work standards: more paper submissions, more congress presentations, transference of results, patenting, etc. These new demands undoubtedly created tension with other tasks, disturbing some of the activities either periodically or permanently, depending on their level of demand. Under these circumstances, teachers will give priority to research during the evaluation and categorization period, will make sure to attend scientific meetings, in other words, they will carry out any activity concerning the metier of the material aspects of knowledge production, in detriment to other work-related activities. The latter, which could be considered an example of the deep diversification of academic work, is also an example of the wit that professors must appeal to in order to stay in the system. We can add that these new academic work configurations came up during hard times for the Argentinean university as a result of the lack of funding and scarce budgets the institutions received all through the 1990s.

Currently, official evaluations of the incentive program show, as part of its achievements, an increase in the number of researching teachers (from 11 % in 1993 to 33 % of the teaching staff at national universities), an improvement of the academic career (60 % of those who participate in the program have reached a higher category since 2004 to date), a consolidation of an evaluation system, and the possibility to evaluate researchers and projects homogeneously as well as the access to a homogeneous information system concerning research activities carried out in the national university system.

Despite its strengths, quantitative and qualitative studies reveal the program's differential impacts are in favor of full-time teachers who only make up 16 % of the whole teaching staff in Argentina's national universities. Also, some counter effects were shown concerning the "placement-adaptation" practices of professionals that allow them to get in and remain in the program in ways that undermine the ethics of research and scientific production[4] (Araujo 2003), or homogeneous strategies of a more disciplinary and productive nature, where the larger amount of publications often goes hand in hand with a loss of originality and quality of the material produced (Leal 2006).

The change in the political context of the Argentine State since 2004, the increased salaries and university budget, and the creation of a Ministry of Science and Technology have not yet managed to bring about changes concerning the teaching-researching orientations and policies that originated in the public agenda of the 1990s.

[4] According to Araujo, empirical evidence shows that professors use different strategies to meet evaluation requirements, some of which lead them to use *certain manipulative practices or CV-forging practices.*

13.5 Tension Between Teaching and Research: Some Results from CAP

Below, we bring forth some data that state the perception of Argentine university teachers on how they combine their teaching and research tasks. These are the results of a survey carried out as part of the project called The Changing Academic Profession (CAP). In the case of Argentina, the analyzed population was teachers at state-funded universities, that is, teachers who depend on national universities and have various time dedications and positions. The design of the sample was done in one step, taking the official database of the University Information System (SIU) of the National Ministry of Education. Of a totaling 119,000 teachers in the existing national universities, a random sample was drawn comprising 2,400 teachers (as agreed at an international level) with the aim to obtain 800 effective answers in each country.

The following results come from 826 fully answered surveys; the distribution of the informants was similar to the overall sample, except on the matter of time dedication (the time devoted to academic activity), in which case there is a bias toward full-time dedications. As regards the choice of the results to present in this chapter, we set off from the hypothesis that, in the last decades, public policies for teachers have generated changes in their jobs' acknowledgement and reward system that would explain the preferences, interests, and perceptions they have regarding the tension caused by their teaching and research tasks. The analysis mainly considers the difference among disciplines, a variable that has shown the most significant variations in the analysis.

13.5.1 The Distribution of Academic Time

In Argentinean tradition, the academic activity was regulated by class periods since they were divided in cycles of 4 months and in annual cycles. Generally, it was around this activity that research was organized. After the changes that determined the academic task, research times also began to be regulated by cycles which are connected with project presentation deadlines, advancement reports, final evaluations, accounting for the resources used, etc. This situation has made the academic task more complex and has led to the mutual overlapping evinced in time distribution.

Table 13.1 shows that all the informants state that they devote more hours to do research (15.9) than they do to teach (13.9) during the class cycle. It also demonstrates that the time devoted to research during the nonclass periods does not increase inversely proportionate to the decrease in the hours dedicated to teaching (17.9 against 15.9). In the light of this evidence, we wonder how and to what end university professors manage their time as well as to what extent the degree of work intensity on either activity impacts on the remaining one. Evidently, the data shows

Table 13.1 Hours spent according to type of activity

	Hours per week during term classes			Hours per week during nonclass periods		
	Mean	Standard divergence	Total observations	Mean	Standard divergence	Total observations
Teaching (preparation of instructional materials and lesson plans, classroom instruction, advising students, reading and evaluating student work)	13.9	7.6	826	5.3	5.6	826
Research (reading literature, writing, conducting experiments, fieldwork)	15.9	10.3	826	17.9	13.7	826
Service (services to clients and/or patients, unpaid consulting, public or voluntary services)	2.4	3.9	826	2.4	3.9	826
Administration (committees, department meetings, paperwork)	3.7	6.0	826	3.7	6.0	826
Other academic activities professional activities not clearly attributable to any of the categories above)	2.3	4.1	826	2.3	4.1	826

Source: Survey The Changing Academic Profession (CAP) Question B1: Considering all your professional work, how many hours do you spend in a typical week on each of the following activities?

that during the periods without classes, the academic takes some time to rest, probably as a consequence of the pressure periods they undergo when having to meet all the requisites that teaching and research demand.

It is also noticeable that there are various activities that characterize the academic and that are not restricted just to teaching and doing research and which entail increasingly multiple and complex tasks. These are activities such as service or extension, management, and governance, which constitute key areas of a university funded upon a model of co-governance and autonomy. The academics' participation in activities of such nature—from committees, council, and evaluation boards to the design and implementation of extension projects and service sales—requires certain academic-management skills and policies that will allow them to achieve consensus, to lead processes, and to make decisions, that is to say, complex activities that require special knowledge and which take up a third of the time devoted to teaching and research activities if considered separately. This low dedication puts forward some questions with respect to its strong presence in the daily institutional life and the little visibility of the real time devoted to it by academics.

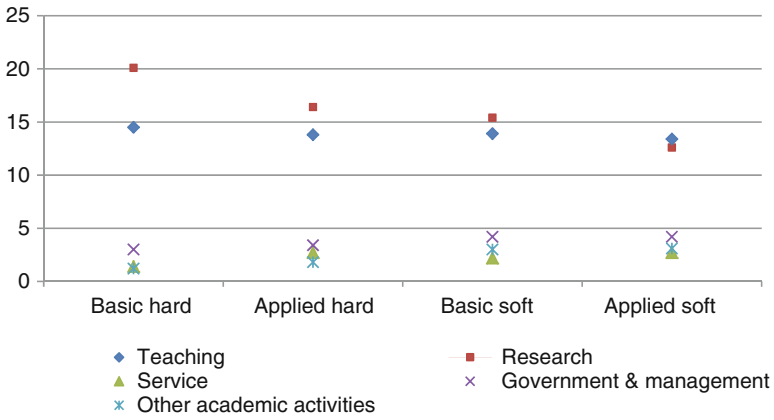

Fig. 13.1 Average hours per week according to the type of activity carried out during classes and to the disciplines

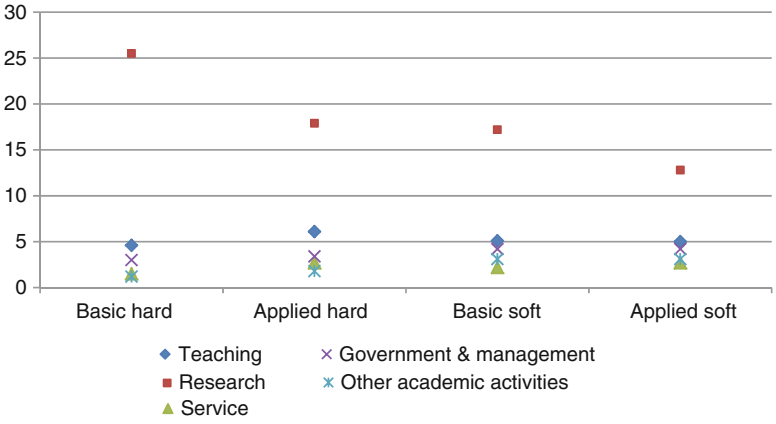

Fig. 13.2 Average hours per week according to the type of activity carried out during nonclass terms and to the discipline

This general time distribution of Argentinean academics varies according to the discipline they are in. As seen in Fig. 13.1, during class periods, the number of hours used for teaching and research is balanced in the case of applied soft sciences, while the gap grows gradually when it comes to the basic soft ones, reaching greater amplitude in the applied hard sciences and, finally, in the basic hard ones.

Figure 13.2 shows that the academics working in the applied soft sciences remain stable regarding the number of hours devoted to research in both periods.

Service, management, and government activities are the ones the academics from the four groups of disciplines spend the least time on. If we consider all of

them together during class terms, they barely reach a third of the hours taken up by teaching or research individually. The group that devotes less time to this type of activities belongs to the basic hard discipline, and the one that spends more time on them is the one made up of academics within the soft sciences, both basic and applied.

Out of all the activities mentioned above, more time is destined to management and governance than to services and extension. This fact is noteworthy if one considers that extension to the community is one of the three main roles of Argentine state universities, which is why it would be reasonable to expect it to be given more time dedication both because of its importance and for the fact that it is one of the foundations upon which the 1918 university reform stands.

13.5.2 Ways of Teaching

Undergraduate teaching in Argentinean universities involves a variety of formats and activities that range from the traditional lecture to the introduction of new information and communication technology. As we pointed out in previous studies, university teaching seems to be stuck in traditional characteristics, to be reluctant to innovation, caught up in a sort of pedagogical reproductivism. In this sense, the inclusion of new teaching strategies seems to depend more on personal interest and commitment on the part of the teacher than on an institutional policy (Leal and Robin 2012). In this part of the chapter, we will analyze the different class types available despite the predominance of the typical lecture class as shown in Fig. 13.2.

The information in Table 13.2 shows that from the different ways of teaching, the model that stands out is that of the lecture (98 %) in which on site presence seems to be the main characteristic. Distance education that could well be one of the alternative types of courses to cope with massification shows a very low percentage with respect to other figures (16 %). This data may indicate that its scarce development in national universities is related to their low-technology resources, lack of political decision, or interest on the part of both institutions and teachers in incorporating this innovative way of delivering teaching as well as the university's teaching reproductive tendency that has succeeded in keeping its format for more than a century. The positivist vision of the teaching organization which still divides classes in theory and practice, even in areas of knowledge that do not admit such distinction, is enough proof of this tendency. Besides, one cannot disregard the fact that the use of new technology calls for an important state investment and requires that students count with basic electronic devices. The striking percentage concerning e-contact with students (75 %) as an alternative way of teaching could be interpreted either as an attempt on the part of teachers to try out innovative teaching strategies closer to distance education or as a lack of time or institutional space to assist students individually.

Table 13.2 Participation in different class types

	Yes	No	Total
Classroom instruction/lecturing	801	17	818
	(98 %)	(2 %)	(100 %)
Individualized instruction	344	474	818
	(42 %)	(58 %)	(100 %)
Learning in projects/project groups	297	521	818
	(36 %)	(64 %)	(100 %)
Practice instruction/laboratory work	402	416	818
	(49 %)	(51 %)	(100 %)
ICT-based learning/computer-assisted learning	323	495	818
	(39 %)	(61 %)	(100 %)
Distance education	134	684	818
	(16 %)	(84 %)	(100 %)
Development of course material	581	237	818
	(71 %)	(29 %)	(100 %)
Curriculum/program development	394	424	818
	(48 %)	(52 %)	(100 %)
Face-to-face interaction with students outside of class	585	233	818
	(72 %)	(28 %)	(100 %)
Electronic communications (e-mail) with students	614	204	818
	(75 %)	(25 %)	(100 %)

Source: Survey CAP. Question C.2. During (or previous) academic year, have you been involved in any of the following teaching activities?

13.5.3 Preferences and Teaching-Research Compatibility

As stated in the analysis of teaching activity, the research-teaching nexus within the context of an institution such as the university is undeniable. The dialectics between both functions can also be observed when research feedbacks into teaching and gives its fundamentals and updates it.

These functions also show key differences as regards logics, cultures, times, spaces, conditions, individuals involved, and ways of materializing and of accounting for them apart from the distinctions provided by the disciplines of reference themselves. In the same way university academics strongly agree on the need of a steady research development and on awarding more prestige to research than to teaching.

Despite this certainty, before the application of the reform policies of the Argentinean scientific system, getting involved in research activities depended almost exclusively on the academics' particular interest, on the tradition of certain disciplines, and on the reference communities. However, two decades after their application, it is barely imaginable for a university academic not to be involved in research.[5]

[5] According to qualitative research about incentive programs, the demand of research production involving all Argentine university teachers is structured according to such logic that those who do not engage in research see themselves as outside the university system. They consider that "*the university system is a social system to which you either belong or are excluded from*" (Leal 2003).

Table 13.3 Participation in different research activities

	Total		Soft		Hard	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
Inquiry and generation of knowledge (elaboration of experiments and field work, supervision of research groups)	52.3	47.7	40	60	62.3	37.7
Transference and communications (writing of papers, participation in transference processes)	56.5	43.5	51	49	60	40
Resource administration and organization (elaboration of proposals for funding calls or subsidies, administration of contracts and budgets, equipment and material purchasing)	49	51	43.3	36.7	50	50

Source: Survey CAP, question D.3: Have you been involved in any of the following research activities during this or the previous academic year?

This new social agent, identified as teacher-researcher, is the kind of academic that takes part in the traditional functions (teaching, research, and extension) and in the new ones (institutional management, community transference, sales of services). In order to remain in the system, he has to diversify his work even at the risk of jeopardizing his professional performance.

In Argentina, the tensions between both activities could be explained by the fact that research was posed as a demand that obliged academics to prove their involvement in undergraduate teaching as well as institutional management and transference to the community (Table 13.3). This situation led full-time teachers to engage in research and vice versa. That is to say, it led academics to diversify their work focusing on research production (transference of results, development of human resources, publications) as products they have to account for, permanently. On the contrary, the teaching function gets less attention since it is an activity whose material production is more difficult to show.

According to Fig. 13.3, of the total number of Argentinean academics, 57 % shows an inclination for research (if we consider the two variants of the answer). This preference finds an equilibrium in the soft disciplines and is definitely more marked in the hard ones where it reaches 62 %.

The difference in preferences according to the disciplinary fields is not at all surprising. There has always been a much stronger research tradition in the hard sciences from the very moment of the creation of the Argentinean university even though teaching was its main academic task. However, what does call our attention is the total results. Even though the majority of the teaching positions are part time (60 % of the total number of teachers), most of them feel more attracted to research. This preference may be due to the existence of the already-mentioned incentive programs and to the fact that the concept of teacher-researcher has already found its place in the mind of the academics even when the position may only demand teaching tasks. As already stated, the data corroborates the idea that the one who does not do research is out of the system of acknowledgement and of material and symbolic compensation which the Argentinean academic is part of.

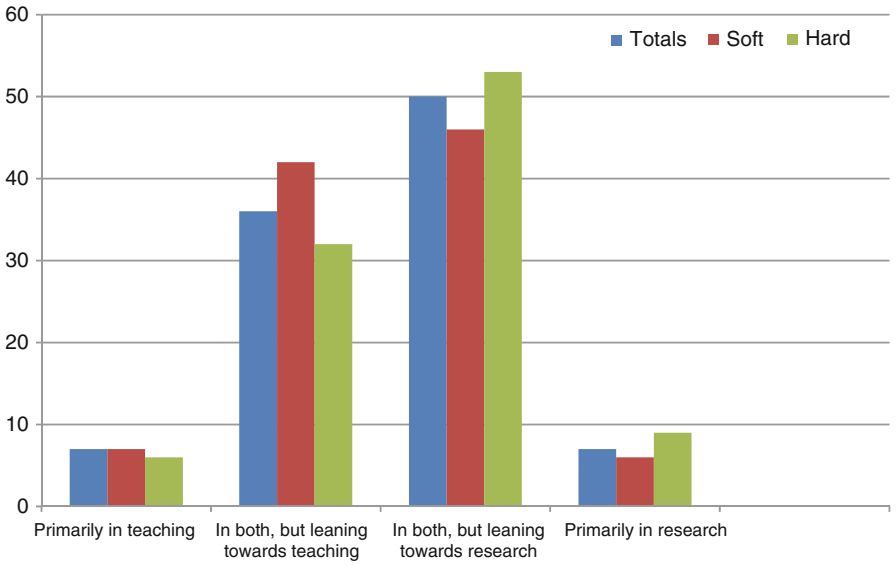

Fig. 13.3 Preferences and academic interests regarding teaching and research (Source: Survey CAP. Question B.2: Regarding your own preferences, do your interests lie primarily in teaching or in research?)

It is worth pointing out that beyond this general tendency lies the idea of compatibility and feedback between teaching and research. The level of disagreement obtained when considering the assertion that teaching and research are hardly compatible is remarkable (4.41 on a scale in which 5 means total disagreement). These answers confirm that both activities are deeply rooted in the social imaginary of the university members.

However, it is surprising that the increasing demand of productivity—originated in the recent policies oriented at getting and attesting to research results—should not be present among their strongest perceptions. Even if the informants' answers are in an intermediate value range which does not allow categorical conclusions, they are more inclined to disagree than to agree with the assertion that such policies are a threat to research quality (2.47 and 2.75). This would lead us to suppose that after 18 years the rules of the game and the reward and punishment system have had an impact on the common sense of the academics, consolidating the figure of the teacher-researcher. On the other hand, the fact that the answers do not show absolute disagreement also indicates the difficulties these policies face in getting unquestionable consent.

We were interested in finding out the way in which the polled academics view the research-related variety of activities. For that purpose we distinguish three areas of activity. Within the context of the strictly scientific-research area, we separate *inquiry and knowledge production activities*—the hard core of research—*transference and communication* of produced knowledge. We also recognize the *resource administration and organization* area (Fig. 13.3).

The production of academic writing (papers, articles, reports), that is, *transference and communication activities*, is the one which shows the highest positive percentage in the *scientific-investigative activity* area (56.5 %). However, this percentage diminishes (52.3 %) when it comes to participation in *inquiry and production of knowledge* (field work and experimentation) which are the ones that provide the necessary data for the analysis and elaboration of papers that are reported at scientific meetings.

The discrepancies between activities oriented to the generation of knowledge and those of communication and transference are explained by different disciplinary research traditions. The soft sciences are the ones that widen the gap between these two moments in research work. This data poses questions regarding the reasons behind the noticeable difference between academics that carry out empirical research and those that focus on transference and communication. Which is the organizing logic of this division of scientific work which makes certain disciplines more focused on inquiry and generation of knowledge? To what extent is this related to the demands imposed by two areas that apparently require different degrees of scientific rigor and consequently the one that looks easier has more followers? If evidence supported this hypothesis, its consequences would be disturbing since they would lead us to question, among other things: Which is the degree of scientific rigor that researchers think their papers should have? How much of the knowledge that is shared in scientific meetings is the result of empiric, solid, and steady research work? To what extent is the recent proliferation of scientific papers the result of repeated rewritings coming from one empirical work? We could say that all this is the aftermath of a process of constant re-elaboration of knowledge that is offered for peer assessment and validation or that they are a way of answering to the productivity demands posed by the incentive programs. We cannot rule out the possibility that both alternatives are at work creating a complex adaptation system that academics efficiently combine so as to remain in the system.

13.5.4 View on the Changes in Work Conditions

Argentinean academics say they are satisfied with the work they carry out. When asked to grade their level of work satisfaction, almost 65 % of the answers indicate a high or very high level of satisfaction that places Argentina among the nine more satisfied countries in the CAP survey (Marquina and Rebello 2012). Nevertheless, the view of Argentinean academics regarding the extent to which the academic working conditions have varied in the last few years is half way, in a sort of plateau, with a slightly more negative vision with respect to the conditions demanded for doing research and even a more negative one when it comes to mechanisms of access to permanence and promotion in job positions and salaries (Fig. 13.4).

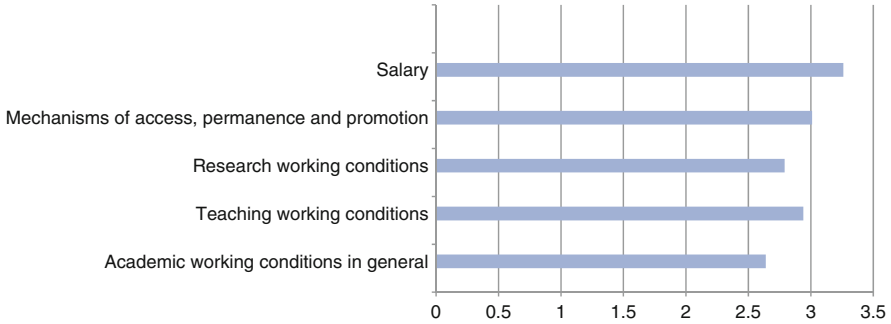

Fig. 13.4 Perception of the improvement or decline in working conditions (Survey Question: Since you started your career, have the overall working conditions in higher education improved or declined?)

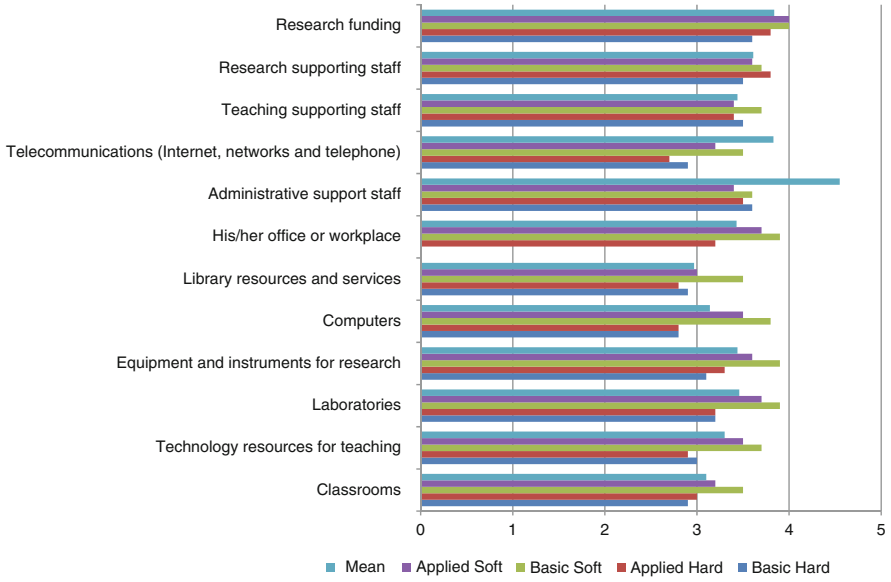

Fig. 13.5 Evaluation of the necessary aspects to carry out the work (Source: CAP survey question B.3. At this institution, how would you evaluate each of the following facilities, resources or personnel you need to support your work?)

This somewhat neutral perception about the change of research and teaching conditions does not agree with their assessment of the resources necessary for the academic work. The most negative views are seen in research funding (3.84) and research support (3.61) (Fig. 13.5).

From the view of the different disciplines, the analysis of these data shows that the average score given to the availability of administrative and staff support for

research is similar among the various disciplinary groups (between 3.6 and 3.5 for the first item and 3.5 and 3.7 for the second item).

However, there are significant differences between the hard and the soft sciences when it comes to the score assigned to other fundamental research resources. The academics from the soft disciplines, especially those in the basic soft ones, perceive a lack of resources such as laboratories (3.9), research equipment (3.9), computers (3.8), offices (3.9), and funds for research (4.0).

These perceptions pertaining the lack of resources are a reflection of the unfavorable conditions under which research activity takes place in an academic field that, only over the last decades, has been fulfilling the necessary qualifications (postgraduate degrees) and strategic knowledge in order to fight for resources in a highly scientific system which is centered around certain rules, logic, and qualifications that academics in the hard sciences handle.

13.5.5 Institutional Policies

The analysis of institutional policies shows us that the academics working in the hard and soft sciences agree on the fact that the *quality of research or teaching* has little to do with their job promotions. They would seem to believe that their academic future at the institution is not conditioned by the quality in their teaching practices or the quality of their research production. When we compare responses about incidence of research quality in decisions about staff, responses are closer to the negative side in the scale, being soft disciplines responses a slight more skeptical (3.54 soft, 3.33 hard). Similar results are obtained when teaching quality is considered, although responses are a little less skeptical both in global results and by soft (3.31) and hard (3.19) disciplines. This could indicate a tendency toward a greater skepticism about the policies for institutional stimuli on the part of soft science academics.

13.6 Conclusions and Discussion

To sum up, we point out that our study is based on the assumption that, in the last decades, the university profession in Argentina has developed under strong tensions bound—to the greater or lesser extent—to the possibility of combining teaching and research as duties attached to the academic condition.

The integrated task of teaching and doing research in Argentinean universities became markedly stronger among some of the disciplines that have a research tradition, namely, in both the soft and hard basic sciences. Meanwhile, teaching became the prevailing feature of the Argentinean academic body whose growth evolved side by side with the admission explosion, and was conducted with part-time contracts and with tasks that were limited almost exclusively to teaching.

The 1990s reforms had to deal with an academic profession based mainly on teaching practices that was largely done by assistants and teachers with little tradition in academic tasks. They had no postgraduate training and, in general, came from various other work fields. Therefore, it is plausible to consider that these professionals had to give up space to fit in an activity like research which bears a different logic from that of teaching. This also came along with a process of adaptation to new work regulations and evaluation systems that use devices typical of areas consolidated in research.

Survey results confirm that, regarding academic time distribution, all the informants state that they invest more time in teaching than they do in research during class terms and that, although during nonclass terms research does not increase inversely proportionate to the decrease in teaching hours, the group of activities inherent in research (project presentation, advancement reports, final evaluations, accounting for the resources used, participation in scientific conferences, etc.) weigh strongly in the everyday institutional life while being scarcely visible in terms of the real time they require and the time academics devote to it.

The various activities that make up the academic condition also include service and extension duties as well as management and governance, which are key areas for running universities. According to survey, these take up one third of the time professors devote to teaching and research, individually. The little time allotted to complex and prolonged tasks (ranging from participation in committees regarding various academic matters, in governmental bodies, and in the implementation of "concursos" to extension program design and management and service sales) also raises some questions.

Not surprisingly, the preferences and interests expressed by research-oriented academics in the hard sciences go hand in hand with the time distribution and the higher levels of preference. What does, however, call our attention is that teachers claim to feel more attracted to research when most of their teaching positions are part time. Furthermore, their intermediate rating with respect to certain assertions on productive and utilitarian scientific orientation does not allow for a more precise analysis as to how far they agree or disagree with them. These data could corroborate the idea that whoever does not do research feels outside the system of acknowledgement and distribution of material and symbolic rewards to which the Argentinean academic belongs. Beyond this general tendency, a majority acknowledges the strong bond between teaching and research and agrees that both activities are compatible. These answers could reassert that both activities are deeply rooted in the social imaginary of university professionals.

Teaching practices in Argentinean universities show that the institution is not in line with the technological developments of the times as it has failed to incorporate the necessary resources that reflect the new and prevailing ways to communicate and learn. Teaching seems to have stagnated in a stage that keeps its traditional characteristics, reluctant to innovation and, thus, fostering a sort of pedagogic reproduction. In this context, the decision to include new teaching strategies would seem a task purely taken on as a commitment to their activities teachers themselves have, rather than as an institutional policy. This leads us to the issue of whether the

lack of pedagogic innovation is related to the fact that, because teaching is not being affected by the new regulations on academic activity, it is being given free reign and left to the chair's self-regulation. If that were the case, the quality of teaching would depend on individual capacity, responsibility, and ethical commitment on the part of the members of each chair.

On the other hand, the types of research activities related to the *elaboration of academic papers* and the *paper work preparation of proposals for research subsidy* are more privileged tasks over the ones related to experimental or field work proper. The soft sciences are also seen as the ones that most broaden the gap between those two moments in the research work. This fact brings about a series of questions on how the over-demand to publish results could be conditioning the production of knowledge.

Most of the academics notice an improvement in their work conditions. Nonetheless, their views fluctuate between a sort of plateau when giving their opinion on how the general working conditions have varied over the years and a negative assessment they make of the shortage of resources needed to carry out the academic task that is nowadays demanded in the field of research (research funding and support). This lack acquires more emphasis among the academics in the soft basic disciplines.

Finally, the sampled academics do not believe that their academic future at the institution is conditioned by the quality of the teaching imparted or the quality of their research production.

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Chapter 14
Teaching and Research in Malaysian Public Universities: Synergistic or Antagonistic?

Norzaini Azman, Vincent Pang, Morshidi Sirat, and Aida Suraya Md Yunus

14.1 Introduction

In common with higher education systems around the world that are actively positioning themselves in the global higher education landscape, the nature of academic work in Malaysian universities is changing radically in the face of new demands on the higher education sector. Generally, most Malaysian universities approach their tasks from the perspective of meeting goals and needs. This approach is compatible with the combined goals of research, teaching and community service with primary emphasis placed on teaching and research and secondary emphasis on service or administration. Thus, the academic's work is predominantly framed and shaped by commitments to and performance in these functions.

The National Higher Education Strategic Plan 2006–2020 (MoHE 2007) is a transformation plan to enhance and strengthen the quality of higher education in Malaysia. The plan has brought about changes to the university system and governance structure in various ways: structural (e.g. stratification of universities), bureaucratic

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(e.g. corporate and strategic management), demographic (e.g. increase in student numbers), economic (e.g. increase in government funding, increase in national income from international education), quantitative (e.g. key performance indicators) and qualitative (e.g. accommodation of equity and access). Terms related to new public management philosophy and approach such as quality, excellence, competition, efficiency, value management, restructuring and accountability have become dominant in the university discourse. These imperatives have caused considerable change to academic work conditions and consequently to the attitudes and perceptions of academics regarding their work. While the dual-core functions of knowledge creation and knowledge transmission through the activities of teaching and research are given priority in the universities, the ongoing tensions still exist between teaching and research, particularly on demands on time and rewards and promotion (Green 2008; Marsh and Hattie 2002; Azman et al. 2012).

There is existing evidence claiming that teaching and research can be synergistic and complementary or antagonistic and competing (Marsh and Hattie 2002; Brew 2003; Coate et al. 2001; Lucas 2007; Taylor 2007). In fact, conflicting evidence has been found and different conclusions arrived at regarding the balance and relationship between teaching and research (teaching and research nexus). This chapter examines what kind of mix between teaching and research there is across the Malaysian public university system. The primary purpose is to highlight academics' perceptions of the teaching–research nexus and where possible to make comparisons between types of universities.

This chapter begins by providing an overview of the context of the Malaysian university system. This is followed by a brief introduction to the role of teaching and research in the university system. The discussion is focused on the public universities which are under the purview of the Ministry of Higher Education and which employ the majority of the country's academic staff. The chapter then proceeds to explain the academic career pathways, including appointment and promotion opportunities. The discussion for the most part of the remaining sections focuses on selected data from the Changing Academic Profession (CAP) study regarding key aspects of teaching and research activities and work preferences. The observations from the findings in the final section include organisational and policy implications for academic work roles and higher education planning.

14.2 Fifty-Five Years of Higher Education Development in Malaysia

The development of the Malaysian higher education system has a very short history and it is still evolving (Zailan 2009; Morshidi and Kaur 2010). Nation-state aspirations, the interplay of market forces, neoliberal thinking and cross-border or internationalisation of education are important forces or factors that have influenced and continue to influence the growth and development trajectory of this system. It is well documented that in the years immediately after Malaya gained her independence,

and in particular in the mid- to late 1960s, the development of this system was very much influenced by nation-state aspirations and capacity building for a newly independent nation (see Zailan 2009; Morshidi and Kaur 2010). Notably, the emerging Malaysian higher education sector in the early 1960s was very much centred on the University of Malaya, which was relocated from Singapore to Kuala Lumpur in 1963. Being the only university in Malaysia at that time, many resources were channelled to the University of Malaya, and it grew to become the only public university in Malaysia in the 1960s which was entrusted with the responsibility of providing an elite workforce for the new nation.

Student activism in the late 1960s prompted the introduction of the University and University Colleges Act, 1971 (UUCA 1971), which was a clear move towards a state control model of higher education. With an increasing demand for higher education places, three public universities were established in the 1970s with the UCCA 1971 as the enabling act for the establishment of these institutions. It was in the 1970s that we saw the emergence of a public university system in Malaysia. This was the basis for the growth and expansion of the system that we currently have.

In the 1970s and 1980s, with the state's grip on higher education, campus activities, students' lifestyle and academic freedom were closely monitored. Thus, in the 1970s and increasingly in the 1980s, we saw a powerful state controlling the public university system, buttressed by a centralised administrative and state financial system (Morshidi and Kaur 2010). Arguably, while the relationship between the state and public universities in the 1970s right up to early 1990s was typical of state control over an agent, instances of curtailment of academic freedom were very subtle in nature. Notably, academics would typically exercise self-censorship in their work-related activities.

The mid-1990s saw the onset of a restructuring of the higher education system in Malaysia following on from a significant trend worldwide as a result of changes in the global economic landscape. Malaysia instituted reforms to effect the changes in line with the changing global landscape of higher education. The essence of the restructuring process is a redefinition of the relationship between the university, the state and the market, and an important consequence of the implementation of a new set of relationships was the corporatisation of state-controlled public universities in Malaysia. This was very much in line with the global trend of reinterpreting the state–university-market nexus. Significant amendments were made to the University and University Colleges Act Amendment Act UUCA 1971, which made it possible to corporatise all public universities (Morshidi and Kaur 2010). Corporatisation of public universities is all about injecting corporate and market culture in the administration and governance system of public universities.

Although this chapter is about the public higher education system, it is pertinent to highlight the development and position of the private higher education system vis-à-vis the public system. Firstly, the private complements the public system, and secondly, many academics from the public system are now sitting in the top management of private universities and university colleges. The Private Higher Education Institutions Act 1996 primarily aimed at effecting internal restructuring and capitalising on internationalisation of education in Malaysia. From the late

1960s to the early 2000s, there was a rapid growth of both private and public higher education institutions. Private higher education institutions in particular need to be regulated to ensure proper development of the sector with quality provision of higher education as a top priority for the government. In view of the establishment of several new public university colleges (which were later upgraded to full university status) and the proliferation of private higher education institutions as a result of the Private Higher Education Act 1996 (popularly known as Act 555), a dedicated ministry to regulate and supervise higher education system and institutions was deemed necessary.

The establishment of the Ministry of Higher Education (MoHE) in 2004, the Public Higher Education Act 1996 (Act 555), the establishment of the Malaysian Qualifications Agency and the subsequent amendments to the UCCA 1997 saw the beginning of active state involvement in regulating the quality and diversity of higher education provision in the Malaysian higher education system. It is important to note that while the state is very dominant in the public higher education system, there were occasions where the state has toyed with the idea of 'steering from a distance' in so far as its relationship with the public universities is concerned. The introduction of the National Higher Education Strategic Plan 2020 and the National Higher Education Action Plan 2007 in 2007 introduced several interesting developments. The stratification of public universities into several distinct categories based on their ascribed mission and vision was a clear indicative statement of planned development of institutions and the system as a whole. Universiti Sains Malaysia was chosen as the only university within the Accelerated Programme for Excellence (APEX) aimed at initiating transformations in the Malaysian higher education system through sharing of best practices and innovative (and creative) ideas. Academics in this APEX university are expected to be transformative leaders and agents within the higher education system. Below this APEX status university are the research universities (incidentally APEX status USM is also a research university). The designation of Universiti Malaya, Universiti Putra Malaysia, Universiti Kebangsaan Malaysia and Universiti Teknologi Malaysia as research universities was deemed relevant and critical in Malaysia's drive towards achieving world-class ambition in the area of research and publications. The next level below research universities is 11 comprehensive/focus universities, and they primarily undertake teaching functions. But this does not mean that academics in these universities do not undertake serious and intense research activities. At the base of the Malaysian public higher education system hierarchy are the four technical universities, which were established to supply the nation with a technically trained workforce.

December 2011 marks the watershed for public universities and the Malaysian higher education system when the MoHE decided to decentralise and devolve the locus of final decision-making in four aspects of university activities from the MoHE and other central agencies to the board of directors/board of governors of the five research universities. Research universities were given 'autonomy' in the areas of student recruitment, academic matters and human resource. Autonomy in the area of university finance and income generation is still being negotiated with the Ministry of Finance.

The growth and development of the Malaysian higher education system, in particular the public sector as noted earlier, was primarily supported by no fewer than 28,000 academics (as of 2011). Between 2003 and 2011, the number of academics in the public sector almost doubled. Of this total, since 2008, there has been an almost even split between male and female academics in the profession within the public sector. Since 2004, the proportion of academics with a PhD qualification has reached a little over a fourth of the total while about half have a master's degree. While the proportion of academics with full professorship status has increased since 2003, the proportion is still under 8 % of the total number of academics in the public higher education system as of 2011. A large majority (no less than 74 %) of academics are at lecturer/senior lecturer level.

14.3 Teaching and Research in Malaysian Higher Education System

The relatively young institutional history of Malaysian universities is a part of the process of the creation of human resource development and knowledge generation for economic growth of the country. From the 1970s to early 1990s, the public university's main mission was to deliver education (teaching), which aimed at producing human resource. Most universities publically proclaim their commitment to teaching through documents such as mission statements, learning and teaching strategies and professional development strategies. In those days, the older universities had a policy that included the training of academics for PhD at renowned universities abroad. As Malaysia entered the industrial economic development phase in the 1980s, the pressure on the established universities such as Universiti Sains Malaysia, Universiti Putra Malaysia, University Malaya and Universiti Kebangsaan Malaysia for teaching and research began to take a new direction. Although much of their individual budget was spent on the provision of education to increase the number of undergraduates, there was also organisational effort at creating facilities and arrangements to improve research and graduate training. In the early 1990s, the older universities started to focus more on research, especially as a high proportion of their academics had returned with their doctorates. Thus, in the senior public universities, a Humboldtian tradition based on the interaction of teaching and research, together with an accepted convention that the delivery of both teaching and research was the responsibility of the academic staff in the universities, began to emerge.

In Malaysia's pursuit to become a developed nation by 2020, and in facilitating the acceleration of economic growth, key critical areas such as business, ICT, engineering, medical, agriculture, environmental science, biotechnology and oil, gas and energy have provided the public universities with a crucial focus for research and development. The public universities receive tremendous support from the government in terms of fund allocations, advisory services, institutional support, research grants, incentives, business subsidies as well as funds for postgraduate

research (Tneh 2011). Further pressure for research arose from the emergence of international 'league tables' of universities in the mid-2000s, such as those produced by the Times Higher Education and by Shanghai Jiao Tong University which place particular emphasis on research productivity. Malaysia's aspirations to chart some of her universities in the top 100 in the ranking of the universities have therefore significantly intensified the focus on research. This has prompted the public universities to emphasise the importance of research and publication.

In pursuit of the above set goals and targets, the senior universities carefully plan their strategies for stimulating research and publication efforts, which include increasing secured research funding, publication in journals with high impact factors, citations and their pool of principal investigators. The assessment of academic scholarship using measures such as impact factor and h-index has become a culture. Academics who demonstrate research productivity in quality publications are celebrated as they receive publication incentives in the form of cash and merit points in the yearly appraisal and in promotion assessment. However, these efforts have given a greater advantage to those academics in the field of science than those in the social sciences, hence widening the divide in terms of publications between these two fields.

MoHE's monitoring of research productivity is carried out via the Malaysia Research Assessment Instrument (MyRA), first introduced in 2006 and improved in 2009. MyRA is a 5-year peer review exercise to evaluate the quality of research, the results of which are used to rank research universities. Among the criteria used are quantity and quality of researchers, research and postgraduates; innovation and intellectual property; and income generation activities. MyRA scores are also used to evaluate universities that apply for research university status, as well as to evaluate the existing research universities to determine if they should retain their status. The Research Management Centre (RMC) of each university, together with entities within the university, is entrusted with the responsibility of promoting research and innovation and of managing data pertaining to research for self-monitoring purposes and also for MyRA.

To ensure that they achieve the targeted MyRA scores, either to maintain their RU status or to be promoted to RU status, the research universities have devised strategies based on the criteria spelt out in the instrument. Key performance indicators (KPI) for research and publications are drawn up accordingly. Although some academics view the KPIs set by some of the universities as almost impossible to achieve, the university management regards this as a strategy that may be successful. For example, University of Malaya (UM) successfully increased the number of ISI publications (544 in 2007, 704 in 2008 and 1,145 in 2009) by setting the KPI for grants received as RM 50,000.00 per staff per year (for S&T—science and technology) and for non-S&T to RM 10,000 per staff per year. The KPI for publication is based on the number of publications in ISI-indexed journals per year (min.), number of citations (minus self-citations) and h-index. UM has set the standard academic performance target and new promotion criteria by benchmarking against global research universities in Asia as well as in other regions. To promote research excellence, UM offers an incentive of RM 50,000 for publication in Nature and Science

(Ghauth Jasmon 2011). It is evident that the research universities are extensively using research output criteria in the rewarding and promoting of academic staff.

It is evident that since 2000, higher education in Malaysia has become strongly influenced by the market ideology—resulting in a corporate managerial culture in universities that subjects academics to corporate-like assessments such as performance-based evaluation and merit–reward schemes. Knowledge is seen, particularly in research universities, as a marketable product and a saleable commodity, and universities are viewed as business enterprises. It is no longer sufficient for academics to teach and conduct research for the sake of knowledge. Their teaching must now be customer oriented, and their research output is not just evaluated in terms of quality but also in terms of its relevance and commercial viability.

Although many in academia have a passion for both teaching and research, it is very clear that inclination towards research may bring more benefits, in terms of recognition, promotion, yearly appraisal, incentives and even monetary perks. In contrast, what does someone get by devoting greater effort to teaching? How would teaching multiple courses in a semester, putting students' needs as top priority and trying out ways to improve teaching and learning be the determining factors in promotion? How can teaching effort be quantitatively and objectively measured, in similar fashion to research effort? How can a more inclusive KPI be set for teaching efforts? Should there be incentives for greater achievements in teaching, as practised in the case of publications? A few universities have established some plans to recognise teaching efforts by introducing the *teaching track* for promotion. However, it has not been fully implemented. Most Malaysian public higher institutions use student evaluation of teaching as part of the indicators of good teaching, but the objectivity of student perception is debatable.

The idea of teaching as a form of scholarship (Boyer 1990) has blossomed into the idea of *scholarship of teaching and learning*, more popularly referred to as SoTL, a scholarly inquiry into student learning. The growing movement of SoTL, which originated from the University of Indiana, is now being practised in other parts of the world. In Malaysia, three of the five research universities have pioneered the SoTL effort by providing research grants to support work in classroom practices. Besides widening research and publication in niche areas, most importantly SoTL shows the commitment towards enhancing teaching and learning and establishing approaches that increase effectiveness of teaching and learning.

To ensure that Malaysian higher education remains relevant and trusted as the provider of quality teaching, several establishments have also been set up. The Malaysian Qualifications Agency (MQA), established in 2007, was entrusted with the key responsibility of monitoring and overseeing the quality assurance practices and accreditation of national higher education. Universities have to maintain records and provide evidence of efforts at ensuring quality in teaching and learning. Strict guidelines are implemented by the MQA in the hiring of lecturers, teaching qualifications, lecturer-to-student ratio, equipment and infrastructure and in the use of market surveys conducted to gauge the viability and marketability of the students upon graduation. To ensure the quality of

undergraduate teaching and learning, MQA has developed the Rating System for Malaysian Higher Education Institutions (SETARA). The SETARA criteria are divided into three major components: (i) input—governance, physical and financial resources and talent (quality, experience and diversity); (ii) process—curriculum, delivery, assessment, monitoring and ancillary activities; and (iii) output—quality of graduates and graduate satisfaction. In 2011, SETARA is extended to D-SETARA that focuses on specific disciplines. Most Malaysian universities have entities such as the Centre for Academic Development or Centre for Teaching and Learning whose functions include monitoring of quality assurance of teaching and learning. These centres are partly responsible for providing data for the SETARA assessment.

MoHE established the Higher Education Leadership Academy (AKePT) in 2008 as part of its attempt at developing academic leadership in teaching, research and management. This has been reflected in the number of professional academic activities carried out by AKePT. In addition, recognitions and rewards are given for eminence in teaching and research activities both at institutional and national levels. It is clear that the Ministry of Higher Education is dedicated to projecting both research and teaching competencies of its fellow academics.

The action plans for the transformation of higher education institutions (2006–2010, 2011–2015) have changed the public university environment, and the accompanying diversification of the mission and educational functions of public universities into research, comprehensive and technical/focused universities has raised issues such as whether there is a diversified role structure to meet the reality in the public universities (the National Higher Education Strategic Plan 2020). The existing scholarship on academic work and reward structure focuses on which mission is most rewarded. For instance, research-related activities are perceived to play a prominent role in the academic's work and promotion structures in research universities, while teaching-related activities are emphasised in teaching and technical universities. As research universities focus more on graduate studies, the load of undergraduate teaching is transferred to comprehensive and technical universities. As a result, in research universities, for example, a division of labour has emerged between teachers and researchers. In addition, the new performance measurement systems (MQF and MyRA) have created a culture of assessment and selectivity among universities. In this environment, staff tend to favour an output in each area of activity. Due to these factors and initiatives, a rather paradoxical situation regarding teaching and research is seen to exist in the Malaysian public university system.

Questions remain as to whether teaching is being sidelined especially in research universities because of the overemphasis on research which is viewed as the catalyst in improving the wealth of the nation. Who are then entrusted with the responsibility in developing the first class human capital as depicted in the National Higher Education Strategic Plan 2006–2020? Despite being largely heterogeneous and structurally similar, there is no doubt that Malaysian universities have become diverse with respect to the way they manage the changes and demands exerted upon their institution and their role in teaching and research.

14.4 Academic Career Pathways

The appointment and promotion of excellent faculty are keys to an academic institution's overall excellence. A successful university usually attracts highly qualified, committed and adequately rewarded academics. To achieve this, each university designs and implements appointment and promotion processes which are aimed at encouraging, developing and maintaining quality academics as well as attracting the 'best brains'.

Malaysian academics employed in public universities are considered as public civil servants and therefore are bound by the rules and regulations of the public services statute (UUCA 1971, 2009). Each academic rank is in line with the general structure of the Malaysian civil service and is a permanent post which ends with retirement. As such, there is a general convergence in the career patterns of academics in Malaysian public universities. Academics are recruited and appointed by an individual institution, but the public universities recruit and appoint staff on the same conditions and regulations. In most institutions, academics begin their career as a tutor or an assistant lecturer. Newly recruited staff, like other public service employees, are granted full tenure after a 1–3-year period of probation. Once they are granted tenure, they benefit from the common public employment statute which guarantees them continued employment, structures their career and regulates their financial compensations (gratuity and Employees Provident Fund). As civil servants, academics receive perks such as yearly salary increment, subsidised housing allowances and car loans. Thus, job security in the public sector is higher than in the private sector. Academics retiring from public universities receive pensions and can be rehired on a contractual basis until the age of 65, unlike other government officers who retire at the age of 60.

The academic rank system in Malaysia is generally composed of four career rungs: lecturer, senior lecturer, associate professor and professor. In well-established universities, such as the research universities, only people with doctorates can be hired directly as a lecturer. The academic rank is divided into several grades—each grade being defined by a common or prescribed salary scale. Academic grades range from DS45 (lecturer) to DS51/52 (senior lecturer), to DS53/54 (associate professor), to VK7 (professor). The formal description of the professoriate is uniform, but in practice, professors in Malaysia are further divided into three salary categories referred to as professor (special grade) C, B, A and distinguished professor. There is not only a hierarchy of incomes among the various levels but one of prestige as well, with distinguished professor at the top. The difference between academic promotion and the promotion of other civil servants is that the promotion of the former is based on scholarly achievement, while the latter is decided competitively within the limits of the number of vacant positions. Normally in the latter case, promotion is based on seniority.

The assessment for promotion in Malaysian universities is primarily quantitative in nature. Promotion largely depends on the number of publications, research conducted, hours of teaching and so on. In addition, promotion criteria also include

consultancy work and service to the community. The promotion process, however, is far from straightforward. There are many complex, interrelated issues pertaining to various aspects of promotion, some of which are outlined here.

Despite having one remuneration scheme with a common grade and salary system, Malaysian public universities have different academic promotion policies and practices. Thus, it is not uncommon to hear about individuals from established universities who have published a number of books and journal articles who have yet to be promoted to a higher rank, while individuals in less established universities who have neither published nor researched much are promoted early in their academic career. As a result, the majority of academics believe that research and publication make little difference in promotion (Noornina and Zainal Arrifin 2010; Azman et al. 2012). This situation creates unhappiness and dissatisfaction among many academics, adding to the complexity in the promotion process in Malaysian public universities. In general, systems of weighting seem to be inadequate because there is usually a heavier weighting on research than on teaching or service at major research and comprehensive universities (Azman et al. 2012). In addition, each university develops its own set of descriptive standards and specifies the number of products and activities expected for promotion, and these quantitative formulas differ from one university to another despite the fact that the same promotion involves the same grade and salary. These discrepancies in promotion arise because decisions on appointment and promotion are the responsibilities of the board of directors of the respective public universities. However, the scheme of service is the same within the public university system.

Globalisation has far-reaching consequences for universities in Malaysia. Since the English language has become the dominant medium of academic discourse, it is the dominant language in publication and research activities (Aida Suraya et al. 2008; Ahmad Nurulazam et al. 2010). This has directly or indirectly influenced the promotion criteria. Academics proficient in English will benefit as there are greater opportunities for them to publish in international refereed journals, while those who are not will find it a challenge in their quest for promotion. Globalisation also brings in foreign academics to local universities. As a result, local academics may need to compete for rewards and recognition with foreign academics serving in the same university.

A more serious challenge for academics in their promotion bids is the 'research versus teaching' dilemma, in which promotion is pegged more to research than to teaching. It is an implicit assumption in Malaysian universities that in order to gain credibility as an academic, an individual needs to be a respected researcher. In the promotional exercise, as one progresses from lecturer to professor, there is increasing weighting for research vis-à-vis teaching. Teaching is perceived as having less significance. As a consequence, some academics may spend less time on teaching but more on research, as a promotion strategy. This is obviously a predicament for those academics who view teaching as their first priority. There are many academics who may find the greater emphasis on research over teaching demoralising. These academics tend to be those who devote their time and energy to teaching and are highly committed to their students, but owing to the research-oriented academic culture, they may find their efforts unrewarded or undervalued. This dilemma is common in countries like the UK and the USA, where the motto of 'publish or

perish' equally applies. This may have to do with the perception that teaching quality is hard to measure and evaluate as opposed to research and publication. Further, the establishment of research universities (RU) gives rise to another related issue: should academics in the RUs, especially those aspiring to be professors, be assessed differently from those in non-RUs?

14.5 The Malaysian Academic Profession at a Crossroads

14.5.1 CAP Methodology

In the following sections, we discuss the perceptions of the Malaysian academics and their response to aspects of teaching and research activities relating to the teaching–research nexus. The data that is used is obtained from the CAP study which was administered in 2007 for the purpose of gathering empirical data from academics nationwide about their profession. The survey included questions concerning workload, work orientation, level of satisfaction, aspects of management and governance, key aspects of teaching and research activities and work preferences. The survey also included demographic questions to enable disaggregated comparisons by university type, gender and academic rank. In this chapter, the relevant CAP data is divided for analysis by the classification of public institutions according to research, comprehensive and technical universities. This enables some exploration of differences between academics in research universities and those with stronger traditions of emphasis on teaching in comprehensive and technical universities.

The CAP survey of the academic profession in 18 Malaysian public universities was broadly representative of the range of institution types. The subsample of 816 academics who completed the questionnaire represents a response rate of 15 %, fairly acceptable in the times of 'survey fatigue', particularly so given the increasingly strong negative attitudes of academics towards filling in time-consuming questionnaires. Female respondents (50.4 %) slightly outweighed male respondents (49.6 %) in the sample. The majority of the respondents worked in comprehensive universities (52.0 %), while the rest worked in research universities (34.0 %) and technical universities (14.0 %). More than half of the respondents were lecturers (58.1 %), while the others were associate professors (16.7 %), professors (7.2 %), assistant professors (0.2 %), senior lecturers (17.6 %) and others (0.2 %).

14.5.2 Academics and Their Work

Measuring the work time of academics is extremely difficult due to the flexible work arrangements. In the CAP study, the respondents were asked to consider the hours spent per week on research and on teaching for both the teaching and non-teaching sessions. The data in Table 14.1 shows the mean number of hours spent for the 'class in session' and 'class not in session' periods. Generally, the respondents

Table 14.1 Hours per week spent on teaching and research

		Class in session		Class not in session	
Type of university		Teaching	Research	Teaching	Research
Research university	*N*	253	253	179	179
	Mean	16.11	10.8	8.56	16.64
Comprehensive university	*N*	385	385	248	248
	Mean	19.51	6.61	8.66	11.19
Technical university	*N*	101	101	70	70
	Mean	18.36	7.93	8.51	13.41
Hours/week for all universities	*N*	739	739	497	497
	Mean	18.19	7.98	8.61	13.46

reported an average of 18.2 h per week on teaching during class in session. The average contact hours dropped to 8.61 over the nonteaching session, although the teaching-related activities still took up around 9 h per week. This shows that 9 h per week on teaching activities was still an important ongoing commitment of the workload in the supposedly 'nonteaching' period. Research, on the other hand, involved 7.98 h per week on average during the teaching period but increased distinctly to 13.5 h of work time over the 'nonteaching' session.

The data shows little difference among the three university types in their teaching hours during both sessions. Respondents from comprehensive universities seem to spend slightly more hours on teaching during the teaching session (19.5) and the nonteaching session (8.66) than those from research (16.1, 10.8) and technical universities (18.4, 7.93). The pattern is reversed when it comes to hours spent on research, with the academics from research universities spending markedly more time (10.8) than those from technical universities (7.39) and comprehensive universities (6.61) during class in session. Likewise, respondents from research universities also reported spending more time (16.6) than those in comprehensive (11.2) and technical (13.4) universities on research during nonteaching sessions. There seems to be a shift in focus of academics in the 'nonteaching period' to research based on the marked increase in the time allocated for research in the two time frames.

Undergraduate teaching (73.8 %) is given the highest percentage of instruction time as the core of work commitment for the respondents. Only about 20 % of the respondents were involved in masters and doctoral teaching or supervision. Variations by institutional type on commitment to different levels of instruction time are particularly obvious. Despite the pressure for research time, the academics from the research universities reported spending 61.9 % of their instruction time for undergraduate teaching. Understandably, the academics from the comprehensive and technical universities spent more time on undergraduate teaching compared to their colleagues from research universities (77.8 % and 88.7 %, respectively). On the other hand, the academics from the research universities spent approximately 34.2 % of their instruction time on masters and doctoral teaching, while only 13.9 % of the academics from comprehensive universities and 8.3 % from technical universities were involved in postgraduate teaching.

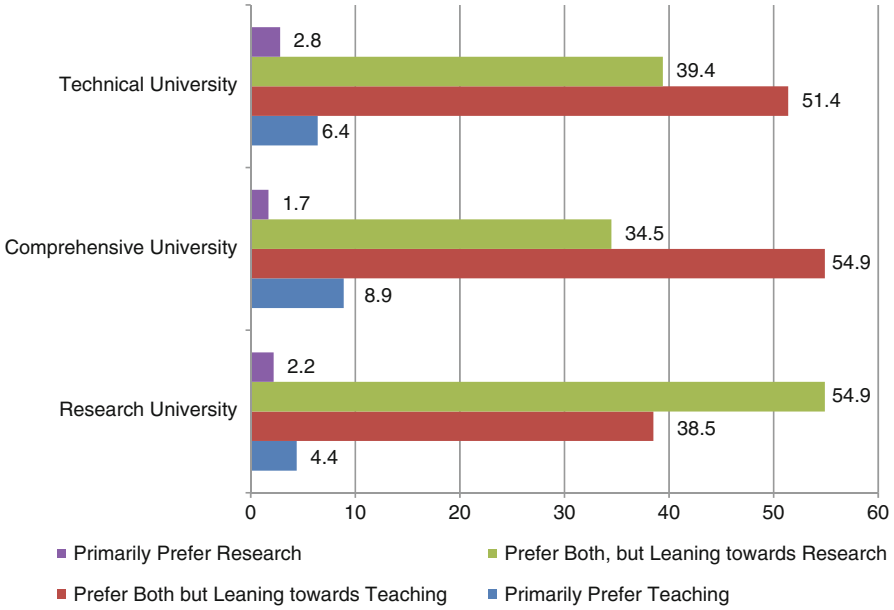

Fig. 14.1 Preference for teaching and research by university type (percentage)

14.5.3 Preference for Teaching and Research

The respondents were asked to rate the extent to which they were oriented to both teaching and research or primarily to one or the other. Figure 14.1 shows the extent of the strength of their preference. A clear majority of the respondents professed an interest in both activities (91 %). However, while 7 % were primarily interested in teaching, only 2 % were primarily interested in research. There are notable variations in these career interests by institution type. More than half (54.9 %) of the respondents from research universities reported having a much stronger preference for research than for teaching, compared with 34.5 % of respondents from comprehensive universities and 39.4 % from technical universities. Those in the comprehensive (54.9 %) and technical universities (51.4 %) were also significantly more likely to have a much stronger interest in teaching than those in the research universities (38.5 %).

14.5.4 Specific Teaching Activities

As we have seen in the earlier analysis, most of the academics spent an average of 18.2 h per week on teaching-related activities. There were however possible variations in the way the work of teaching was managed by individual academics and in the

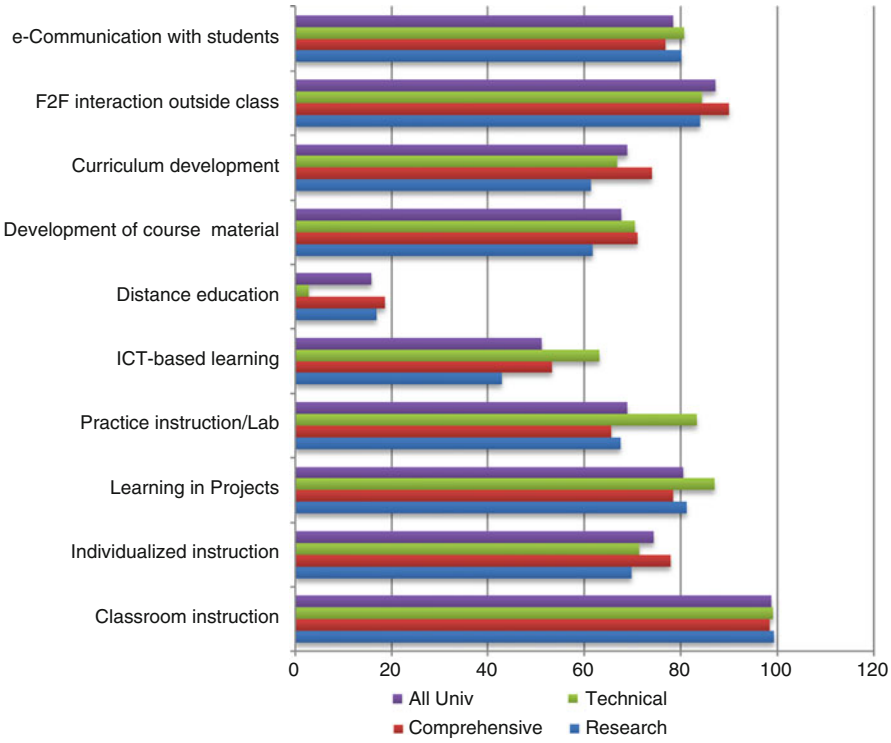

Fig. 14.2 Commitment to specific teaching activities by university type (percentage)

priorities they gave to the tasks. The CAP study asked respondents to indicate their involvement in the types of teaching activities. The responses are reported in Fig. 14.2.

The responses to teaching-related activities emphasise the importance given by the respondents to classroom interaction and lecturing. Approximately, 98.7 % of the respondents reported that they were involved in classroom instruction or lecturing. Face-to-face interaction outside class (87.2 %) and learning in projects (80.5 %) figured prominently on the list of teaching activities. Clearly, the academics who were teaching were those who reported using the project-based learning approach, and for most of them, teaching means face-to-face activities in which they work closely with groups of students. The respondents reported that they were least involved in distance education (15.9 %) and ICT-based learning (51.1 %). The low involvement in technology-based activities may be due to the time demands of developing course materials via technologies. At the institutional level, the academics from the technical universities seemed to have higher use of lab/practice instruction and ICT-based learning in their teaching compared to those from research and comprehensive universities.

The academics were also asked (a) if they were encouraged to improve their instructional skills based on teaching evaluation, (b) if there were adequate training courses for enhancing teaching quality and (c) if practice-oriented knowledge and

skills were emphasised in their teaching. The majority of academics agreed and strongly agreed with the three statements ($a = 80.1$ %, $b = 72.6$ % and $c = 85.5$ %). There is a notably lower proportion of academics from research universities who agreed or strongly agreed with the three statements regarding teaching ($a = 75$ %, $b = 58.2$ % and $c = 83$ %). The lower emphasis given to (b) training, evaluation and quality teaching in research universities may be due to more available training for research skills development. On the other hand, the emphasis on teaching development activities by comprehensive and technical universities is probably due to the universities having relatively higher proportions of young academics or early career academics—compared to research universities—which would necessitate induction and professional training for teaching.

14.5.5 Specific Research Activities

The CAP survey asked a number of questions on aspects of research. From a list of four types of research, the respondents were asked to indicate which type they had been engaged in over the previous 5 years. Most of the academic research that the respondents reported having been involved in were applied or practice oriented (90.7) and basic/theoretical (88.7 %). The respondents were less active in technology transfer or commercially oriented research (50.5 %). Institutional differences in the types of research conducted were fairly predictable but nonetheless striking. In the research university sample, most academics were working on different types of research including research that was international in orientation (76.2 %). However, only just over one-third (37.3 %) were involved in technology transfer. Conversely, the academics in technical universities tended to engage more in research that involved technology transfer (85.5 %). On the other hand, the academics in comprehensive universities tended to conduct more social-oriented research (85.8 %) than the respondents from other universities.

The majority of the academics who do research also reported that they worked with collaborators in their research projects (88.1 %) and that they collaborated with researchers from other local institutions (54 %) too. Rather predictably, a higher proportion of academics from research universities collaborated with researchers from other Malaysian institutions (67.7 %) compared with those from comprehensive (46.7 %) and technical (45.3 %) universities. More academics from research universities (43.7 %) than both the comprehensive (25.2 %) and technical universities (13.7 %) collaborated with international colleagues in their research projects.

Additionally, using the list of activities in Fig. 14.3, the respondents were asked to indicate their involvement in the types of research activities during the previous academic year. Writing academic papers that contain research results figured prominently on the list as substantial proportions of respondents (82.6 %) reported having been mostly engaged in this activity. The majority of the academics also reported that they had been involved in writing proposals (71.5 %)

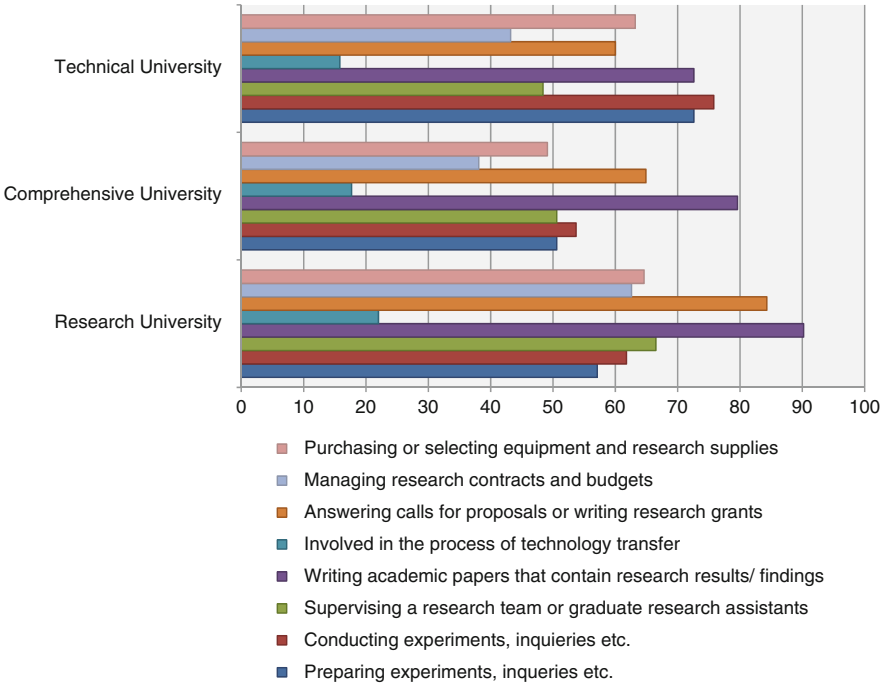

Fig. 14.3 Involvement in specific research activities by university type (percentage)

to secure grants. The research activity that academics were least active in was technology transfer (19.1 %).

There are some noteworthy differences by institutional type as to academics' involvement in the types of research activities. Figure 14.3 shows that significantly more respondents from the research universities were involved in writing academic papers based on research findings (90.2 %) than those academics from comprehensive (79.6 %) and technical universities (72.6 %). The same pattern applies to the writing of research proposals, managing research contracts and budgets and supervising a research team. The reverse is the case with respect to items on preparing and conducting experiments. Here, more academics in the new universities, i.e. technical universities than either the research or comprehensive universities, reported that they had been engaged in preparing and conducting experiments and enquiries.

Data from the CAP survey provide a picture of research productivity among the respondents. The data suggest that on average, Malaysian researchers were not that active or productive in the previous 3 years. On average, the academics hardly published in scholarly books (an average of 0.74 authored scholarly books and 0.48 published in scholarly edited books). The academics published an average of 4.7 chapters/articles within the previous 3 years. However, many presented papers in conferences (an average of 8.7 in the previous 3 years). As expected, academics in

Table 14.2 The relationship between teaching and research by university type (percentages)

	Teaching and research are hardly compatible with each other		Your research activities reinforce your teaching	
Type of university	Agree	Disagree	Agree	Disagree
Research university	27.7	50.8	79.0	8.4
Comprehensive university	36.5	35.0	68.1	8.7
Technical university	32.1	33.0	54.8	13.5
Total	33.0	40.0	70.1	9.2

research universities performed better in all aspects of publication compared to their counterparts in the other universities.

14.5.5.1 Research–Teaching Nexus

Two questions in the CAP survey addressed the respondents' views on the relationship between teaching and research. In response to the first, less than half of the academics (40 %) perceived that teaching and research were compatible activities. More academics in the research universities agreed or strongly agreed (50 %) that research and teaching were not distinct from each other and that they were compatible.

The second question aimed to ascertain whether the respondents perceived positive or negative interactions between teaching and research. Table 14.2 summarises the relationship between teaching and research according to university type. The most popular conception was that research enhanced teaching (70 %). More respondents from the research university (79 %) than either the comprehensive (68.1 %) or technical universities (54.8 %) considered that their research contributed to their teaching. This means that the majority of the Malaysian academics in the survey were likely to use research as input to their teaching. Thus, despite being unsure of the compatibility of research and teaching, the majority believed that research activities reinforced teaching.

Malaysian academics' assessment of their working conditions revealed somewhat positive feelings about their university working environment. Slightly more than half (55.7 %) of the academics believed that their working environment had improved since they started their career. The perception of improved working environment over 5 years was shared by a higher proportion of academics from technical universities (63 %) who agreed and strongly agreed with this item. In contrast, only 50.9 % of the academics from research universities indicated that their working environment had improved.

Despite somewhat lukewarm feelings towards the working environment, 66 % of the sample was still basically satisfied with their job. There are only slight differences between the institutional types. There appears to be slightly lower levels of satisfaction in the research university (62.9 %) as compared to comprehensive (66.6 %) and technical (68.6 %) universities.

14.6 Relationship Between Teaching and Research: Synergistic or Antagonistic?

In this chapter, selected Malaysian CAP data was used to look at how academics viewed teaching- and research-related activities. The data provides a general picture of the two most important and enduring academic values perceived by the sample. The academics' perceptions are helpful to gain insights into the Malaysian public universities' academic culture and identity, but we acknowledge that they might not be the most reliable indicator for the presence of any relationship between research and teaching. Nonetheless, bearing in mind the wider institutional and national context, the data is considered relevant for us to draw some initial observations. These observations which are based on widely shared scholarly values of teaching and research and the commitment of a representative selection of academics have obvious organisational and policy implications for the structuring of academic work.

The Malaysian academics in the public universities are considered permanent staff, and they work long hours. They have a high level of satisfaction and enjoy reasonably good working conditions. The oft-quoted statement is that the service scheme for academic staff is one of the most envied schemes of service in the Malaysian public service scheme because promotion is not based on seniority and availability of posts. Academics are promoted based on their academic and research excellence and publications record.

The majority of Malaysian academics are involved in undergraduate teaching and hence spend longer hours on teaching activities. Those who do research tend to be engaged in applied and basic types of research, but they are not particularly productive in publication despite being engaged more in writing academic papers than in other research activities. The majority of the Malaysian academics have preference for both teaching and research.

The findings above suggest that Malaysian academics still have a strong teaching and research mission. The findings confirm that the academics still hold on to traditional academic values as they spend long hours on teaching. However, we argue that what accounts for more hours spent on teaching may not necessarily mean an increase in class contact hours but more on the teaching-related activities required by the Malaysian Qualifications Framework (MQF).

The perception that academics are undertaking unnecessary amounts of administrative tasks related to teaching is widespread (Fauziah Nordin 2009; Rohana Yusoff et al. 2010). This is evident from the 9 h per week reportedly spent on teaching-related activities during the nonteaching sessions. The MQF and ISO requirements of reporting and collecting evidence are indeed sources of irritation and complaint by the academics, regardless of the legitimacy of their purposes. Thus, there is a need for a better understanding of the nature and extent of administrative activities associated with institutional and national benchmarking and quality audit requirements in order to avoid their negative effects on the quality and productivity of academic work. In sum, there should be an ongoing monitoring of accountability

and auditing processes to ensure that they have minimal impact on the time available for teaching and research.

The other most important observation, particularly with respect to workload, is that the overall number of work hours given to teaching and research for academics in research universities is equally high. Despite the significantly longer time given to research by the academics from the research universities, the time devoted to teaching-related activities is still high. In the last 5 years, it has been widely held that the workload of academics in research universities has increased if not doubled (Normala Daud 2010). While being cautious of exaggerated claims, it is important to note that the increase in working hours in recent times has indeed further pushed up the average work time in research universities to quite a high level. The question remains whether the academics in research universities have a realistic sense of the kind of working hours that might optimise their productivity. Contrary to expectations, the CAP data has shown that they are not productive in publications, especially when compared to the academics from Canada and Korea.

Not surprisingly, the majority of Malaysian academics continue to profess interest in both teaching and research. The increasing number of academic staff possessing a PhD in most of the public universities may have resulted in a greater motivation to teach and be involved in scholarly activities. It may perhaps be inferred that the academics in the survey appear to base their work and identities around both teaching and research and that they perceive their roles in both teaching and research as interdependent.

The fact that academics from research universities like both but lean towards research and academics from comprehensive and technical universities are interested in both but lean towards teaching reflects some key institutional differences in terms of maturity and mission. The variation in missions among the universities, with the research universities emphasising research, comprehensive universities going for a balance of teaching and research and technical universities emphasising teaching, has influenced how academic work is valued differently in each of these types of universities. New ways of balancing traditional work patterns and organising time and energy on a narrower set of more specialised activities are needed for public universities, especially for the research universities. Each university has to continue to devise new strategies and new models of academic employment tailored to the missions of their institutions. At the most basic level, there is a need to find creative solutions in the management of the tensions between research and teaching. If the workload standards are supposed to reflect the desired mission of a university, then rewards and promotion must also be aligned with the quantity and quality performance set out in the workload.

Nevertheless, problems still arise when the academics' salary structure is the same for all the public universities. Although some efforts have been made to incorporate a fairer approach to evaluating teaching and research performance within the promotion guidelines at the national level, each public university still has the autonomy to divide, reward and promote their academics. Based on their research mission, and as ranking requirements have risen and competition intensified, the rules and standards for evaluating promotion in research universities are becoming

increasingly more stringent. This has promoted the movement of academics among universities, especially those from research universities to comprehensive and technical universities. Usually, those who fail to be promoted are those who did not meet the criteria for research and publications. While the movements (academic mobility) benefit the individual academic in terms of rank and salary, it also creates status and credibility distinctions within the public university system.

Thus, there is an increasing urgency for both national policy and institutional management to set the extent to which Malaysian academics in public universities can and should be both teachers and researchers and the types of research that support the core missions of the university. Fundamental research that allows researchers to be up to date with the state of the art would be more beneficial for those who are more interested in teaching and therefore should be emphasised by the comprehensive and technical universities. Thus, strategic responses are needed to address the challenges of reconfiguring the expectations for academic work. This includes the allocation and distribution of academic work roles within the academic staff structure, new approaches to the ways in which academic work is conceived and valued and how achievements are recognised and rewarded. Research universities are currently making efforts to introduce career pathways and promotional tracks for teaching and research and the allocation of internal grants for action research to assist those academics more inclined towards teaching. While there are benefits for differentiation and restructuring of roles and promotion tracks, it has to be borne in mind that it also has the potential for undermining the possible benefit to students of any synergy between teaching and research activities.

Evidently, the teaching–research nexus remains a relevant concept that differentiates university from other forms of education and training (Taylor 2007; Jenkins et al. 2003; Grant and Wakelin 2009). The strongest interpretation of the nexus is that quality university education can only be given in the subjects where the lecturers themselves have undertaken research. This need not mean that all academics are conducting research or are teaching in their area of research. The results of the analyses in the preceding sections show that Malaysian academics in the CAP survey had contradictory perceptions regarding the teaching and research nexus. Although they perceive teaching and research as incompatible, they yet perceive that research activities reinforce teaching. Thus, there needs to be ways of ensuring that learning is actively connected to research within institutions so as to maintain the quality and meaning of university education.

It is widely observed that in the Malaysian public universities, research universities included, there is a lack of explicit strategies to promote the synergy of teaching and research. The challenges of promoting the synergy are compounded by the fact that at the managerial level, teaching and research are treated as distinct, whereas on the intellectual level, they are perceived to be synergistic (Taylor 2007; Coate et al. 2001; Verburg et al. 2007; Gottlieb and Keith 1997). As a result, the significant benefits of research to teaching are not articulated and managed well in the universities. Teaching and research are separately accounted for in terms of time and resource commitment as well as for rewards. For instance, at meetings to discuss workload distribution for each academic session, only teaching and supervision

hours are counted as workload. Most universities manage and assess teaching and research differently. Most importantly, there is no perceived 'added value' or reward from the effective application of the teaching–research nexus.

14.7 Conclusion

The academic work has stretched rather than adapted to meet the challenges of the transformation of the HE sector in Malaysia. The situation is suspected to have become worse and more complicated after 2007. Many major reforms have taken place in the public university system during the implementation of phase I of the transformation plan which ended in 2010. Phase two of the transformation plan took off in 2011 and will end in 2015. The pressure for the academic profession to evolve will continue to increase in the next 3 years as the agenda to strengthen and consolidate effective strategies to ensure achievement in phase two of PSPTN continues. Apart from strengthening efforts at the national level, an additional policy document called PSPTN2 Malaysia's Global Reach: A New Dimension has been prepared to fulfil current and future demands in Malaysia's efforts to compete globally (Ministry of Higher Education 2011). With these expectations, academics in Malaysia will continue to deal with issues arising from increased workload, the competing demands of teaching and research, feasibility and sustainability of research funding, less cooperation with peers in other institutions due to institutional competition and performance standards and indicators. If the academics continue to be overwhelmed by their workloads and the range of their responsibilities (including community service, administration, technology transfer, consultancies, teaching generic skills, teaching entrepreneurship skills), there is a possibility that the creativity, innovation and originality that they put into their academic work may soon be eroded. This observation calls for a systematic research agenda that looks at academic work roles and expectations and the number of hours demanded for teaching, learning and services, as well as the tension and the fragmentation of tasks that will undoubtedly threaten the quality of both teaching and research.

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Chapter 15
From Teachers to Perfect Humboldtian Persons to Academic Superpersons: The Teaching and Research Activities of the South African Academic Profession

Charl C. Wolhuter

15.1 Introduction

As in the rest of the world, universities are assuming ever-increasing importance in South African society. A pivotal part of the university sector is the academic profession—of such importance that it could well be said that the health of the academic profession is an index of the state of the higher education sector. In fulfilling its twin functions of teaching and research, the South African academic profession has been for the past few decades, and especially since the early 1990s, at the receiving end of an array of vast-reaching changes. The recently completed Changing Academic Profession (CAP) survey of the academic profession, which also covered South Africa, gives a rare chance to obtain a glimpse as to how the South African academic profession is experiencing these changes, especially with relation to their fulfilling of their teaching and research assignments. The aim of this chapter is to report on the findings of the CAP survey regarding the teaching and research functions of the South African academic profession. First the historical background of universities in South Africa will be surveyed, outlining the series of far-reaching changes which came on the way of the profession. Then the research methodology will be explained and the findings presented and discussed.

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15.2 The Historical Evolution of Higher Education in South Africa and the Ever-Increasing Avalanche of Change

15.2.1 Beginnings

Formal education in South Africa dates only from as late as 1652, when the Dutch East Indian Company decided to establish a refreshment station at a site where Cape Town is today. Such a raison d'être for a colony and economy had no need for higher education. The same could be said when the Britain took over the Cape Colony in 1806, being as it was still a preindustrial agrarian economy. The first university to come into being in South Africa was the University of the Cape of Good Hope, which was established in 1873 (its name was subsequently changed in 1916 to the University of Cape Town). After the formation of the Union of South Africa in 1910, a second university was established in 1916 in Pretoria, in the northern part of the country. The name of this university was the University of South Africa (it subsequently became a distance education university). Other universities were established in the course of the twentieth century: the University of Stellenbosch (1916), the University of the Witwatersrand (1922), the University of Pretoria (1930), the University of Natal (1949), the University of the Orange Free State (1950), the Rhodes University (1951), the Potchefstroom University (1951), the University of Port Elizabeth (1965, its name has later been changed to the Nelson Mandela Metropolitan University), and the Rand Afrikaans University (1967, its name has later been changed to the University of Johannesburg). All these universities (with the exception of the distance education institution, the University of South Africa) catered for the White section of the South African population. Secondly, being modeled after universities in the colonial mother country—Britain—they all resembled British universities of the time: institutions offering a liberal arts education, universities with a strong ivory tower character, and cut off from societal realities and exigencies (Wolhuter 2009).

Higher education for Black South Africans commenced when the South African Native College was established in 1916 at Lovedale. This institution became the University of Fort Hare in 1949.

15.2.2 The Influence of the Context of an Evolving Colony

After the industrialization of the country began to take off in the twentieth century, a second type of higher education institution came into being. This institution was named the Technikon, and it offered higher education with a technical-vocational bent. By the end of the 1980s, there were eight Technikons in South Africa, offering higher technical-vocational education for White South Africans: Cape Technikon, Natal Technikon, Port Elizabeth Technikon, Pretoria Technikon, Vaal Triangle Technikon, Witwatersrand Technikon, Free State Technikon, and the Technikon RSA (the Technikon RSA was a distance education institution).

15.2.3 Policies of Racial Segregation as Shaping Factor in the Development of Higher Education

The second contextual factor which shaped higher education in twentieth-century South Africa was the segregation policies of government. A typical colonial setup, de facto racial segregation, had always been a feature of South African society. However, in 1948 the National Party was voted into power (by the White electorate, to which the franchise was limited). The National Party introduced a system of rigorous de facto and de jure racial segregation—the policy of *Apartheid*—in every sphere of society, including education and higher education. Within the geographical territory of South Africa, ten so-called Homelands were carved out for Black South Africans. The idea was that within these Homelands, Black South Africans should develop to modernization. Each Homeland should then have its own government, health services, education system, etc. Each Homeland should then also have its own university. This laid the basis for a proliferation of universities during the decades after 1948. Eventually, besides the University of Fort Hare, another ten universities were established for Black South Africans: the University of the North (later renamed the University of Limpopo), the University of Venda, the University of Qua-Qua, the University of Zululand, the University of Bophuthatswana, the Medical University of South Africa, the University of Durban-Westville, the University of the Western Cape, Vista University, and the University of Transkei. Also the following Technikons were established for Black South Africans: Technikon Northern Transvaal, Mangosuthu Technikon, Setlogelo Technikon, Peninsula Technikon, and ML Sultan Technikon. Being, on the one hand, modeled after the White higher education institutions of South Africa and, on the other, having as its main assignment the education of a pool of skilled human resources of mainly teachers, civil servants, and health workers for the various Homelands, the brief of all these Universities and Technikons was virtually exclusively teaching.

15.2.4 The International Academic Boycott

The segregation policies of the South African government incurred the wrath of the international community, and especially from 1961 (when South Africa ceded from the Commonwealth and became an independent republic) the country was subjected to an extensive range of boycotts from the international world. These include diplomatic boycotts, economic boycotts, sport and cultural boycotts, and an international academic boycott. The international academic boycott included the following:

- A refusal of international scholars to collaborate with South African scholars
- A refusal by some publishers to provide access to information (e.g., books, computer software)
- A denial of South African participation at international conferences

- A denial of access to South African academics by certain institutions abroad
- A refusal to act as external examiners for theses presented at South African universities (Harricombe and Lancaster 1995)

These boycotts also had the effect to isolate South African universities from international trends in academe, such as the increasing emphasis on the research function of universities, the democratization of universities, the denudation of the power and autonomy of academics, and the rising cult of managerialism and its influence on the professional lives of academics.

15.2.5 First Pressure for Research

Universities in South Africa have traditionally been conceptualized as primarily teaching institutions, with research occupying a subordinate role (Sutherland and Wolhuter 2002, pp. 77, 79). Yet the international trend of pressurizing academics to publish did reach South Africa eventually too. No doubt other factors which played a role were the international boycott and the need to develop high-technology industries locally, especially with regard to the military-industrial complex and the need to develop alternative sources of energy in response to the fuel boycott. In 1984 a new subsidy formula was introduced which linked the amount of funding which universities will obtain from the government to inter alia the research output of staff attached to a university.

15.2.6 The Momentous Changes of 1994

1994 is another key date in the history of South Africa. A new political dispensation dawned. This political dispensation has been based upon a Constitution of a Western European liberal democracy type and a Bill of Human Rights widely hailed as one of the most progressive in the world. Following elections on 27–29 April 1994, the African National Congress (ANC) took over the government and implemented a wide range of policy changes.

A new education system was designed, based upon the following principles, which constituted the intrinsic goals of the new education systems:

- Democratization
- Desegregation
- Decentralization
- Equal education opportunities
- Multicultural education (Wolhuter 1999)

As many of these principles were diametrically opposite than what had informed the pre-1994 education system (cf. Booyse et al. 2011), they implied a momentous change to South African education. The entire education system would further aim

to develop the entire population and to promote various societal goals. These goals, the *extrinsic* goals of education, included:

- Economic goals: the eradication of poverty and the promotion of the country's economic productivity and development
- Social goals: building a society free of racial, gender, and other forms of unfair discrimination, creating a socially mobile society, and the removal of artificial hierarchies and abstractions in the way of progress
- Cultural goals: empowering people so that they can participate in the process of cultural expression
- Political goals: empowering citizens to take part in the processes of a democratic society, nation building, and building a communal value system for a society characterized by democracy, equality, freedom, peace, justice, tolerance, and stability (Wolhuter 2011–4)

One unintended effect of the academic boycott was that it had cut off South African universities from developments in higher education worldwide. After 1994 as South Africa was reintegrated into the international world of higher education, South African universities too had to negotiate these changes, only in the case of South Africa they did not come gradually as in the rest of the world, but rapidly and forcefully (cf. Jansen 2004; Bundy 2005). Four such changes will be elaborated upon in subsequent paragraphs, namely, the relentless pressure to conduct more research, the rising managerialism, the empowering of students, and the influx of students poorly prepared for university study.

The impressive assignment for serving as instrument for societal upliftment (outlined above); the fact that for appointments and promotion South African academics had, after 1994, once again to compete in an international pool; the appointment of university principals with experience of the international academic world and its exigencies; and the fact that, at an age of globalization, universities found themselves in a race to remain internationally competitive (with all the global university rankings in circulation, cf. Shin et al. 2011) all meant that South African academics were increasingly faced with the demand to produce visibly their research output.

In the decades preceding 1990, South African universities were cut off from the international trend of the encroachment upon the academic freedom and autonomy of academics, which pick up momentum abroad especially in the wake of the neoliberal economic revolution of the 1980s. Apart from coercing universities to conform to the government's macro-social policies of segregation, pre-1990 South African government refrains from interfering into the affairs of universities. And inside universities the (internationally increasingly anachronistic) model of collegial governance (where a senate of senior academics constituted the managing structure of the university) remained intact. Post-1994 South African government followed the pattern of other states in Africa (cf. Warner 2004) of fairly explicitly harnessing universities in the pursuance of objectives it (government) regards as desirable. The neoliberal economic creed (to which the South African government was forced to subscribe too in view of the international climate after 1990) dictated that governments, as the largest provider of funds for

higher education, could/should, in turn, require accountability from universities. The result was that South African universities, since 1994, found themselves on the receiving end of a never-ending plethora of government prescriptions (cf. Van der Walt et al. 2010). This plethora was replicated at the level of institutional management, as institutional managers, in obeying government orders, are constantly issuing directives to academic staff. The general climate of the neoliberal economic revolution, carrying in the principles of efficiency, the profit-motive, and the accountability into higher education, too was conducive to the increasing managerialism in the lives of academics coming from university managers. Not only are they facing increasing managerialism, but South African academics' relations with institutional administrations and managers seemed to be very strained. This conclusion was borne out by an analysis of the CAP data for the publication of the international academic profession's relations with institutional governance, based on the CAP data (cf. Locke et al. 2011). The conclusion was that South African academics do not feel very influential at their institutions, even at departmental level. They view institutional management and administration as being incompetent, characterized by a top-down style, and not very supportive of academic teaching and research activities (Wolhuter et al. 2011). The rising culture of managerialism and its undermining influence on academic freedom and autonomy traditionally (and rightfully) being enjoyed by South African academics have been well documented (and deplored) by eminent scholars of higher education in South Africa, such as Waghid (2009, p. 8), Adams (2006), Jones (2009, pp. 231–232), and Le Grange (2009, p. 116).

The neoliberal economic revolution also redefined students as consumers of higher education or clients of university lecturers, replacing the old metaphor of the student sitting (obediently, subserviently) at the feet of the (omniscient) professor. With all the rights of a consumer, and also empowered in an age of democratization of society and of universities, students have become a powerful constituency in the higher education sector. Thus, the academic profession finds its autonomy and freedom emaciated from two fronts—from the top by rampant managerialism from government and institutional managers alike and from the bottom by the student corps.

Since 1994 student enrollments have surged. The total number of students at South African universities increased from 495,355 in 1994 to 632,911 in 1999 to 741,380 in 2006 (UNESCO 2009) to 887,065 in 2010 (Republic of South Africa 2012). Two factors should be kept in mind when reading these figures. Firstly, impressive as these figures are, South Africa's gross higher education enrolment ratio still lags considerably behind that of other upper-middle income countries, not to mention advanced countries. In South Africa, the gross higher education enrolment ratio stands at 17 %, compared to 24 % in Brazil, 24 % in Mexico, and 32 % in Malaysia (all upper-middle income countries) (Cummings 2008, p. 47). Secondly, the fact that the majority of the secondary schools in the country are dysfunctional means many students who enter university are inadequately prepared for university study, especially insofar as their numeracy and English language skills (the majority of students do not speak English as their first or home language and thus face difficulty when entering university where the language of

learning and teaching is English) are concerned, as shown by tests on the 2009 first year university cohort of university students—the alarming results of these tests enjoyed prominent media coverage in South Africa (e.g., Rademeyer 2009; Dibetle 2009).

The post-1994 comprehensive societal reconstruction project (which entailed, e.g., spreading health-care benefits, social security and pension benefits, and housing to the Black majority—making up 80 % of the South African population, to the level enjoyed by White South Africans) placed a heavy burden on the fiscus, and higher education could not claim increased state funding, despite the tall assignment and many demands placed upon higher education. While decreased state funding for higher education has been a global trend in the wake of the neoliberal economic revolution since 1990 (cf. Cummings 2008, p. 33), in South Africa this decrease has been on a steeper gradient than the international norm. This can be illustrated by taking the indicator of governmental spending on higher education student as a percentage of per capita Gross Domestic Product. Globally, the mean decreased from 38.5 % in 1999 to 35.4 % in 2004 (World Bank 2006, p. 86). In South Africa the corresponding figures are 65.2 % and 47.1 %—clearly a sharper decline than the global mean (Wolhuter et al. 2010, p. 208). The South African governmental expenditure on higher education as a percentage of the Gross Domestic Product is 0.74, lower than the global aggregate figure of 0.81 % and lower than the 0.85 of Africa (De Villiers and Steyn 2006, p. 38).

15.2.7 Private Universities

In two aspects higher education trends in South Africa the past two decades stand in diametrical contrast to international trends. One is with respect to private higher education. The massification of higher education, the neoliberal economic revolution, and the diminished state spending on higher education resulted in a proliferation of private higher education internationally, so much so that it is estimated that 30 % of all higher education enrolments worldwide are in private higher education institutions (Altbach et al. 2009, pp. 73–75). In South Africa, until very recently, the political climate was very anti private higher education. While according to the *Higher Education Act* the registration of private higher education institutions was possible, a cumbersome bureaucratic process and a bureaucracy and higher education ministry unfriendly to private higher education meant a virtual absence of private higher education institutions on the South African higher education landscape. And while there are 87 private higher education institutions registered with the Department of Higher Education, they have extremely small student bodies—many less than 100 students (Wolhuter et al. 2010, p. 210). Official statistics regarding enrolment do not exist, but it is estimated that the total enrolment in private higher education institutions in South Africa is unlikely to exceed 20, 000 (Ibid.).

15.2.8 Institutional Fabric

The second aspect of recent higher education development in South Africa at odds with international trends is that of institutional differentiation. Abroad a clear differentiation of higher education institutional types with divergent missions has developed, with research universities on the top end and community colleges at the other (Wolhuter 2011–2). However, the prestige of the university saw to it that in South Africa a trend in the opposite direction toward isomorphism with the world-class research university as model has taken place. Every university in South Africa strives to be a world-class research university (Wolhuter 2012).

15.2.9 Recruiting and Employing Academics

The pool to recruit academics is small. The annual production of doctorate graduates in South Africa, according to the latest available figures, is 1,274 (Wolhuter 2011–3, p. 127). This translates into 26 doctoral graduates per million population per year (Ibid.). This is extremely low compared to the international norm, not only for developed countries but also for upper-middle income countries (the World Bank category in which South Africa falls). In the United States of America and the United Kingdom—two examples of developed countries—the corresponding figures are 288 and 201, while in the case of Brazil and Mexico, two upper-middle income countries, the figures stand at 52 and 28 (Assaf 2010, p. 46). Of the CAP survey respondents, 52 % of South African respondents had a doctorate (compared to, e.g., 97 % of the respondents in Korea).

15.2.10 The Professional Environment of South African Academics: Overburdened

The rise in student numbers, compounded by the poor quality of the student intake and the culture of entitlement among students; the organizational culture of managerialism and performativity; and the huge assignment put to universities (as outlined above) added up to a heavy burden being placed upon academic staff. In fact according to several publications of research, it amounts to a too heavy burden. In 2005, Olivier and others did a qualitative investigation among university academic staff about the level of staff wellness. Their conclusion was that at that particular university academic staff was experiencing “a significant amount of occupational stress, which is not conducive to their wellness” (Olivier et al. 2005, p. 919). Two of the causal factors of this stress were identified as managerialism, the top-down management style of the university’s management (Ibid.: 919–920) and the heavy workload (Ibid.: 920). Holderness et al. (2005, p. 704) did an empirical study of the time

management of South African academics and found that they spend an extraordinary amount of time on administrative tasks, to the detriment of core academic activities, such as teaching, attending conferences, professional growth projects, and networking and international relations.

15.3 Research Method

The authors applied the CAP (Changing Academic Profession) questionnaire to a representative sample of the South African academic profession ($n=700$) during 2008. The CAP survey is the second international survey of the academic profession. The first was the Carnegie Investigation, which took place in 14 countries in 1992 and which culminated in the publication by Altbach (1996). At the time of the Carnegie Investigation, South Africa was still subjected to the international academic boycott and, therefore, did not participate in that research project. However, the authors did apply the questionnaire of the Carnegie Investigation to a sample of the South African academic profession in 2001 (cf. Wolhuter et al. 2006). As the results of the Carnegie Investigation, compared to that of the CAP survey, give a picture of shifts over time with respect to the South African academic profession, the results of the Carnegie Investigation will be drawn upon too.

15.4 Findings

15.4.1 Place on the Teaching-Research Continuum

Respondents were asked where their personal preferences lie regarding teaching-research and to choose between one of the following options:

- Primarily in research
- In both teaching and research, but leaning toward research
- In both teaching and research, but leaning toward teaching
- Primarily in teaching

The percentage distribution of their responses is presented in Table 15.1.

As can be seen in Table 15.1, the South African academic profession is spread out on the entire teaching-research continuum. Most, however, regard themselves as both teachers and researchers, the preponderance coming down a little bit heavier on the teaching side. So the current contextual exigencies for both teaching and research are present in academics' conceptualization of their roles. The historically more dominant call for teaching still resonates stronger in academics' self-definition. At the same time, the research function is not at all absent. Only a single digit of academics see themselves as primarily researchers.

Table 15.1 South African academics' preferences regarding teaching versus research

Question: Where do your interests lie?		Percentage distribution of answers	
Responses	Primarily in research	9	Total primarily in research: 46
	In both teaching and research, but leaning toward research	37	
	In both teaching and research, but leaning toward teaching	35	Total primarily in teaching: 53
	Primarily in teaching	18	

However, the double-barreled imperatives of both teaching and research are present in the overwhelming share of academics—in total 72 % view themselves as being involved in both teaching and research.

15.4.2 Teaching Activities: Extent of

During the academic year, South African academics spend, on average, 20.6 h per week on teaching activities (this includes preparation and presentation of lectures, consultation by students, and assessing student work). This is quite high: in Argentina and China the corresponding findings of the CAP survey were, respectively, 13.9 h and 19.2 h. It should be borne in mind that, on top of this, the academic year in South Africa is exceptionally long, the 3–4 month summer recess of North America and Western Europe, for example, is absent in South Africa. The average time which South African academics spend on teaching activities when classes are not in session is 11.5 h per week. Class sizes are large, even when compared to other developing countries. The median undergraduate university class in South Africa has 110 students (that is the second highest of all CAP countries, after Australia which had 150 students), compared to 90 in Argentina, 80 in China, 25 in Mexico, and 35 in Brazil.

15.4.3 Nature of Teaching

The percentage of respondents involved in various types of teaching activities is presented in Table 15.2

From the figures in Table 15.2, the very demanding nature of the student corps at South African universities is clear (high percentages of academics involved in interaction with students outside class and in individualized instruction) as is the high demands which the transformation places on academic staff (note the high percentages of respondents engaged in curriculum/program development). A comparison of the South African academic profession's responses to the CAP questionnaire

Table 15.2 Percentages of South African academics involved in various types of teaching activities

Activity	Percentage of respondents
Classroom instruction/lecturing	92
Individualized instruction	75
Learning in projects/project groups	41
Practice instruction/laboratory work	34
ICT-based learning/computer-assisted learning	26
Distance education	48
Development of course material	86
Curriculum/program development	70
Face-to-face interaction with students outside of class	83
Electronic communication (e-mail) with students	77

question "I spend more time than I would like in teaching students basic academic skills due to students' deficiencies" elicited more strongly agree and agree responses than any other country which participated in the CAP research project. A total of 69 % of South African respondents agreed with this statement. In some of the other countries which participated in the CAP survey, the percentages of respondents who agreed with the statement were as follows: 57 in Brazil, 58 in Mexico, and 51 in Malaysia (data as published in the CAP tables). The large number of students being fed into the higher education system by the largely dysfunctional secondary school system in the country is clearly taking its toll on the academic profession as can be seen in, for example, the fact that 83 % of respondents are involved in face-to-face interaction with students outside class or that fully three quarters of respondents are engaged in individualized instruction.

15.4.4 Internationalization of Teaching Activities

Fifty-nine percent of respondents agreed or agreed strongly with the statement that they emphasize international content in the courses which they teach (for China, widely regarded as a country with a relatively closed and inward-looking system of higher education, the corresponding figure was 67 %). Forty-one percent agreed or agreed strongly with the statement that since they have started teaching in higher education, the number of international students has been increasing (among respondents in China 53 % agreed or strongly agreed). Only 9 % of respondents agreed or strongly agreed with the statement that most of their graduate students were international, and only 4 % of respondents have experience of teaching at a university abroad. As far as their teaching activities are concerned, it seems that the product of the peripheral geographical location of the country and preoccupation with the domestic education project have resulted in extremely low levels, it could even be said perniciously low levels, of internationalization.

Table 15.3 Respondents' rating of teaching infrastructure

Aspect	Percentage of respondents giving it a positive rating
Classrooms	40
Technology for teaching	39
Teaching support	29

15.4.5 Training for Teaching

Sixty-nine percent of respondents indicated that their institutions encourage them to improve their instructional skills in response to evaluation by students. However, only 46 % agreed or agreed strongly with the statement that there are adequate training courses for teaching skills available. The low and declining levels of governmental funding of higher education on the one hand and the soaring student numbers are evident here too; mindful of the dictum that when the going gets tough money-wise, staff development is the first to suffer.

15.4.6 Evaluation of Teaching Infrastructure

Respondents' rating of different aspects of teaching infrastructure at their universities is presented in Table 15.3.

Satisfaction with teaching infrastructure runs obviously low. These low levels of satisfaction with teaching infrastructure too show the effect of low and declining levels of public expenditure on higher education, amidst a time of a student enrollment explosion.

15.4.7 Management of Teaching

Sixty-six percent of respondents indicated that their institutions set quantitative targets regarding the number of hours which they (academics) should be in class, 48 % that their institutions have quantitative targets regarding the number of students in class, 59 % that their institutions have quantitative targets regarding the percentage of students which should pass courses, and 63 % that their institutions have such quantitative targets regarding time which academics should have for student consulting. From the responses it appears that academic unit managers have the primary influence in determining teaching loads of academics.

Academics responses as to by whom their teaching is regularly evaluated are presented in Table 15.4.

It is clear that academics find themselves in a highly regulated and monitored environment as far as their teaching activities are concerned. Both the overly managerialism and the empowerment of students are evident.

Table 15.4 Evaluation of teaching of academics

Question: By whom is your teaching regularly evaluated?	Percentage of respondents
Peers in department/academic unit	46
Head of department/academic unit	57
Members of other academic departments/units	20
Senior administrative staff	15
Students	75
External reviewers	28
No one	8

Table 15.5 Average research output of South African academics during the 3 year period up to the survey

Output type	Numbers
Books authored/coauthored	1.9
Books edited/coedited	1.6
Book chapters and articles in peer-reviewed journals	3.0
Research monographs/research reports	2.7
Patents secured	1.0
Articles in popular newspapers/magazines	2.4
Papers presented at scientific conferences	3.8

15.4.8 Time Spent Conducting Research

Within the academic year South African academics spend, on average, 8.8 h per week conducting research, rising up to 15.1 h per week when classes are not in session. This is considerably less than the time they spend on teaching-related activities, reflecting the colonial legacy (with its emphasis on teaching) and the results of the enrollment surge and the large number of students coming to university academically ill prepared for university study, placing a heavy burden on lecturers. The high volume of consultation and teaching students on an individual basis, revealed above, is taking its toll on time available for research.

15.4.9 Research Output

The research outputs of South African academics, during the 3 year period up to the CAP survey, are presented in Table 15.5.

The above presents a picture of a relatively low research output. Compared to the average South African academics' output of 3.0 articles during the 3 years up to the survey, for example, the corresponding figures were 4.4 in the case of Brazil, 5.1 in

the case of Argentina, 7.0 in the case of Canada, 5.9 in the case of the United States of America, 10.4 in the case of Hong Kong, and 10.9 in the case of South Korea. Thus, the historical legacy of universities being primarily institutions of teaching, the large numbers of students of classes, and the very demanding nature of students being ill prepared for university study but living in a culture of entitlement, all added up, mean academics are left with little time to do research and take their toll on research output.

A further factor explaining the low levels of research output is the relatively small percentage of academic staff in possession of doctoral degrees.

15.4.10 International Profile or Research Activities

While the average response to the question "what percentage of your publications in the past 3 years were coauthored with colleagues in your countries" was 33.4 %, the mean answer to the question "which percentage of your publications the past 3 years were coauthored by colleagues in foreign countries" was only 6.1 %. Moreover, the average response to the question "what percentage of your publications in the past 3 years were published in a foreign country" was 16.0 %. It seems as if the low international profile of South African academics' teaching activities is echoed in their research activities. As far as internationalization of teaching and research activities is concerned, South African universities seem to exemplify the caveat regarding which the recent UNESCO study on the higher education revolution worldwide holds out, namely, that in the Global South, the university sector universities frequently function as an instrument reinforcing the Northern hegemony, rather being at the forefront of internationalizing society (Altbach et al. 2009, p. 32).

15.4.11 Conceptualization of Research

South African academics' responses to statements probing their conceptualization of research are presented in Table 15.6.

It seems as if South African academics have a broad conceptualization of research. The context of the call for relevance has let its mark on South African academics' conceptualization of research, as is evident in the strong agreement that scholarship includes the application of academic knowledge in real-life settings. In view of the historical emphasis (and current relevance) of teaching, they have a positive evaluation of the significance of research in reinforcing teaching. In times when the ruling (from the side of university managers and policy makers) conceptualization of the ideal academic and expectations of academics call for being strong on both the teaching and research sides, the majority of South African academics likewise see teaching and research as standing in a symbiotic relationship in the professional lives of academics.

Table 15.6 South African academics' conceptualization of research

Statement	Percent of academics who agreed
Scholarship is best defined as the preparation and presentation of findings on original research	64
Scholarship includes the application of academic knowledge in real-life settings	76
Scholarship includes the preparation of reports that synthesize the major trends and findings of my field	66
Teaching and research are hardly compatible with each other	21

Table 15.7 South African academics' characterization of their own research

Feature	Percentage of respondents who agreed that this feature could describe their primary research activities
Basic/theoretical	50
Applied/practically orientated	75
Commercially oriented/intended for technology transfer	22
Socially oriented/intended for the betterment of society	66
International in scope or orientation	51
Based in one discipline	38
Multidisciplinary	62

15.4.12 Characterization of Their Own Research

Respondents were asked how they would characterize their own research. The results are presented in Table 15.7.

In the results of Table 15.6, the precipitation of the call for relevance is evident in South African academics' research orientations, as is the rise of mode II knowledge, and their attachment to the domestic/national reconstruction project and the place of research therein, rather than having an international orientation. The liberal education tradition, stemming from the historical origin of South African universities as imitations of British institutions, steeped in the liberal arts education university ethos, is still evident in the sizeable contingent of respondents who characterized their research as basic/theoretical.

15.4.13 Experience of Conditions Under Which Academics Conduct Research

Respondents' responses to questions pertaining to their experience of the conditions under which they have to conduct research are presented in Table 15.8.

The figures in Table 15.8 show that South African academics find themselves in an environment of managerialism with regard to their research activities. Furthermore,

Table 15.8 South African academics' assessment of research infrastructure

Statement	Percentage of academics who expressed agreement
Restrictions on the publication of results from my publicly funded research have increased since my first appointment	18
Restrictions on the publication of results from my privately funded research have increased since my first appointment	17
External sponsors or clients have no influence over my research	48
The pressure to raise external research funds has increased since my first appointment	61
High expectations to increase research productivity are a threat to the quality of research	64
High expectations of useful results and applications are a threat to the quality of research	43

Table 15.9 The management environment, with regard to their research activities, in which South African academics find themselves in

Question: By whom is your research regularly evaluated?	Percentage of respondents who answered positively
Your peers in your department or unit	39
The head of your department or unit	51
Members of other departments or units at my institution	25
Senior administrative staff at my institution	20
My students	7
External reviewers	58
I myself	49
No one at or outside my institution	9

the majority feel that the high expectations of research, at times when university management is characterized by performativity, are a threat to the quality of research, i.e., academics are just chasing quantitative targets in a "publish or perish race," regardless of the quality of those publications.

The management environment, with regard to their research activities, in which South African academics find themselves in, is presented in Table 15.9.

It is clear that academics find themselves in a very restrictive and managed environment in which they must conduct their research. They do not look kindly to this environment of managerialism. By their own experience, some of the pressures involved in this context of managerialism have a detrimental influence on the quality of research.

15.4.14 Evaluation of Research Infrastructure and Support

Respondents' assessment of research infrastructure and support at their institutions is presented in Table 15.10.

Table 15.10 South African academics' assessment of research infrastructure and support at their institutions

Aspect of research infrastructure/support	Percentage of respondents who assigned a good or excellent rating
Laboratories	36
Research equipment and instruments	37
Computer facilities	60
Library facilities and services	69
Telecommunications (Internet, networks, and telephones)	57
Research support staff	26
Research funding	30

While a majority (though not an overwhelming majority) of academics regard library facilities, computer facilities, and telecommunications at their institutions as good or excellent, a minority have the same assessment regarding research funding, research support staff, laboratories, and research equipment and instruments. This is cause for concern. The low levels of satisfaction with research infrastructure could be interpreted in the same way as the lack of satisfaction with teaching infrastructure, as explained above, namely, the leveling off of public funding for universities.

15.5 Conclusion

The societal and educational reconstruction in post-1994 South Africa has required South African academics to develop to full and perfect Humboldtian persons—perfect teachers and prolific researchers. In terms of their preferences, they have lived up to this ideal: South African academics straddle the teaching-research divide, and most see themselves as both teachers and researchers. The influx of students, many of whom are insufficiently equipped and prepared for the rigors of university study, bears heavy on academics, as can be seen in the time they spend on teaching activities and on individual student counseling. The needs of students (in terms of, e.g., face-to-face student advising on an individual basis) mean that South African academics cannot make full use of the possibilities of technology to reduce the burdens of teaching. Academics have a conceptualization of research and have aligned their own research activities in line with the demands for relevance, but in the context of heavy teaching obligations, research output is low. The tyranny of distance (from the world core of scholarship: Western Europe and North America) in hampering internationalization has not been overcome by technology. With respect to both teaching and research, academics find themselves with insufficient support in terms of infrastructure and funding. Moreover, they do find themselves in a highly regulated, assessed, and supervised environment, hardly consonant with the ethos of a university as a place of a free pursuit of truth. Especially for the thriving of research, and for creativity to come to its right, this is lethal.

From this study it could be recommended that the culture of managerialism at South African institutions of higher education should be looked into seriously, with the view to restore some of the autonomy and freedom of academic staff, which they need in any case to teach and especially to do research on a level and with a space for creativity worthy and necessary for a university to live up to its name. Secondly, comparisons between South Africa and international trends in higher education have recommended that privatization and institutional differentiation (the establishment of Community Colleges in particular) should be considered (e.g., Wolhuter 2011–1, 2011–2). This study looking at the overtaxing of academic staff can only underwrite such recommendations.

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Part IV
Teaching and Research Balanced Systems

Chapter 16
The Balance Between Teaching and Research in the Work Life of American Academics

Martin Finkelstein

16.1 Introduction: The Arbiters of Faculty Work Life

In 1987, the late Burton Clark proposed an elegantly parsimonious sociology of the American academic professions: academic work life in the USA, he argued, was "nested" in a matrix defined, on the one hand, by the type of institution in which a professor worked and, on the other, by the academic discipline or field in which he/she received their doctoral training. Each cell in this matrix defined a slightly different variation on the academic work role—substantially predictable based on only these two factors. The work role variable to which Clark was referring included prominently the balance between teaching and research (in terms of actual time and effort allocation), the type of research undertaken (e.g., basic vs. applied), the form and quantity of publications produced (e.g., research notes, journals, articles vs. books; sole vs. multiple authorships), the work venue (e.g., laboratory, office, library, home, office), etc. The notion was simple enough: individual academic fields provided distinctive and enduring educational socialization experiences during doctoral training that were "carried over" into the subsequent career, and these were reenforced and/or reshaped at the margins by the expectations and organizational structures of the institutional settings in which they pursued their work. From a comparative perspective, this second-order *institution level, in-service* socialization component was what distinguished the highly diversified American system from other national systems characterized by a more basic uniformity in work settings—that is, a university is a university is a university.

From the moment of its initial articulation, this "matrix theory" of the academic professions gained wide currency as a cogent macro-level lens through which to understand US faculty work activities and behavior. In the ensuing quarter century,

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however, American higher education has undergone what many consider a radical transformation and/or restructuring (Schuster and Finkelstein 2006; Slaughter and Rhoades 2004) in several respects. Most generally, it has witnessed something of a blurring of the lines of demarcation among types of institutions as the research university model (research dollars and publications as the desideratum of academic quality), including expectations that all faculty engage in research and publish, has diffused broadly throughout the system's 4-year sector. Former liberal arts colleges are adding master's programs and former comprehensive institutions are adding doctoral programs and seeking (or adopting) "university" status. This increasing homogenization of research expectations could certainly threaten to attenuate differences in teaching and research balance attributable historically to institutional type. Second, the last quarter century has seen a radical "marketization" of academic fields in the university, that is, academic fields have grown and prospered inside the university in direct proportion to their role and commercial value outside it—in the new knowledge-based economy of the twenty-first century. Those fields that generate resources outside university walls (science and technology-based) and must compete with industry for faculty talent have prospered, while those that compete less well commercially have faltered. That has led some observers to conclude that universities have become bifurcated institutions academically—divided between the "haves" and the "have nots"(Slaughter and Rhoades 2004). It is not clear to what extent this commercial stratification of the academic menu has intensified or attenuated differences among disciplines overall or between disciplines within one or another of the new stratification cells.

Distinct from, albeit related to, these trends in institutional homogenization and academic field commodification are trends in the restructuring of academic appointments. Gappa and Leslie (1993), Baldwin and Chronister (2001), Schuster and Finkelstein (2006), Cross and Goldenberg (2009), and Kezar and Sam (2010) have all heralded the ascent of contingent faculty appointments in the United States: the rise first of part-time (in the 1970s and 1980s) and then (in the 1990s and 2000s) of full-time nontenure-track appointments—across institutional types and academic fields. While these appointments differ most obviously in their duration and permanence, they differ substantively in their specialization of function: that is, they focus incumbent work activities on a single one of the typical triumvirate of faculty functions in the post-World War II American university, either teaching (predominantly), research (usually related to federal grants), or service (related to directing new academic programs, frequently with an off-campus or distance learning component). To the extent that a "new" majority of faculty in US colleges are now holding appointments that limit their responsibilities to, for example, only one of the historic faculty functions, e.g., teaching, suggests, at the least, that one other variable may need to be added to Clark's faculty work prediction equation (a three-dimensional matrix).

And then, there is the matter of gender. The final macro trend of the past quarter century in American (indeed, global) higher education is its increasing feminization. In 1969, about one quarter of American professors were women; by 2008, that overall figure had reached about 38 %. Moreover, among new entrants to the US

academic workforce today, nearly half (about 45 %) are women. In certain fields of the humanities (English; foreign languages), softer social sciences (psychology, history), and the professions (education, social work, nursing, and many of the allied health professions), the majority of instructional faculty are now women. This demographic shift becomes salient when we consider that social science research in the past half century has documented the decisive role of gender in shaping academic work and careers (Finkelstein 1984; Finkelstein et al. 1998): women are more oriented to teaching than men and less oriented to research; they allocate more of their time to teaching, are more student centered than men, publish less, etc. To the extent that they are an increasing presence in the workforce and to the extent that their historically documented work life differences vis-à-vis men persist, then it would appear that gender—as well as type of appointment—may need to be added to institutional type and academic field (assuming the latter's salience persists) as determinants of the work life of the "new" American professor.

16.2 Purpose of the Proposed Study

In light of the original "Clarkian" principles and the potentially transformative academic trends we have noted in the intervening years, the purpose of the present chapter is to test the extent to which Clark's formulation still obtains or whether his original formulation needs to be expanded to include the "new" potential predictors of type of appointment and gender as arbiter of the shaping of academic work, in particular the balance that faculty strike between their teaching and research responsibilities.

To be precise, we will address the following questions:

- To what extent do institutional type and discipline continue to shape academic work in much the same powerful way as Clark described in 1987?
- To what extent have type of appointment and gender emerged as an additional set of organizing principle for academic work in the USA?

16.3 Data Source and Method

For purposes of addressing the research questions above, we sought to compare US faculty responses in 1992 and 2007 on five common survey items that serve as indicators of the faculty work role —weekly hours spent in teaching, weekly hours spent in research, total weekly work hours, reported orientation to teaching vs. research, and articles published over the past 3 years—and disaggregate those responses by institutional type, academic field, type of appointment, and gender. Specifically, we sought to determine whether interinstitutional and interdisciplinary differences in the above work activities in 1992 were larger, smaller, or about

the same as those in 2007. Were those institutional type and interdisciplinary differences affected when type of appointment were controlled—in either 1992 or 2007? Were there systematic differences in work activities by type of appointment in 1992 or 2007? If so, how large were those differences, especially relative to those associated with institutional type and academic field? In either year (1992 or 2007) were any differences greater, lesser, or the same for new entrants than for experienced faculty?[1]

16.3.1 Dependent Variables

Five identical items were selected from the 1992 Carnegie survey and the 2007 CAP survey to serve as dimensions of the teaching and research balance within the faculty work role. These included the following:

1. Total self-reported weekly work hours
2. Total weekly self-reported hours spent in teaching
3. Total weekly self-reported hours spent in research
4. Self-reported orientation to teaching vs. research (ranging from heavily in research to heavily in teaching)
5. Self-reported published articles in the last 3 years

16.3.2 Independent Variables

For both surveys, we employed the same independent variables: institutional type, academic field, appointment type, gender and career stage. While the options for institutional type varied somewhat across the two surveys, we dichotomized the institutional type variable for both 1992 and 2007 into universities (including research and doctoral granting) and other 4-year. For academic field, we categorized the data for both 1992 and 2007 into the following four clusters: life and medical sciences; physical sciences and engineering; humanities and social sciences; and others, including the professions. The type of appointment variable was dichotomized as either tenured or tenure-track (career ladder) or contract (non-ladder). For career stage, we used the traditional 7-year probationary period as the criterion to dichotomize respondents into two subgroups: new entrants (7 years or less since first full-time appointment) and senior faculty (including what are usually considered mid-career faculty, i.e., those who have spent 8 years or more in the profession).

[1] In Finkelstein et al. *The New Academic Generation* (Johns Hopkins, 1998), it was shown that new trends that were barely discernible in aggregate data became striking when that same data was disaggregated by year of entry to the academic profession, that is, that new developments clearly affecting new recruits might be largely hidden by aggregate data.

16.3.3 Data Analysis

The data analysis proceeded in two stages: a descriptive stage and a multivariate stage as follows:

Descriptive. For each dimension of the faculty work role in each bookend year, crosstabs were computed by each independent variable categorized as above. The cross tabulations were then compared for observable trends.

Inferential. A series of logistic regression analyses were undertaken for each of the five outcome (dependent) variables. Each logistic regression analysis included three models: an initial model that tested the effects of institutional type and academic field only, a second model to which appointment type and career stage were added, and a third model to which gender was added. In the process of generating the correlation matrix upon which the regression analyses were conducted, appropriate tests for multicollinearity among predictor variables were conducted.

16.4 Prologue to Results: Trends in Academic Work, 1970–1992

Before proceeding directly to an examination of the results, it seems necessary by way of establishing the context for interpreting these findings to locate for the reader the status of the teaching vs. research balance in the US faculty role for the period immediately prior to the 15-year period examined here: the period from about 1970 to 1992 in which American higher education's *golden age* had begun receding and had been replaced by a period of fiscal constraint and reexamination and assessment. If the 1992 Carnegie survey provides the "baseline" for the current study, we need to provide the reader a sense of the "baseline" that those undertaking the 1992 Carnegie survey had when they took their snapshot of faculty work. We try to do so by using data from earlier US national surveys to provide an overview of the two decades prior to the 1992 Carnegie survey.

In the early 1970s, faculty in the USA reported about a 40–42 hour work week in national surveys—a figure that rose sharply by the late 1980s to close to 50 hours (with perhaps one-fourth reporting 55 or more weekly hours). Most of that rise was attributable to an increase in research hours and publication activity; indeed, the overall rise masked a slight decline in weekly teaching hours. This trend represented the widespread diffusion of the research model throughout the 4-year sector of American higher education. This is the period when college rankings, especially by *U.S. News and World Report*, made their debut and focused attention on factors such as faculty credentials, external research dollars generated, and faculty publications as key factors in attracting the best students and driving campus positions in the ratings game (Wildavsky 2010). It is also the period when student consumerism received its biggest boost—the 1972 amendments to the Higher Education Act of

Table 16.1 Weekly hours in teaching and research, role orientation, and publications: all US faculty, 1992 and 2007 (percent or mean)

	1992 (N = 3,300)	2007 (N = 1,066)	% Change (1992–2007)
Mean teach hours, weekly	18.7	20.9	+12.0
Mean res hours, weekly	16.5	11.9	−27.8
Mean total work hours, weekly	50.9	47.7	−6.3
Teach or res:% teach oriented	49.2	57.0	+7.8
Teach or res: % res oriented	50.8	43.0	−7.8
Mean articles last 3 years	6.4	4.1	−36.1

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

1965 targeting individual students rather than institutions as the recipients of federal scholarship grants. Ultimately, the confluence of these developments led to unfettered pursuit by students of the most highly rated colleges and reenforced institutional jockeying for ever better positions in the prestige race.

The early 1990s saw something of a "teaching" correction in American higher education. The decade opened with the publication of Ernest Boyer's widely influential *Scholarship Reconsidered: Priorities of the Professorate* (Boyer 1990). That volume decried the knee-jerk embrace of research and decried its displacement of teaching as the overriding focus of most 4-year institutions, and it provided a conceptual framework and rationale for expanding conceptions of faculty research and scholarship to include "the scholarship of teaching." That clarion call was supported by the increasing disaffection of state legislators and other public officials with undergraduate education that was increasingly relegated to graduate teaching assistants and other part-time faculty. In several states these concerns effectively translated into higher teaching loads or at least the enforcement of legal teaching loads and a concomitant decline in research effort (facilitated, too, by a concurrent decline in federal research support). These trends were reflected in a stabilization or slight regression to earlier (i.e., lower) levels of weekly work hours—mostly at the expense of research hours.

This was the context into which the 1992 Carnegie survey introduced itself. And now, thus armed, we turn to those results.

16.5 Findings

16.5.1 Descriptive Results

Table 16.1 reports overall weekly work hours, weekly hours in teaching and in research, teaching vs. research orientation, and publications for US faculty in 1992 and 2007. These data appear to confirm the sort of "teaching correction" post-1990 we postulated in the preceding section: weekly time devoted to teaching increased by 12 % and research time declined by more than 27 % in the

Table 16.2 Weekly hours in teaching and research, role orientation, and publications by institutional type: all US faculty, 1992 and 2007 (percent or mean)

	1992			2007		
	Other 4 years (n=980)	Research (n=2370)	% dif (res vs. other 4 years)	Other 4 years (n=611)	Research (n=475)	% dif (res vs. other 4 years)
Mean teach hours, weekly	23.4	16.7	−28.7	24.2	18.2	−24.8
Mean res hours, weekly	11.1	18.6	+7.5	9.1	16.3	+80.2
Mean total work hours, weekly	47.8	52.2	+9.1	47.2	50.3	+6.6
Teach or res: % teach oriented	73.9	38.9	−35.0	72.8	37.7	−35.1
Teach or res: % res oriented	26.1	61.1	+35.0	27.2	62.3	+35.1
Mean articles last 3 years	3.3	7.5	+126.8	3.0	6.4	+109.2

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

15-year period, thus allowing for an actual decline in total weekly work hours despite the teaching effort uptick. This reallocation of effort is reflected in a slight decline in reported orientation to research and a substantial decline in reported publication activity.

16.5.1.1 Institutional Type

When we examine differences in teaching and research effort between institutional types in both 1992 and 2007 (Table 16.2), we find a consistent pattern of difference between research and non-research institutions in each year: faculty in research institutions spend less time in teaching than their "other 4-year" counterparts, they are more research oriented, and they publish much more and work longer hours. Moreover, the magnitude of the institutional type differences appears to remain equally large, suggesting that type of institution continues to play a formative role in shaping the character of faculty work.

In an effort to detect whether any more subtle changes in the power of institutional type may be operating for certain faculty subgroups (but not others) and thus be effectively masked in the aggregated analyses, we sought to repeat the cross tabulation of institutional type and faculty work activities, controlling for career stage. The hypothesis here was that if indeed there was some attenuation in the effect of institutional type on faculty work, it should be most noticeable among the most recent faculty hires. Table 16.3 reports the effect of institutional type and work activities for faculty in the first 7 years of their career only, i.e., typical probationary faculty in their first academic appointment.

Table 16.3 Weekly hours in teaching and research, role orientation, and publications by institutional type: new entrants only, 1992 and 2007 (percent or mean)

	1992			2007		
	Other 4 years (n = 260)	Res (n = 560)	% dif (res vs. other 4 years)	Other 4 years (n = 177)	Res (n = 109)	% dif (res vs. other 4 years)
Mean teach hours, weekly	22.4	16.4	−26.9	26.1	19.6	−24.7
Mean res hours, weekly	10.2	20.5	101.8	9.8	18.5	+89.0
Mean total work hours, weekly	42.7	52.7	23.4	48.9	49.3	+0.9
Teach or res: % teach oriented	69.2	37.5	−31.7	67.5	32.4	−35.1
Teach or res: % res oriented	30.8	62.5	31.7	32.5	67.6	+35.1
Mean articles last 3 years	2.4	5.9	146.1	2.6	4.6	+74.4

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

The data here show that while among new hires, the basic pattern of difference in both teaching effort and research effort and orientation between research and non-research institutions remains, differences in total weekly work effort between institutional types virtually disappear and publication differentials are cut in half. This suggests that the spread of the competitive research and publication ethos throughout the 4-year sector described earlier may indeed be manifesting itself—if not yet in allocation of time to research, in efforts to increase the tangible products of research—scholarly publications.

16.5.1.2 Academic Discipline

Table 16.4 shows weekly hours for teaching, research, and all activities, research orientation, and publication in 1992 and 2007 for faculty in four clusters of academic fields: (1) the life and medical sciences; (2) the physical sciences, mathematics, and engineering; (3) the humanities and social sciences; and (4) other fields, including the professions (health sciences as well as law, architecture, education, and business).

In 1992, the position of the four disciplinary clusters is roughly as expected: faculty in the natural sciences (life sciences and physical sciences combined) spend less time teaching and more on research, work more hours overall, are more research oriented, and publish nearly twice as much as their colleagues in the humanities and social sciences and other fields, including the professions (although the relative position of the life and physical sciences changes slightly from item to item). By 2007, the basic pattern persists with, however, some notable exceptions: the gap in overall work hours and research hours favoring natural scientists (the former a

Table 16.4 Weekly hours in teaching and research, role orientation, and publications by discipline: all US faculty, 1992 and 2007 (percent or mean)

	1992				2007			
	Life and medical (n = 1035)	Physics and engineering (n = 590)	Social sciences and humanities (n = 1025)	Professions (n = 675)	Life and medical (n = 230)	Physics and engineering (n = 195)	Social sciences and humanities (n = 333)	Professions (n = 300)
Mean teach hours, weekly	13.4	20.0	21.6	21.1	18.8	19.2	22.5	22.0
Mean res hours, weekly	18.5	19.4	14.7	13.3	12.6	14.2	12.0	9.8
Mean total work hours, weekly	52.5	51.8	49.2	50.1	48.8	47.8	48.0	46.7
Teach or res: % teach oriented	42.7	40.4	52.0	62.7	53.9	52.3	54.0	65.8
Teach or res: % res oriented	57.3	59.6	48.0	37.3	46.1	47.7	46.0	34.2
Mean articles last 3 years	8.6	7.8	4.2	4.7	5.5	5.3	3.1	3.3

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

Table 16.5 Weekly hours in teaching and research, role orientation, and publications by gender: all US faculty, 1992 and 2007 (percent or mean)

	1992			2007		
	Female (=880)	Male (n=2,400)	% dif (male vs. female)	Female (n=400)	Male (n=650)	% dif (male vs. female)
Mean teach hours, weekly	20.6	18.0	−12.3	22.5	20.0	−11.2
Mean res hours, weekly	13.5	17.5	+29.5	10.3	13.0	+27.0
Mean total work hours, weekly	49.9	51.3	+2.7	48.5	47.4	−2.2
Teach or res: % teach oriented	57.2	46.3	−10.9	63.6	53.3	−9.3
Teach or res: % res oriented	42.8	53.7	+10.9	37.4	46.7	+9.3
Mean articles last 3 years	4.3	7.1	+67.6	3.5	4.5	+29.7

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

function primarily of their greater effort allocated to the latter) narrows as do differences in research orientation and, to a lesser extent, publications. While disciplinary differences remain, they appear, like differences attributable to institutional type, to be somewhat attenuated.

16.5.1.3 Gender

Table 16.5 displays gender differences in the focal faculty role activities in 1992 and 2007. The pattern that emerges in both 1992 and 2007 is largely as expected: men spend less time in teaching and more time in research than female colleagues; they are more oriented to research and publish much more. Two points are worthy of note. First, the magnitude of the differences between the genders seems smaller than between the institutional types and academic fields overall. Second, the differences are especially small in overall weekly hours devoted to work (indeed, by 2007, women reported working longer hours than men) and the gender disparity in publications seems to narrow by 2007. In an effort to further locate and analyze these gender differences, Table 16.6 shows the gender differences on the five focal work dimensions for research university faculty only (controlling for institutional type), and Tables 16.7 and 16.8 shows the gender differences controlling for academic discipline in 1992 and in 2007, respectively. The message of Table 16.6 is clear: at research universities (vis-à-vis the general institutional population), gender differences have to some extent always been attenuated, but, more to the point, by 2007, gender differences in weekly hours devoted to work, research orientation, and publications had virtually disappeared. The data in Tables 16.7 and 16.8 suggest that in no small part the

Table 16.6 Weekly hours in teaching and research, role orientation, and publications by gender: US research university faculty only, 1992 and 2007 (percent or mean)

	1992			2007		
	Female (=570)	Male (n=1780)	% dif (male vs. female)	Female (n=168)	Male (n=302)	% dif (male vs. female)
Mean teach hours, weekly	18.0	16.3	−9.5	19.4	17.5	−9.7
Mean res hours, weekly	16.4	19.4	+18.5	15.2	17.0	+11.6
Mean total work hours, weekly	52.0	52.2	+0.4	50.6	50.3	−0.7
Teach or res: % teach oriented	44.4	37.1	−7.3	38.4	36.8	−1.6
Teach or res: % res oriented	55.6	62.9	+7.3	61.6	63.2	+1.6
Mean articles l ast 3 years	5.4	8.2	+52.8	6.2	6.5	+5.5

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

Table 16.7 Weekly hours in teaching and research, role orientation, and publications by discipline and gender (F=female; M=male): all US faculty, 1992 (percent or mean)

	Life and medical		Physics and engineering		Social sciences and humanities		Others (incl. professions)	
	F (n=320)	M (n=793)	F (n=58)	M (n=553)	F (n=326)	M (n=737)	F (n=230)	M (n=476)
Mean teach hours, weekly	15.6	12.4	23.7	19.3	22.6	20.5	21.4	20.5
Mean res hours, weekly	13.8	17.0	14.7	17.9	11.9	14.9	11.2	13.5
Mean total work hrs, weekly	49.4	52.2	49.7	51.4	48.3	48.5	48.7	49.4
Teach or res: %teach oriented	49.5	39.8	58.5	38.6	56.1	50.2	69.4	59.5
Teach or res: % res oriented	50.5	60.2	41.5	61.4	43.9	49.8	30.6	40.5
Mean articles last 3 years	5.3	8.4	4.4	7.3	3.3	4.2	3.0	4.4

Source: Carnegie Foundation for the Advancement of Teaching (1996)

attenuation of gender differences in research orientation and publications is likely attributable to women faculty in the humanities and social sciences and the professions who have largely eliminated any gender disparities in publication in those fields. These findings are largely consistent with the trends in faculty research productivity noted by Schuster and Finkelstein (2006) in their recent overview of the evidence gleaned from more than three decades of national faculty surveys in the United States.

Table 16.8 Weekly hours in teaching and research, role orientation, and publications by discipline and gender (F = female; M = male): all US faculty, 2007 (percent or mean)

	Life and medical		Physics and engineering		Social sciences and humanities		Others (incl. professions)	
	F (n = 121)	M (n = 126)	F (n = 46)	M (n = 159)	F (n = 132)	M (n = 202)	F (n = 112)	M (n = 192)
Mean teach hours, weekly	21.4	15.6	20.9	18.3	21.5	22.6	23.5	20.0
Mean res hours, weekly	9.6	13.9	9.4	14.7	10.6	12.4	10.3	9.4
Mean total work hours, weekly	47.7	49.4	47.5	48.4	45.5	48.8	50.3	42.6
Teach or res: % teach oriented	67.5	41.0	70.8	45.8	54.1	53.4	62.6	67.6
Teach or res: % res oriented	32.5	59.0	29.2	54.2	45.9	46.6	37.4	32.4
Mean articles last 3 years	3.9	5.5	3.7	4.4	2.5	3.5	3.2	2.7

Source: CAP (2009)

16.5.1.4 Type of Appointment

Table 16.9 shows the differences in the focal faculty role activities in 1992 and 2007 by type of appointment: tenured and tenure-track (often referred to as *career* ladder) vs. non-tenure-track (*non-ladder or limited term)*. The pattern of differences in 1992 is minimal in all but two respects: most notably, there is a sharp differential in publication activity in the expected direction with tenured and tenure-track faculty outpublishing their contract colleagues by nearly 50 %, and somewhat incongruously, it is the contract faculty that taught nearly 10 % less than the tenured and tenure-track faculty.[2] There is little appreciable difference in either orientation to teaching vs. research or in weekly effort devoted to research. By 2007, both the scope and absolute magnitude of differences in role activities had strikingly expanded: large differences were discernible in all areas except weekly teaching hours, including a decided gap in research orientation and weekly research effort, and the previous publication gap between appointment types had increased. This suggests that relatively muted differences had developed into a substantial work role differential by 2007.

When we examine the scope and magnitude of the role activities gap between career ladder and limited contract academic staff controlling for career stage (Table 16.10), we find that new entrants in 1992 largely reflected the aggregate (except for a decidedly smaller gap in publication activity), while in 2007 the gap

[2] This unexpected (at least in terms of direction) teaching differential may reflect the disproportionate number of contract faculty in this earlier period with research as their principal activity, especially at the research universities. Such faculty typically teach much less (Schuster and Finkelstein 2006).

Table 16.9 Weekly hours in teaching and research, role orientation, and publications by appointment type: all US faculty, 1992 and 2007 (percent or mean)

	1992			2007		
	Contract (=704)	Tenured/track (n=2804)	% dif (tenured/track vs. contract)	Contract (=360)	Tenured/track (n=718)	% dif (tenured/track vs. contract)
Mean teach hours, weekly	17.0	18.7	+9.9	20.0	20.6	+3
Mean res hours, weekly	14.6	15.2	+4.3	8.5	12.8	+51.2
Mean total work hours, weekly	49.3	50.3	+2.1	43.8	48.8	+11.4
Teach or res: % teach oriented	48.0	49.5	+1.5	70.7	49.6	−21.1
Teach or res: % res oriented	52.0	50.5	−1.5	29.3	50.4	+21.1
Mean articles last 3 years	4.5	6.0	+32.7	2.3	4.2	+80.2

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

Table 16.10 Weekly hours in teaching and research, role orientation, and publications by appointment type: US new entrants only, 1992 and 2007 (percent or mean)

	1992			2007		
	Contract (=375)	Tenured/ track (n=479)	% dif (tenured/track vs. contract)	Contract (=155)	Tenured/ track (n=159)	% dif (tenured/track vs. contract)
Mean teach hours, weekly	17.2	18.6	+8.2	20.3	22.8	+12
Mean res hours, weekly	15.6	15.3	−2.1	8.8	14.3	+61.7
Mean total work hours, weekly	49.6	47.8	−3.7	44.3	49.6	+11.9
Teach or res: % teach oriented	43.4	51.2	+7.8	70.8	47.1	−23.7
Teach or res: % res oriented	56.6	48.8	−7.8	29.2	52.9	+23.7
Mean articles last 3 years	4.3	4.9	+13.5	1.9	3.6	+89.8

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

between contract and tenured/tenurable faculty among new entrants vis-à-vis more senior faculty had expanded especially in the areas of weekly research effort and publication (although inexplicably contract faculty also seem to teach 10 % less than their tenurable colleagues).

This suggests—at least with respect to research effort and publication activity—that the accentuation of appointment type differences was especially visible among the newest entrants to the profession. The data in Table 16.11 which controls for institutional type shows that the appointment type-related gap in work activities is largely replicated in research universities—where differences in research effort, weekly work hours, and research orientation persist among different types of full-time faculty appointees, while the gap in publication activity is somewhat attenuated. This suggests that irrespective of appointment type, there is a modestly durable institutional type effect.

Table 16.12 shows the work role gap in 1992 and 2007 for contract vs. tenurable faculty by gender. There are few surprises in the overall data, with a few notable exceptions: the persistent gender gap in weekly teaching and research effort and in orientation to research that is visible in the aggregate (Table 16.11) and among tenured and tenure-track faculty in 2007 and appears to persist across both institutional type (Table 16.6) and academic field (Tables 16.7 and 16.8) largely disappears among contract faculty in 2007. Male contract faculty teach about the same amount (20 hour weekly) in 2007 as female contract faculty and spend about the same amount of time (9 hours weekly) in research, and the gender gap in research orientation is the lowest among any faculty subgroup defined by institutional type, academic field, and type of appointment. This is in stark contrast to the gender gap for tenured and tenure-track faculty which remains relatively large in 2007. The only area in which the gender gap among contract

Table 16.11 Weekly hours in teaching and research, role orientation, and publications by appointment type: US research university faculty only, 1992 and 2007 (percent or mean)

	1992			2007		
	Contract (=496)	Tenured/ track (n=1995)	% dif (tenured/track vs. contract)	Contract (=97)	Tenured/ track (n=394)	% dif (tenured/track vs. contract)
Mean teach hours, weekly	14.9	16.9	+14.0	16.6	18.3	+10.1
Mean res hours, weekly	16.3	16.9	+3.7	11	16.5	+50.1
Mean total work hours, weekly	50.9	51.4	+1.0	44.8	51.1	+14
Teach or res: % teach oriented	40.3	38.6	−1.7	60.8	31.2	−29.6
Teach or res: % res oriented	59.7	61.4	+1.7	39.2	68.9	+29.7
Mean articles last 3 years	5.27	7.05	+33.8	4.1	6.02	+46.8

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

Table 16.12 Weekly hours in teaching and research, role orientation, and publications by appointment type and gender (F=female, M=male): all US faculty, 1992 and 2007 (percent or mean)

	1992				2007			
	Contract		Tenure/track		Contract		Tenured/track	
	F (n=263)	M (n=438)	F (n=673)	M (n=2128)	F (n=154)	M (n=197)	F (n=245)	M (n=469)
Mean teach hours, weekly	19.4	15.7	20.3	18.2	20.1	20.0	23.0	19.3
Mean res hours, weekly	12.5	15.9	12.6	16.0	9.0	8.4	10.7	14.0
Mean total work hours, weekly	48.4	49.9	49.0	50.7	44.3	43.7	49.5	48.4
Teach or res: % teach oriented	53.1	44.8	58.8	46.6	73.3	67.8	54.3	47.1
Teach or res: % res oriented	46.9	55.2	41.3	53.4	26.7	32.2	45.7	52.9
Mean articles last 3 years	3.2	5.3	4.3	6.5	2.2	2.5	3.8	4.4

Source: Carnegie Foundation for the Advancement of Teaching (1996); CAP (2009)

faculty surpasses that of tenured and tenure-track faculty is in publication activity where men outpublish women by nearly 40 %. That type of appointment appears to neutralize the persistent effects of gender on work role definition suggests clearly—and persuasively—that appointment type may now serve as an independent arbiter of work role definition.

16.5.2 Inferential Results

Table 16.13 displays the results of the final (third) model of the logistic regression analyses for all five dependent variables for 1992.

At first inspection, the results provide clear—and resounding—empirical confirmation to the basic Clark conceptualization: both institutional type and academic field emerge as significant predictors of all five faculty work dependent variables, although between the two, institutional type was more powerful. A 1992 faculty member at a research university was about *five* times more likely than one at another 4-year institution to be highly oriented to research (rather than teaching) and to expend a large weekly effort on research; they were *three* times more likely to have published above the median than faculty at other 4-year institutions and about 1.5 times as likely to work above the median number of weekly hours and one-third as likely to teach above the median number of weekly hours. Less powerfully, a 1992 faculty member in the natural sciences was about twice as likely as one outside the natural sciences to be oriented to research (rather than teaching), to devote more than the median weekly number of hours to research, and to publish more than the median number of articles. They were about half as likely as nonscientists to teach above the median number of weekly hours and no different from nonscientists in total weekly work hours.

Beyond institutional type and academic field, gender emerges—even as early as 1992—as a significant arbiter of work role behavior, almost on a par with academic field (a close third). A male faculty member in 1992 was about one and one-half times as likely as a female to be above the median in weekly research hours, in research orientation, and in publication; conversely they were about three-fourths as likely to be above the median in weekly teaching hours. Type of academic appointment is, however, largely invisible as a determinant of academic work role in 1992: contract faculty were no more or less likely than tenured and tenure-track (career ladder) faculty to expend any greater (or lesser) effort in teaching, research, and overall job or to publish more.

Table 16.14 displays the results of the final (third) model of the logistic regression analyses for all five dependent variables for 2007.

The Exp B values suggest first that while the determinative power of institutional type persists across four of the five dimensions of the work role, it is slightly attenuated. The only dependent variable upon which the predictive power of institutional type remains equally strong is faculty orientation to research: a 2007 faculty member at a research university is still about five times more likely than one at another 4-year institution to be above the median in research orientation. They are slightly less likely, however, than a faculty member in 1992 to be above the median in research hours (Exp B = 2.7 vs. 3.3) and publications (Exp B = 3.7 vs. 4.0) and show no significant difference with other 4-year institution faculty in total work hours (they were significantly higher in 1992). The determinative power of both academic field and gender appears to persist at about the same level of power: Exp B in the neighborhood of 1.5 for scientists vs. nonscientists and for men vs. women on research orientation, teaching, and research hours and publications.

Table 16.13 Predictors of time allocation, role orientation, and publications: all US faculty, 1992

Predictors[****]	Teach hours		Research hours		Total week hours		Articles 3-year		Teach/res orientation	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Institutional type: res univ	.000[***]	0.367	.000[***]	4.731	.001[**]	1.469	.000[***]	3.073	.000[***]	5.009
Discipline: life and med sci	.000[***]	0.344	.000[***]	1.487	0.053	1.261	.000[***]	1.882	.000[***]	1.984
Discipline: physical sciences	.010[**]	0.726	.000[***]	2.342	0.238	1.182	.002[**]	1.615	.000[***]	2.318
Discipline: humanities	0.561	1.062	0.095	1.199	0.427	0.907	.011[*]	0.72	.000[***]	1.581
Appt type: tenure/tenure-track	0.537	1.069	0.157	1.159	0.405	1.101	0.052	1.279	0.624	0.952
Career age: new entrants	0.255	0.894	.025[*]	1.243	0.724	0.963	0.121	0.832	0.109	1.16
Gender: male	.000[***]	0.705	.000[***]	1.524	0.052	1.221	.000[***]	1.453	.000[***]	1.391
	(X^2 = 293.668, df = 7, p <=.000)		(X^2 = 310.082, df = 7, p <=.000)		(X^2 = 30.999, df = 7, p <=.000)		(X^2 = 194.174, df = 7, p <=.000)		(X^2 = 339.283, df = 7, p <=.000)	

Source: Carnegie Foundation for the Advancement of Teaching (1996)
Where value selected represents the higher coded value in the corresponding variable set
[***]p < .001; [**]p < .01; [*]p < .05
[****]predictors coded as follows: (variable name: value selected)

Table 16.14 Predictors of time allocation, role orientation, and publications: all US faculty, 2007

	Teach hours		Research hours		Total week hours		Articles 3-year		Teach/res orientation	
Predictors[****]	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Institutional type: res univ	.000[***]	0.393	.000[***]	3.774	0.698	0.944	.000[***]	2.67	.000[***]	5.132
Discipline: life and med sci	.013[*]	0.619	0.68	1.087	.030[*]	1.483	.011[*]	1.876	.007[**]	1.677
Discipline: physical sciences	.008[**]	0.566	.012[*]	1.708	.035[*]	1.513	0.244	1.365	.007[**]	1.748
Discipline: humanities	0.916	1.018	0.166	1.294	0.143	1.279	0.41	0.836	.001[**]	1.842
Appt type: tenure/tenure-track	0.359	0.871	.000[***]	2.041	.001[**]	1.646	.000[***]	2.534	.000[***]	2.684
Career age: new entrants	0.216	1.205	0.541	1.102	0.724	0.95	0.34	1.209	0.655	1.07
Gender: male	.006[**]	0.677	.004[**]	1.528	0.111	0.806	0.634	1.09	.022[*]	1.385
	(X^2=66.217, df=7, p<=.000)		(X^2=99.085, df=7, p<=.000)		(X^2=23.451, df=7, p<=.001)		(X^2=53.191, df=7, p<=.000)		(X^2=153.985, df=7, p<=.000)	

Source: CAP (2009)

Where value selected represents the higher coded value in the corresponding variable set

[***]$p<.001$; [**]$p<.01$; [*]$p<.05$

[****]predictors coded as follows: (variable name: value selected)

The new and big story revealed by Table 16.14 is the emergence of type of appointment as a powerful predictor of work role behaviors rivaling academic field and gender as second only to institutional type as an arbiter of academic work. The table shows that a career ladder (tenured or tenure-track) faculty member who in 1992 showed no visible differences on any of the five dimensions of academic work from a contract faculty member was by 2007 two and half times more likely than a contract faculty member to be above the median in research orientation and weekly research hours, twice as likely as a contract faculty member to be above the median in publication, and one and a half times as likely as a contract faculty member to be above the median in total weekly work hours. This suggests that by 2007 appointment status had developed very quickly as a fourth pillar defining the complexion of academic work.

16.6 Discussion and Conclusions

Based on the above analyses, what then can we say first, most generally, about the changing balance of teaching and research in American higher education? In the past 15 years, we have suggested that a rebalancing of teaching and research toward teaching is observable. The self-reported total number of weekly hours devoted to academic work have stabilized or declined slightly, teaching orientation and hours have increased across the board, research hours have declined across the board (although there has been a much smaller decline in observable research orientation), and publication volume and rate has declined but is distributed more widely within the 4-year system.

Within the context of this broader teaching "correction," which can be interpreted as nothing more than a swing of the pendulum (although, to be sure, it may be a lengthy swing), what can we say more fundamentally about the factors that shape academic work in the United States? To what extent do Burton Clark's observations of a quarter century ago still hold? To what extent do they need to be modified or even supplanted? The results of our analyses suggest several layers of conclusions. Most generally, at the macro-level, they suggest that institutional type and academic field remain powerful arbiters shaping how faculty members go about their work. Moreover, our analyses suggest that even as Professor Clark wrote, gender had already emerged as a nearly coequal third axis shaping academic work—both within institutional and disciplinary settings.

By 2007, however, while institutional type, academic field, and gender persist as arbiters of academic work, the available evidence suggests that type of appointment has emerged—and very quickly—as a major shaper of the academic work role, second only to institutional type. This is the single most dramatic and far-reaching conclusion of this analysis. Clearly, in the past 15 years, new types of full-time appointments which were just emerging in the 1990s have become major factors in the academic workplace—not only as a function of their rapidly growing numbers but in terms of the powerful definition, or redefinition, that they give to the academic

work role—across institutional and disciplinary settings and even within the boundaries of gender socialization. While, then, a 4th arbiter of the complexion of academic work has emerged, the available evidence suggests some subtle shifts in the interaction among these four. There is some evidence that gender differences are being attenuated by the power of institutional type (the elimination of many differences, especially in publication behavior at research universities) and appointment type (male and female work patterns differ less in contract appointments than in tenure-track appointments). There is even some evidence that the power of institutional type is attenuating slightly as publication expectations spread across the system –even in the midst of a "teaching correction." There is some further evidence that career stage may be entering the picture—insofar as new entrants to the profession may differ less among themselves in their work orientation and behavior than their senior colleagues.

Taken together, the findings suggest that we are witnessing an increasing differentiation of academic work. If a quarter century ago, Professor Clark could explain half the variance in a professor's work life based on only two bits of information (institutional type and academic field), we can say with some confidence that he would need to add at least two additional ones today: gender and appointment type. And perhaps most significantly, the newly emergent arbiter of academic work—appointment type—promises increasing specialization in the work role, rendering questions of teaching and research balance increasingly moot (or rather increasingly irrelevant) to an ever larger segment of the US instructional faculty.

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Chapter 17
Teaching and Research in English Higher Education: The Fragmentation, Diversification and Reorganisation of Academic Work, 1992–2007

William Locke

17.1 Introduction

This chapter provides an analysis and interpretation of the key changes in higher education and their impact on teaching and research in the United Kingdom, and in particular England, between the two international surveys of the academic profession, in 1992 and 2007. It identifies some of the key characteristics of the UK academic profession in 2007, as this was the year of the more recent survey. It reports on the amount of time academic respondents to the surveys spent on different activities; their primary interests in teaching and research; their affiliations to their subject, department and institution; their satisfaction with their jobs and views on the attractiveness of the profession; their opinions on teaching; their views on research, their scholarly contributions and sources of research funding; and the evaluation of teaching, research and service activities. These responses are discussed in the context of the key changes in the UK higher education system in the period between the two surveys. Finally, the chapter interprets the categorisation of the UK (by this book's editors) as achieving a balance between teaching and research and concludes that the descriptions of the core activities of higher education institutions—teaching and research—may be breaking down, requiring a reconceptualisation of academic work in the twenty-first century.

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17.2 Major Changes in UK Higher Education Between 1992 and 2007

The UK higher education (HE) system underwent dramatic changes between the surveys of academics in England in 1992 (supported by the Carnegie Foundation for the Advancement of Teaching) and those throughout the United Kingdom (UK) for the *Changing Academic Profession* (CAP) study in 2007. The binary divide between universities and the larger nonuniversity institutions (polytechnics) was formally abolished in 1992 and further eroded in England in 2004, with the loosening of the criteria for award of the title, so that new 'universities' no longer required research degree awarding powers. The coalition government in England plans to open HE to additional private providers, tertiary colleges and non-teaching 'awarding bodies', thus further diversifying the system. There was a huge (86 %)[1] expansion in the number of students entering higher education, and especially those studying part-time and at postgraduate level, and international students. A significant emphasis was placed during this period on widening participation to those parts of the population that had tended not to consider HE study, but to limited apparent effect (NAO 2008). In parallel, but at a slower rate due to the relative decline in public funding of HE in the UK, the number of academic staff grew from approximately 100,000 (Fulton 1996) to nearly 170,000 (HESA 2008a).

After 1992, the external evaluation of the core activities of teaching and research intensified and was co-opted for government purposes in the steering of HE institutions (HEIs) towards diversity of purpose whilst maintaining quality standards. A 'third stream' of funding was established in order to encourage HEIs in their efforts to reach out to businesses and the community and disseminate the knowledge they generated more widely than via the students they graduate. Finally, since 1997, devolution of power to the four constituent nations of the UK—Scotland, Wales and Northern Ireland, as well as England—has progressed at a different pace in each, leading to (and, in some respects, strengthening) some significant differences in educational policies and practices.

So, it is timely to compare the findings from the surveys in 1992 and 2007 on the nature of academic roles in the UK and the ways they were changing, and how academics viewed the profession after a period of turbulence. This chapter focuses on the findings from an analysis of the responses to an online survey of nearly 1,700 academics from a wide range of HEIs throughout the UK which was carried out by the Centre for Higher Education Research and Information (CHERI) at The Open University. The chapter includes comparisons with data from the 1992 paper-based survey of 1,400 academics in England as part of the first International Survey of the Academic Profession (Fulton 1996). However, it has not proved possible to isolate the responses to the 2007 survey from those employed in HEIs in England, so the UK-wide results are presented.

The CAP 2007 questionnaire repeated 13 items from the earlier survey. The comparison allows us to explore the changes in English HE as they were reflected

[1] 1991/92: 1,267,900 (Connor et al. 1996) using previously unpublished government data; 2006/07: 2,362,815 (HESA 2008b)

in responses on the amount of time the respondents spent on different activities; academics' primary interests in teaching and research; their affiliations to their subject, department and institution; their satisfaction with their jobs and views on the attractiveness of the profession; their opinions on teaching; their views on research; their scholarly contributions and sources of research funding; and the evaluation of teaching, research and service activities. For the purposes of this chapter, the data has been analysed according to a range of factors (gender, age, time in the profession, grade, academic discipline and type of institution) and focused on the results where there is a significant correlation. First, however, I identify some of the key characteristics of the UK academic profession in relation to teaching and research.

17.3 The UK Academic Profession and Teaching and Research in 2007: Key Characteristics

Universities are organisationally autonomous from the national governments of England, Scotland, Wales and Northern Ireland—the four constituent nations of the UK. They are free to employ and dismiss academic staff, set salaries, decide on academic structure and course content, spend their budgets to achieve their objectives and own and dispose of their buildings and equipment. Within certain parameters, they can decide on the size of student enrolment and borrow money. In England, from 2006, HEIs were able to decide on the level of tuition fees for full-time undergraduate home and European Union (EU) students up to a maximum 'cap'. Students could take out loans to pay for these increased fees, and repay them at preferential rates of interest when they graduated, but only when their income reached a certain threshold. From 2012, this fee cap was increased nearly threefold, and the government funding of teaching will eventually be reduced by two thirds to cover the hugely increased loans. Tuition fees for part-time (until 2012), postgraduate and international (non-EU) students have not been regulated. However, despite this relative autonomy and falling levels of public expenditure per student, the governments of the UK still exercise a considerable degree of influence over HEIs, through the allocation of funding and student loans and the conditions attached to these, and the regulation and evaluation of their activities. A series of intermediary bodies, such as funding councils, research councils, the Quality Assurance Agency, the Office of the Independent Adjudicator and the Office for Fair Access—as well as the relevant government department or ministry—attempt to steer institutions in the direction of the administration's policies, although these policies are not always consistent with each other and can suddenly take a different course (Locke 2008). Of course, some aspects of HE are clearly the subject of legislation and, for our purposes, the abolition of tenure in universities[2] in 1988 is a clear example of government influence.

[2]Academics working in polytechnics did not have tenure. However, there is some debate about whether tenure remained in practice, given universities' reluctance to make compulsory redundancies (Fulton and Holland 2001).

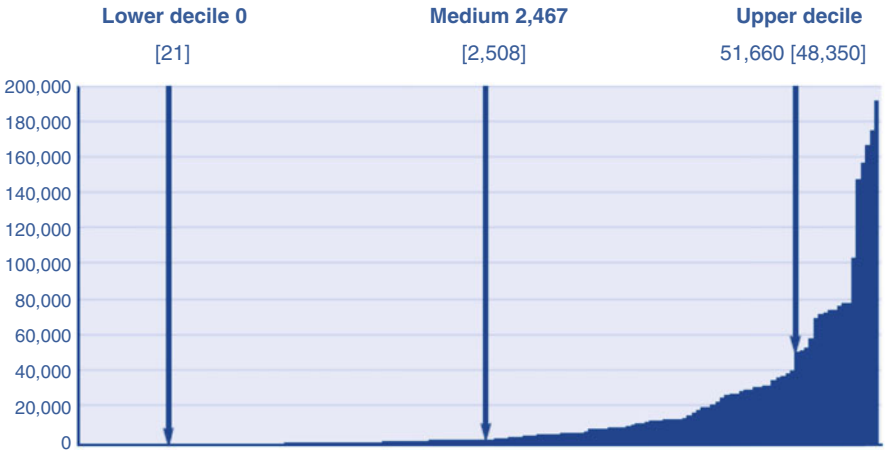

Fig. 17.1 Public funding of research (£1,000) in the UK, by institution, 2006/07 (From Universities UK 2008, p. 44)

HEIs in the UK are highly differentiated by institutional origin, status, mission, historical wealth, resources, research activity and income, educational provision and student characteristics. This differentiation influences how changes impact on individual HEIs and how much autonomy they can exercise in addressing government policy, the various markets they operate in and other drivers such as demography, technology and environmental change. For heuristic purposes, five types of HEI have been distinguished: research-intensive (Russell Group) universities, other pre-1992 universities, post-1992 universities, post-2004 universities and HE colleges.[3] Analysis of the survey data revealed differences that were strongly consistent with this categorisation: HEI-type was more significantly correlated with differences in responses to the questionnaire than any other factor, including gender, age, subject, grade and mode of employment.

University success and prestige are still largely associated with research—even for those post-1992 universities that have sought to prove their new credentials (Locke 2004). However, the vertical differentiation of institutions has endured. For example, Fig. 17.1 shows the distribution of the public funding of research, demonstrating its concentration in a small number of higher education institutions, each one represented by a bar. Figure 17.2 shows the relationship between public research income and all income generated by each institution.

There is a steep gradient above the upper decile. The extent of concentration of research funding is demonstrated by the fact that the overall ratio of public research income to overall income is 13 % and the median institution receives just 3 % of its income from public research funds—and this has decreased from 4 % in 2005/2006 (Universities UK 2008).

[3]However, there remains the possibility of identifying different patterns of institution through further analysis of the CAP UK data.

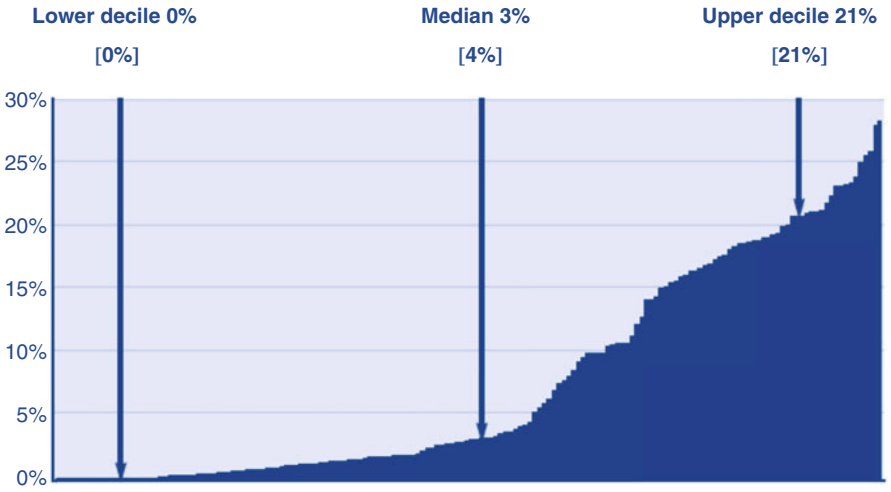

Fig. 17.2 Public funding of research in the UK as a percentage of all income, by institution, 2006/2007 (From Universities UK 2008, p. 45)

This concentration of research funding has led to an increasing number of individuals, academic departments and even universities effectively becoming teaching-only or, at least, 'research inactive'.

At the same time, the number of research-only academics has increased, though at a slower pace, and the vast majority of these are on fixed-term contracts associated with specific research projects. Those academics on contracts that require them to teach and research represented little more than half of the total population in 2007, the year of the survey. Table 17.1 summarises the main characteristics of UK academics.

17.4 Findings from the 1992 and 2007 Surveys

17.4.1 Academic Work: The Balance of Activities and Interests

Between 1992 and 2007, responses to the two surveys suggest that the median number of hours academics spend teaching had slightly increased, as had the time spent on administrative work (Table 17.2). This may have been the result of more accurate recording as much as an *actual* increase in time spent on these activities. Increasingly, academics in England are being required to complete time allocation schedules in an attempt to provide their institutions with more information about the costs of different activities. This has meant that individuals are far more aware of how they spend, and account for, their time. As a result, activities which may have been incorporated in a broad notion of 'teaching' in 1992 may now be disaggregated and

Table 17.1 Profile of academic staff in the UK, 2006/2007

	Full-time	Part-time	Total
All academic staff	113,685	56,310	169,995
By gender			
Female	58 %	42 %	42 %
Male	73 %	28 %	58 %
By grade			
Professors	90 %	10 %	10 %
Senior lecturers and researchers	86 %	14 %	20 %
Researchers	60 %	40 %	31 %
Lecturers	84 %	16 %	22 %
Other grades	25 %	75 %	18 %
By age			
30 and under			15 %
31–40			28 %
41–50			28 %
51+			29 %
Terms of employment			
Permanent	72 %	28 %	62 %
Fixed term	44 %	56 %	38 %

Source: HESA (2008a)

Table 17.2 Median hours per week on teaching, research, service, administration and other academic activities, in session and not in session, 1992/2007

	1992		2007	
	In session	Not in session	In session	Not in session
Teaching	20	5	19	7
Research	10	20	10	25
Service	2	2	4	4
Administration	8	5	8	7
Other	2	3	5	5

included in the categories of 'service' or 'other academic activities' which have seen a rise in the 2007 survey. Time spent on 'research' has increased more dramatically than time spent on 'teaching' since 1992 which reflected the growing pressure on academics to produce high-quality research outputs suitable for submission to the periodic UK Research Assessment Exercise. It also followed an increase in the number of research-only staff employed after 1992 and a growing emphasis on research for career progression in, and between, institutions.

Given the increase in the number of hours spent on research, it is unsurprising that the proportion of academics that claimed a primary interest in research increased during the period (55 % in 1992 and 67 % in 2007), whilst those that stated a primary interest in teaching or in both teaching and research decreased in the 2007 survey (see Table 17.3).

Table 17.3 Primary interest (%), by age, 2007

	30 and under (32)[a]	31–40 (155)	41–50 (167)	51+ (198)	Total (552)
Primarily in teaching	8	5	12	13	11
In both, but leaning towards teaching	19	18	22	27	22
In both, but leaning towards research	50	48	43	43	45
Primarily in research	23	29	23	17	22

[a]The figures in this row (and in subsequent tables) represent a proportion of the responses from the UK weighted 800 (but England only) and not the actual numbers of individual responses to the questions

Table 17.4 Primary interest (%), by institution type, 2007

	Research-intensive univ. (271)	Other pre-1992 univ. (450)	Post-1992 univ. (173)	Post-2004 univ. (26)	HE colleges (65)	All (985)
Primarily in teaching	4	11	16	8	23	11
In both, but leaning towards teaching	17	22	34	35	20	23
In both, but leaning towards research	52	47	36	46	22	45
Primarily in research	27	21	15	12	35	22

The higher percentage of under 40s interested in research reflects the predominance of contract researchers in the early stages of an academic career in the UK as shown in Table 17.4. Seventy-three percent of respondents in the category '30 and under' and on fixed-term contracts stated they were primarily interested in research. There were 27 % of academics in the age category '30 or under' who stated they were primarily interested in teaching. This reflects the structure of the academic profession and the common pathways to career progression. Again, this was reflected in the high percentage (77 %) of 31–40-year-old academics who regarded their primary interest is research. By mid- to late career, respondents were slightly less preoccupied by research.

Seventy-nine percent of academics from research-intensive universities were primarily interested in research, whilst only 21 % were primarily interested in teaching. Institutions that had more recently become universities (since 1992 and 2004) had a lower percentage of academics stating their primary interest in research. It is surprising to see so many from HE colleges stating research as their primary interest. It would be interesting to investigate the thinking that lies behind these responses so that we can develop a clearer understanding of what academics within these different institutions regard as research and teaching, how they conceive of these activities and the relations between them.

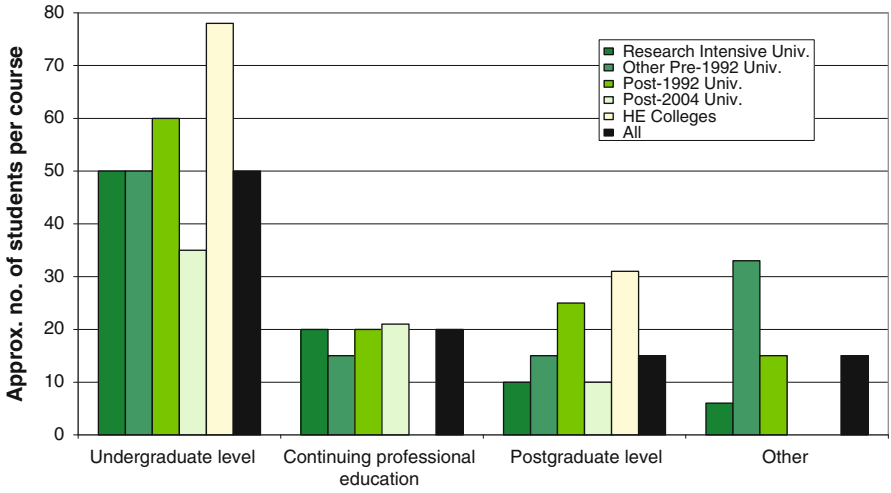

Fig. 17.3 Average number of students per course, by institution type, 2007

There are also differences between academic disciplines. Twenty-one percent of academics employed in the field of education and 22 % of academics working in design, creative and performing arts stated a primary interest in teaching, whilst only 7 % and 8 %, respectively, were primarily concerned with research. Only 8 % of academics working in engineering and technology departments stated a primary interest in teaching compared with 44 % who regarded research as their primary interest. This is quite different to the picture portrayed in the 1992 survey when 18 % of academics stated a primary interest in teaching and 8 % a primary interest in research. The majority of academics (74 %) working in this discipline in 1992 suggested an interest in both areas of academic work.

17.4.2 Teaching

Table 17.2 illustrated a drop, since 1992, in the number of hours academics spend on teaching. A more detailed examination of their teaching activities reveals some interesting differences in the experiences of academics working in different types of institution. Figure 17.3 gives an indication of the average class size at various levels of provision and in different types of HEI. Unsurprisingly, the largest classes were at undergraduate level with a median score of 88 students per course. HE colleges appeared to have the smallest class sizes overall, whilst research-intensive and other pre-1992 universities had the highest class sizes at the undergraduate level. However, this appears contrary to findings based on a survey of first and second year undergraduate students (HEPI 2006).

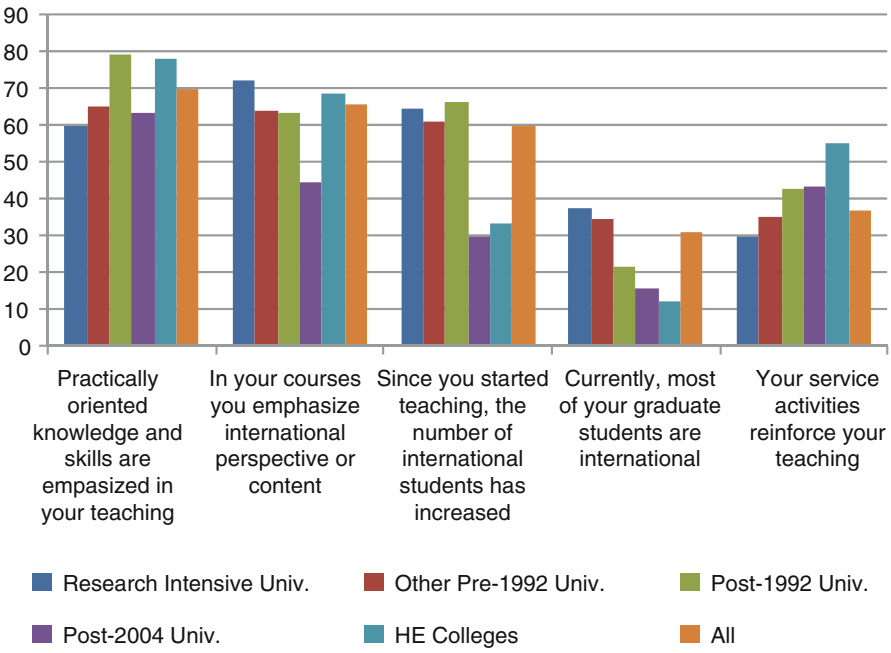

Fig. 17.4 Views on teaching, by institution type, 2007

Academics were asked whether they agreed with a number of statements referring to their teaching activities. More than three quarters of respondents agreed or strongly agreed with the statement that 'Your research activities reinforce your teaching', with only 8 % disagreeing or strongly disagreeing. Even larger majorities agreed or strongly agreed that 'You inform students of the implications of cheating or plagiarism in your courses', 'Grades in your courses strictly reflect levels of student achievement' and 'You incorporate discussions of values and ethics into your course content'. Once again the responses to certain questions differed significantly between institution types, with the greatest variations included in Fig. 17.4. Respondents from the post-1992 universities and HE colleges were more likely to agree that 'Practically oriented knowledge and skills are emphasised in your teaching', and those from HE colleges were most likely to agree that 'Your service activities reinforce your teaching'. Those in research-intensive universities were most likely to emphasise international perspectives or content in their courses and have a majority of international graduate students.

Similarly, a higher proportion of academics working in more applied academic disciplines such as engineering and technology, medicine, dentistry and health and design, creative and performing arts agreed with the statement 'Practically oriented knowledge and skills are emphasised in your teaching'. Also, fairly high proportions of academics working in engineering and technology departments and those working in the area of administration, business and social studies agreed that

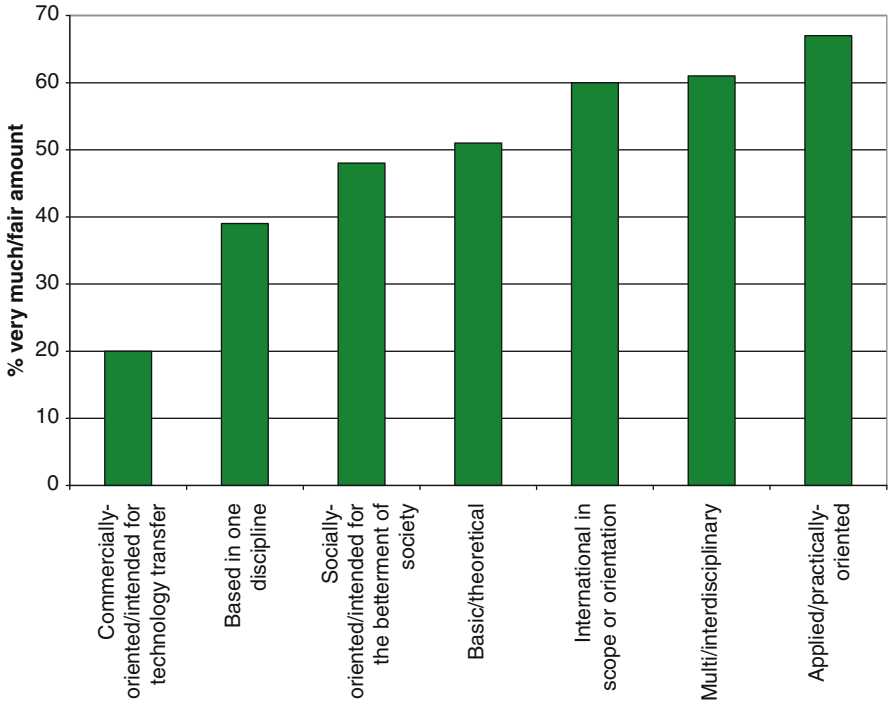

Fig. 17.5 Emphasis of primary research, 2007

'Currently, most of your graduate students are international', whilst only smaller proportions of academics working in medicine, dentistry and health, education and humanities and language-based studies agreed with this statement.

17.4.3 Research

Figure 17.5 indicates the types of research that academics in England are currently undertaking. More respondents reported undertaking applied/practically oriented than basic/theoretical research, multi/interdisciplinary research than investigations based in one discipline and socially oriented research intended for the betterment of society than commercially oriented research intended for technology transfer. These emphases may reflect the priorities of funders, academic publishers, institutional managers and others who can influence the type of research that is supported. For example, the UK research councils expected the research they funded to have 'a societal and economic impact', requiring researchers to demonstrate an awareness of the wider environment and context in which the research takes place and to engage actively with the public at both the local and national levels about the research and its broader implications (RCUK 2008).

Table 17.5 Scholarly contributions, 1992/2007

	1992		2007	
	Mean	Median	Mean	Median
Authored or co-authored books	0.9	0	1.4	1
Edited or co-edited books	0.7	0	1.5	1
Articles published in an academic book or journal	5.4	3	6.9	4
Research reports/monographs for a funded project	2.4	1	3.2	2
Papers presented at a scholarly conference	4.0	2	6.7	4
Professional articles written for a newspaper or magazine	2.4	1	2.9	2
Patents secured on a process or invention	0.1	0	1.8	2
Computer programs written for public use	0.4	0	3.1	2
Artistic works performed or exhibited	0.3	0	3.8	2
Videos or films produced	0.4	0	2.8	1

Once again there were differences between those working in different types of institution. A higher percentage of academics in post-1992 (60 %) and post-2004 (55 %) universities stated that very much or a fair amount of their primary research was socially oriented or intended for the betterment of society. Sixty-two percent of academics at research-intensive universities and 67 % of academics in other pre-1992 universities stated that very much or a fair amount of their primary research was international in scope, compared with only 40 % of those in post-1992 universities and 22 % of those in post-2004 universities. This may reflect the greater likelihood of academics in the older universities aiming for the higher grades in the 2008 Research Assessment Exercise (RAE) that rewarded research that was internationally excellent or even 'world leading'.

There were again differences between the academic disciplines. Seventy percent of academics working in humanities and language-based studies stated that very much or a fair amount of their primary research was international in scope. Unsurprisingly 63 % of academics working in the field of medicine, dentistry and health stated that very much or a fair amount of their primary research was socially oriented for the betterment of society compared with only 19 % of those working in engineering and technology units and 22 % of those working in biological, mathematics and physical sciences agreeing with this statement.

Research output has been heavily influenced by the RAE and, to a lesser extent, the research councils, which privilege 'medium and large scale original quantitative research that will yield short-term results publishable in high-status journals rather than smaller scale applied and discursive research, some of which is communicated to end-users in ways that students might also benefit from it' (Locke 2004, p. 103). Table 17.5 outlines the scholarly contributions made by academics in the three years previous to the survey being conducted in 2007. It compares these with the contributions made by academics in the three years previous to the 1992 survey being conducted. In all types of contribution, apart from professional articles written for a newspaper or magazine, output has increased.

Table 17.6 Scholarly contributions by institutional type, 2007

	Research-intensive univ. (240)	Other pre-1992 univ. (385)	Post-1992 univ. (138)	Post-2004 univ. (21)	HE colleges (47)	All (831)
Scholarly books you authored or co-authored	0.38	0.42	0.43	0.33	0.15	0.39
Scholarly books you edited or co-edited	0.28	0.38	0.30	0.14	0.15	0.32
Articles published in an academic book or journal	6.60	7.09	3.50	2.76	5.66	6.16
Research report/monograph written for a funded project	1.23	1.22	0.95	0.29	2.38	1.22
Paper presented at a scholarly conference	6.30	6.62	3.65	3.38	4.79	5.85
Professional article written for a newspaper or magazine	0.84	0.67	1.01	0.38	1.15	0.80
Patent secured on a process or invention	0.07	0.08	0.01	0.00	0.00	0.06
Computer program written for public use	0.10	0.25	0.05	0.10	0.19	0.17
Artistic work performed or exhibited	0.02	0.17	0.16	0.90	0.40	0.16
Video or film produced	0.03	0.12	0.20	0.38	0.32	0.12
Others (please specify)	0.53	0.40	0.38	0.05	1.32	0.48

Interestingly, whilst the number of papers presented at a scholarly conference has increased significantly, the number of articles published in an academic book or journals has risen by less, perhaps reflecting the increased competition in academic publishing. The increased productivity in patents, computer programs, artistic works and videos or films also reflects the greater commercialisation and commodification of research.

When these contributions are broken down by institutional type, as in Table 17.6, it is interesting to note the conventional pattern in research-oriented (pre-1992) universities of a paper presented to a scholarly conference which leads to a chapter or article published in an academic book or journal. This reflects the form of research output favoured by the cyclical research assessment exercises that encouraged rapid publication of research results in peer-reviewed periodicals. Generally speaking, other contributions, especially those not generally peer reviewed, such as artistic or audiovisual works, are much less numerous than written publications. The number of written publications produced by academics in HE colleges, especially research reports or monographs written for a funded project, is noteworthy, although the low numbers of respondents from this type of institution suggest caution when concluding anything from this.

Eighty-six percent of academics agreed that the pressure to raise external funds had increased since their first appointment. A majority were also concerned that

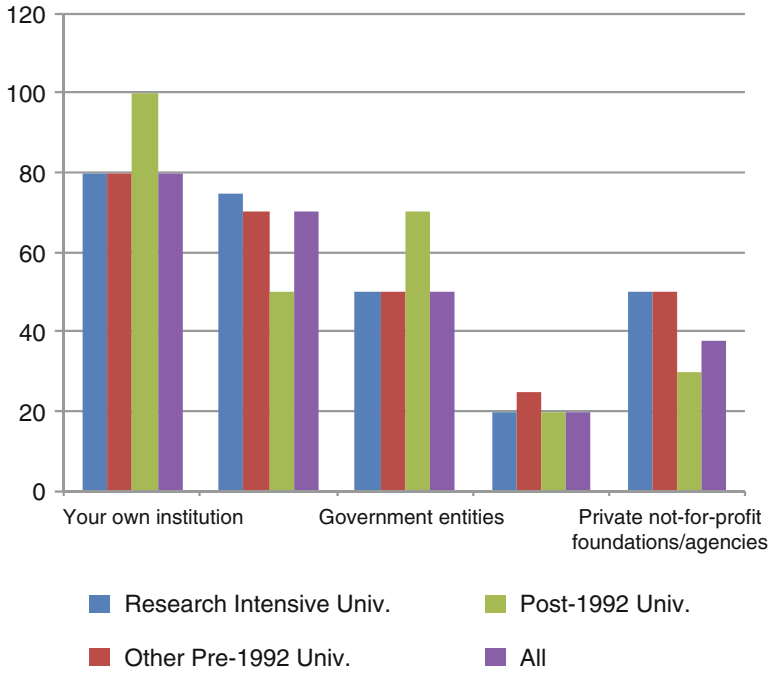

Fig. 17.6 Median percentage of funding for research, by institution type, 2007

high expectations to increase research productivity—and of useful results and application—are a threat to the quality of research.

Figure 17.6 gives an overview of the median percentage of funding for academics' research. It illustrates the advantage of the older universities, and the research-intensive universities in particular, in attracting funding from public research funding agencies and private not-for-profit foundations and agencies.

17.4.4 Evaluation

Finally, it is not surprising that respondents in 2007 were more likely than their 1992 counterparts to report that their teaching and research are evaluated regularly by both peers in their department and external reviewers. This reflected the growth in the assessment of the quality of all academic activities during the period 1992–2007. In 2007, external review played a greater part in research than teaching, although the difference may not have been so pronounced earlier in this 15-year period when the assessment of teaching included classroom observation. A clear majority reported in the 2007 survey that students regularly evaluated their teaching, and this was likely to be a response to feedback in annual course monitoring processes and a reaction to the first two rounds of the annual National Student Survey in 2005 and 2006.

17.5 Discussion

The findings from the 1992 and 2007 surveys clearly reflect the increasing emphasis on research in the UK after the abolition of the binary divide gave the new universities the opportunity (in theory, at least) to secure public funding for this activity. As public expenditure per student on teaching declined, research (and particularly the RAE) represented one of the few means for HEIs to increase income, even at less than the full costs of the activity generated. Growing evaluation of the outputs both helped to increase productivity and also raised expectations to a point where a majority of respondents feel that quality is at risk. The assessment procedures and mechanisms for allocating research money were also designed to increase selectivity in research funding between institutions. Within institutions, this has often been translated into selectivity between departments and between individuals within departments. So much so, that institutional managers had to make tactical decisions about the proportion of academics to submit to the periodic assessment exercise and, ultimately, about which individuals (and departments) could remain 'research active' and which should focus mainly on teaching and income-generating alternatives to research.

The period between the two surveys is characterised by the final separation of research and teaching, as a result of policy and operational decisions to distinguish the way these activities are funded, managed, assessed and rewarded (Locke 2004). This process had started with the introduction of the RAE in 1986 and, by 2007, resulted in the substantial increase in the number of teaching-only posts and (largely fixed-term) research-only contracts in HEIs, such that these together now account for nearly half of all academics in the UK. The 2004 HE Act also led to the conversion of 14 or so HE colleges and institutes into teaching-only universities, without research degree awarding powers. The separation of the core academic activities in which, increasingly, only some institutions can attract sufficient sums of money for research then necessitated the creation of a 'third stream' of funding to support collaboration between universities and business and industry that might become a 'second core mission'—after teaching—for some institutions seeking 'to play to their strengths'. Although designed to encourage diversity, these policy initiatives—and, equally, HEIs' responses to them—have had the effect of fragmenting academic activities and introducing new divisions of labour and changing perspectives on core academic roles which appear to be experienced differently by academics according to their age, gender, grade and career stage.

The CAP findings further indicate the key influence that institutional role and type has in this process. Although academics in 2007 still claimed greater affiliation with their academic discipline and department than with their institution, the responses suggest a stronger role for both departments and institutions in their working life. The need to manage the processes of fragmentation, external evaluation and internal quality assurance, financial constraints and opportunities, new and growing relations with business, etc., required a growth in institutional operations and the associated administrative and management personnel, such that they

represented more than half of the 'workforce' in UK HEIs. Again, there were variations in the way these changes were experienced and operationalised within different types of institutions, depending on how well they were positioned to withstand the external pressures and constraints and take advantages of the opportunities that were opening up to them in an increasingly competitive and marketised HE environment.

17.6 Conclusion

The editors of this book have categorised the UK higher education system as having achieved a more or less even balance between teaching and research. Whilst it may be the case that teaching and research appear relatively balanced across the system in comparison with other CAP countries, these activities are highly differentiated between institutions, between departments within an institution and even between individuals within the same department. Those academics whose employment contracts require them to teach and research represent only just over half of all academics, and an increasing amount of teaching is undertaken in institutions that do not have the power to award research degrees and do not undertake a significant amount of externally funded research. Nevertheless, there is a clear hierarchy between research and teaching, with the former on top. In practical ways, current circumstances often pit research and teaching against each other in competition for academics' time: productivity and effectiveness in one area is sometimes achieved at the expense of the other, at least in part (Bexley et al. 2011). Across the UK system, teaching and research exist in a range of relationships with each other—positive and negative, integrated and independent—and it is a matter for strategy and policy, at system, institutional and departmental level, whether synergies can be found between them. It is a matter for higher education institutions to maintain and maximise the beneficial relations between the two, if they wish to do this. Research, teaching and the relations between them are matters for strategic choices about the nature and future of a higher education institution. Views and actions on these matters reflect differing beliefs about the nature and purposes of higher education and the contribution of graduates to a knowledge economy (Locke 2004).

Since the 2007 CAP survey, the policy and financial operating environment has changed again, with a new coalition government in England increasing efforts to privatise higher education, shift more of the cost of tuition to students and extend market incentives. However, there are deeper and longer-term trends in the political economy of higher education which suggest the need for a serious reconsideration of the nature of the categories we are using to describe what higher education institutions do. It could be argued that the descriptive terms 'research' and 'teaching' no longer adequately capture the vast array of activities that institutions providing higher education undertake (Locke 2012). If nothing else, we should also include in our analysis those other academic and academic-related activities that are undertaken alongside teaching and research, which often reconnect, 'wrap around' and

even protect the teaching-research nexus and take it in new directions. These are summed up in words and phrases such as 'service', administration', 'academic citizenship', 'engagement' and, of course, 'knowledge exchange' and 'collaboration with business and the community'. This 'third dimension' is referred to, and characterised, differently in different countries and this tells us much about the nature of the academic role in various cultures. But we should also examine the role of 'para-academics'—or those professionals and experts working in learning support, student assessment, quality assurance, widening access to higher education study for under-represented groups, work-based learning, learning technologies and so on—in other words, those performing academic-related work or an aspect of the academic role, who are not formally employed on academic contracts. In many ways, these two examples of the ways in which the activities of teaching and research are being rethought and reorganised indicate a need to reconceptualise academic work in the twenty-first century.

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Chapter 18
Teaching, Research, and the Canadian Professoriate

Glen A. Jones, Bryan Gopaul, Julian Weinrib, Amy Scott Metcalfe, Donald Fisher, Yves Gingras, and Kjell Rubenson

18.1 Introduction

This chapter focuses on academic work in the context of Canadian higher education, with a particular emphasis on exploring the balance between teaching and research. As noted in previous chapters in this volume, Canada can be categorized as a semi-core system that has been strongly influenced by what Ben-David (1977) has referred to as the core systems in the historical development of higher education. In the Canadian case, these historical influences began with its colonial ties to France and Great Britain, but there is little doubt that the greatest core influence on the development of the Canadian system has been its American neighbor to the south.

The Canadian higher education system can also be categorized as being within the group of countries where the professoriate are expected to maintain a

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balance of both research and teaching. This balance is the source of considerable tension as the system is pushed and pulled between what are sometimes competing objectives of increasing accessibility to undergraduate education on the one hand and contributing to a national research and innovation agenda on the other (Jones 2007). While there are serious questions concerning the sustainability of the current structural arrangements, the end result is a system that has one of the highest participation rates in postsecondary education in the world and a strong record of university research productivity.

This chapter has been organized into three major sections. We begin by providing an overview of the historical development of higher education in Canada with a particular emphasis on the evolution of teaching and research. The second section focuses on academic work and careers, including a review of appointment, tenure, and promotion policies, and the increasing fragmentation of academic work with the growing use of different categories of academic labor, including contingent faculty, teaching assistants, and teaching-stream professors. The third section presents relevant Canadian data from the Changing Academic Profession study. The final section offers a summary of findings and concluding observations.

18.2 Historical Development of Higher Education in Canada

While postsecondary education in the geographic region that was to become Canada can be traced back to the permanent settlements of New France during the French colonial period (Harris 1976), universities did not emerge until the establishment of the British Colonies and, more precisely, after the American Revolution had forced almost all of those who were loyal to the Crown to migrate north. The earliest universities were created in Lower Canada (Quebec), Upper Canada (Ontario), New Brunswick, and Nova Scotia (Jones 1997), and these were the four colonies that agreed to federate to become the Dominion of Canada in 1867 under the British North America Act. The federation expanded to include other colonies, and new provinces were created as the population expanded in the west.

The Canadian constitutional arrangement involved a federation with a division of powers between a federal level of government and the provinces. The responsibility for education was assigned to the provinces. Most of the higher education institutions that existed during this early period were small denominational colleges, and there were only a handful of publicly supported universities; the total university enrolment in 1867 was 1,500 students, and only five universities had enrolments of over 100 students (Cameron 1991).

There is little doubt that the primary function of these early Canadian universities was teaching; in fact, as Neatby argued, there was considerable consensus on the mission of these institutions:

> Universities trained the children of the political elites; they served as a finishing school for their daughters and prepared their sons for admissions to the liberal professions. These social functions were understood by governments and by university officials; there were no

> major confrontations over admissions, over course content or over student discipline because both groups shared the same social values. Cabinet ministers and members of the Board of Governors might belong to different parties, but they were all men of substance with similar views of the social order. (Neatby 1987, p.34)

These were small, marginalized institutions struggling to financially survive while enrolling a very small fraction of the population. Government support was minimal and limited to a small number of universities viewed as public and provincial, and so the major sources of revenue were tuition fees and donations. The fact that these were essentially teaching institutions does not mean that professors were not engaged in scholarship; in fact there is considerable evidence of research taking place within universities throughout the nineteenth century, but these were not activities viewed as central to the role of the university (McKillop 1994).

Canadian universities were relatively slow to adopt the German university research model. The two most respected universities at the turn of the twentieth century were, not surprisingly, the two universities that had become most involved in research and graduate studies. The University of Toronto awarded the first doctoral degree in Canada in 1900, and McGill University awarded its first doctorate in 1909 (Williams 2005). These two universities were responsible for more than half of all of the doctoral degrees awarded in Canada until World War II (McKillop 1994).

As new provinces were created in western Canada, new "provincial universities" were created to serve the needs of these sparsely populations regions. These new institutions, heavily influenced by the American land-grant universities, especially the University of Wisconsin, were designed to be the only universities in the province, and they moved quickly to establish extension (continuing education) units as well as faculties of agriculture and other programs designed to support local industry.

The creation of the National Research Council of Canada in 1916 was, at least in part, a response by the Government of Canada to the impact of the German research universities on the industrial development of Germany, and the new council moved quickly to engage the university community and began to offer scholarships and modest grants supporting graduate studies and research (Jones and Weinrib 2011). Research was viewed as a legitimate, and increasingly central, component of the work of some universities, a view that was further reinforced when researchers at the University of Toronto received the Nobel Prize for Medicine in 1923 for the discovery of insulin.

While some universities took steps to strengthen the research mission, others were quite satisfied to focus on undergraduate teaching. As Magnusson (1980) notes, the Université de Montréal saw its primary role as one of preserving and transmitting knowledge, a view that continued well into the 1950s. Most of the private universities, largely associated with protestant churches, continued to focus on providing an undergraduate education within an environment that supported religious values.

World War II had a huge impact on higher education in Canada. During the war a number of Canadian universities became major centers of research and development for the war effort, but it was the terms of the benefits program for veterans

returning from the conflict that would dramatically transform Canadian higher education. Qualified veterans were eligible to receive a free university education, including maintenance grants, following the war, and tens of thousands took advantage of the benefit. Canadian university enrolment increased by 46 % in 1945–1946 when 20,000 veterans decided to pursue higher education. The number increased to 35,000 in 1946–1947 (Cameron 1991; Jones 2006).

While the initial wave of expansion was designed to directly address the needs of returning veterans, arguments to continue to expand participation in higher education in order to address broader national objectives began to emerge from a range of sources. Canada's rapid postwar industrial expansion demanded a more educated workforce. A national review of the arts associated the expansion of higher education with the social and intellectual development of the nation. Economists argued that government investments in higher education would offer strong returns through economic growth and increased tax revenues. By the mid-1950s it had become clear to both the federal and provincial governments that the expansion of higher education had become a national priority and that expansion would require a substantial new investment in the sector (Jones 2006).

With strong support from both the federal and provincial levels of government, higher education went through an enormous, multifaceted period of expansion, transitioning from a small network of marginalized universities early in the century to become one of the first mass systems of higher education (Trow 1974). By the mid-1970s, many of the key structural arrangements that were to characterize Canadian higher education for the rest of the twentieth century had emerged, and four of these structural factors are important to the discussion of teaching and learning in Canadian universities.

The first was the development of a highly decentralized approach to higher education policy. While the responsibility for higher education had been assigned to the provinces under the constitutional arrangement, the expansion of higher education was regarded as an issue of national importance, and the federal government initially provided direct grants to universities to support increasing enrolment. As the smoke cleared following the war, the provinces, especially Quebec and Ontario, asserted their constitutional rights, and the federal government's direct support for universities evolved into transfers to the provinces. The transfer of funding for higher education from the federal government to the provinces served to preserve the distributed authority over higher education. Provinces were within their jurisdictional rights to determine how funds would be spent, but the federal government could continue its financial support for the growth of higher education throughout the country. It should be noted that a portion of these funds were collected from the provinces in the form of taxation and then redistributed through the transfer.

The provinces became the primary authority in terms of higher education policy, and they took steps to develop provincial institutions and structures that would address provincial needs. Most provinces undertook major reviews of postsecondary education in the 1950s and 1960s that provided a foundation for system-wide expansion. Higher education policy became highly decentralized as the provinces began to develop unique structures and policy approaches. The

provinces also supported, or at least tolerated, high levels of university autonomy with policy frameworks that provided institutions with the ability to make their own decisions over almost all key matters within the constraints associated with block operating grants.

In the case of Quebec, educational reform became a central component of the broader sociopolitical transformation associated with the "quiet revolution." The growing recognition of economic and social inequities based on language, a shift in the role of the Roman Catholic Church within Quebec society, and the rise of nationalist sentiment combined to underscore the need for significant change. The Royal Commission of Inquiry on Education, chaired by Alphonse Parent, provided recommendations that would completely transform the province's educational system. The entire school curriculum was redesigned, and secondary school would end at Grade 11. Following secondary school, students could attend one of the new *colleges d'enseignement général et professionnel* (CEGEPs) which offered 2-year, preuniversity programs as well as vocational education programs. Students could then apply to attend one of the existing universities, or, beginning in 1968, a campus of the new Université du Québec system.

The second characteristic of Canadian higher education that emerged during this period was institutional differentiation. As the provinces moved to expand higher education, each province created some type of nonuniversity institution, though the roles assigned to these institutions varied tremendously by jurisdiction. In the case of Quebec, the new CEGEPs offered vocational and preuniversity programming; they were an intermediary institution between secondary school and university. In contrast, Alberta and British Columbia created community colleges that roughly resembled the American institutions and offered 2-year university-transfer programs and technical/vocational programs leading directly to employment. Ontario created Colleges of Applied Arts and Technology that operated in parallel with the university sector; they offered a comprehensive range of technical/vocational programs, including 3-year diplomas, but they did not have a university-transfer function. While the mission of these institutions varied by province, they were all regarded as high access colleges without the legal authority to offer university-level degrees (Jones 2006).

While the expansion of higher education led to the creation of new institutional types, Canadian universities emerged from this period with quite similar characteristics. Most denominational institutions either abandoned their explicit religious affiliations to become secular universities or entered into affiliation arrangements with existing universities. The expansion in enrolment led to a parallel expansion in programs, and most universities became comprehensive institutions with some combination of undergraduate, professional, and graduate programming. While the universities continued to be private, non-for-profit institutions with considerable autonomy, they were now considered "public" institutions in that the majority of their operating funding came from provincial government grants (Jones 1996).

Perhaps most importantly for this discussion, the common model of the university that had emerged by the early 1970s was an institution with both a teaching and research mission. While many universities with denominational roots had been

primarily teaching institutions, they quickly moved to establish a research mission. The Government of Canada had come to view university research as an investment in economic and social development, and new research funding mechanisms were created to support curiosity-driven university research. By the mid-1970s three major granting councils had emerged to support research in medicine, the natural sciences and engineering, and the social sciences and humanities. There had been a major expansion in research-based graduate programs across the country, in part to address the expanding demand for professors with doctorates.

Another important element of the Canadian higher education system that had emerged by the 1970s was faculty unionization. The recession of the early 1970s led to instability within the higher education sector as governments struggled to deal with declining tax revenues. Concerns about job security and salaries led professors at several universities to unionize, and the movement spread quickly across the country. The Canadian Association of University Teachers, a national umbrella organization of institution-based faculty associations, had emerged as a national voice for professors and a protector of academic freedom, but the association also saw unionization as a mechanism for furthering the interests of the academic profession, and it took steps to support faculty associations seeking union status and to provide comparative data and model contract language for collective bargaining. Within a decade "the landscape was transformed" and over 50 % of university professors in Canada were unionized (Tudivor 1999, p. 85). There was a second, modest wave of unionization in the 1990s, and almost all Canadian universities now have a unionized faculty association (Jones 2002). It is also important to note that it was not just professors who unionized; at most universities a wide range of employee groups, including administrative support staff, specialized technical staff, and teaching assistants, are members of unionized labor groups; in fact Dobbie and Robinson (2008) suggest that higher education may be the most unionized sector in Canada.

The importance of faculty unionization was not limited to job security and salaries. Collective bargaining became the primary mechanism for defining academic work through the development of appointment, tenure, and promotion policies, and academic work became defined in terms of teaching, research, and service.

Supporting the teaching function of universities, and more specifically, supporting high levels of access to postsecondary education, has been a key priority of government policy across the provinces since the 1950s. Participation rates in postsecondary education continued to climb, and by the late 1980s, Canada had the highest participation rates in the world. Government policy in most provinces has continued to support increasing access to postsecondary education, though it is important to note that greater emphasis has been placed on meeting the demand for access than on issues of quality. It has generally been assumed that Canada's public universities are of a roughly equal standard in terms of undergraduate education, and there has never been a national quality assessment mechanism; in fact membership in the Association of Universities and Colleges of Canada, the national organization of universities, has become the proxy for institutional accreditation. While issues of teaching quality in Canadian universities have received considerable attention, there have been relatively few policy initiatives

aimed at directly improving the quality of undergraduate education, the general assumption being that issues of quality are best left in the hands of the relatively autonomous institutions. For example, the Higher Education Quality Council of Ontario has approached the issue of quality by supporting research on innovative student support and teaching practices within institutions, rather than focusing on system-wide policy or standards.

In contrast, strengthening the research capacity and supporting the research function of Canadian universities has been a quite explicit objective of government policy. As already noted, the federal government has created research funding councils to support curiosity-based as well as targeted research activities. Each council supports a combination of open and targeted research grant mechanisms, as well as supporting graduate and postdoctoral scholarship programs. While most provinces left research policy in the hands of the federal government, the Quebec government created its own provincial funding council. In the 1980s, the Government of Canada created a number of new initiatives designed to support research in strategic areas and facilitate technology transfer and university-industry partnerships. In the mid-1990s the federal government took steps to address the federal deficit, and it made significant reductions in its unconditional transfers to the provinces, but when the federal budget was balanced at the end of the century, the government decided to make major new investments in research (Fisher et al. 2007). The Canada Research Chairs program was designed to strengthen Canada's research infrastructure by supporting the creation of 2,000 research professorships, some of which were assigned to existing faculty (to support retention and address concerns of a "brain drain" to the United States), but most supported new appointments of junior or senior research professors. Issues of workload and selection were left in the hands of individual institutions, with a national review process designed to ensure that appointments were of the highest standard, though it was generally assumed that the chairs would devote considerable attention to the research function. The Canada Foundation for Innovation provides major support to institutions for research infrastructure. The provincial governments have also become interested in research and innovation, in part because of their interest in maximizing federal grants to institutions in their region, and there are now a range of provincial government research initiatives that support university research and development activities (Sá 2010).

While all public universities in Canada have a research mission, the new investments in research have served to reinforce the significant differences in research funding between institutions (Shanahan and Jones 2007). Beginning in 1991 the top 10 Canadian universities (in terms of research funding) began to meet periodically under the name G10, and the group gradually expanded both in terms of number of institutions and in terms of function. The U15 now includes the top 15 institutions in terms of research funding, and there is now a permanent secretariat and detailed arrangements for data sharing between institutions. The expansion of research funding has also served to reinforce the importance of the research function within institutions, and there is increasing competition for research funding within the sector.

18.3 Academic Work and Careers

As noted above, higher education policy in Canada is highly decentralized; higher education is the responsibility of the provinces and territories that have legislative and regulatory authority over universities and colleges. Universities are created as separate private, non-for-profit corporations,[1] though most of these corporations are considered public in that they receive government funding.

As relatively autonomous corporations, universities have the legal right to enter into employment contracts subject to the provincial labor laws that govern all employment relationships. University presidents, senior administrators, faculty, and staff are all employees with contractual relationships to the university. Each university has developed its own human resource policies, including determining the salary and benefit arrangements for its employees (Boyko and Jones 2010; Jones, 2002; Metcalfe et al. 2011).

Collective bargaining plays a major role in determining the nature of the employment relationship between universities and professors. The vast majority of full-time university faculty are unionized and represented by institution-based faculty unions. The terms and conditions of employment of university professors in these institutions are largely determined by collective agreements between the faculty union and the university.

18.3.1 Appointments, Tenure, and Promotion

Most university personnel policies make a clear distinction between "tenure-stream" appointments and professors appointed to part-time or contractually limited positions, and it is not uncommon for professors appointed to different types or categories of appointments to be represented by different labor unions. The vast majority of full-time faculty are appointed to tenure-stream appointments with "tenure stream" referring to the fact that the appointment is on a pathway toward a permanent, tenured position (Jones et al. 2012).

Appointment, tenure, and promotion policies are almost always defined through collective bargaining, though sometimes the collective agreement provides overall direction and these policies are supplemented with operational documents that describe these processes in greater detail. There are similar patterns to these policies and procedures, though there are important institutional variations on common themes.

Appointments for junior-level tenure-stream positions are publicly advertised as such, and applicants are asked to submit a curriculum vitae as well as detailed information on their research and teaching activities. There is usually a search committee specific to each appointment that includes professors from the relevant department or unit, as well as one or more students. Short-listed candidates for the position are interviewed and they are frequently asked to give a presentation based

[1] While most universities were created under unique legislation, some provincial governments have approved omnibus legislation for the university sector (such as British Columbia) or the postsecondary system (such as Alberta).

on their research activities and/or a model teaching session. These presentations are public and attendees are asked to provide feedback on the candidate to the search committee process. The decision of the search committee usually takes the form of a recommendation to the relevant academic administrator, usually the dean of the faculty, but the process of approvals and negotiation may be somewhat idiosyncratic by institution. Salaries are negotiated, but collective agreements usually establish a firm framework for salary levels, with academic rank and years of experience as the key variables.

At most universities, junior faculty in the tenure stream are usually appointed to an initial contract of 2 or 3 years in length. A probationary review takes place toward the end of the contract period in order to determine whether the individual is making satisfactory progress. If the review is positive, the individual receives a second contract extending employment until the tenure review. The length of the entire pre-tenure appointment varies by institution but generally involves a term of between 3 and 7 years (Gravestock et al. 2009).

All Canadian universities have tenure policies that determine the process for the detailed review of a candidate's work and a final decision on the awarding of tenure. If awarded, tenure implies a permanent contract that can only be terminated for cause, and "cause" is usually understood to mean a very serious employment issue. In their review of tenure policies at 44 Canadian universities, Gravestock et al. (2009) noted that while all tenure policies involve the assessment of teaching and research, there was considerable variation by institution in how the criteria for tenure and research were described. There were differences in tenure processes in terms of the number and role of committees that review the candidate's tenure dossier, as well as the roles assigned to academic administrators at different levels of the process. There were also differences in the implications of a negative decision, with most universities providing the unsuccessful candidate with a terminal contract leading to the end of the employment relationship, but with some institutions allowing the candidate to reapply for tenure under specific conditions.

Pamela Gravestock (2011) conducted a detailed analysis of tenure policies at 46 Canadian universities in order to determine whether these policies favored research over teaching and to analyze how teaching was assessed in the tenure process. While it is commonly assumed that the tenure process prioritizes research, Gravestock found that tenure policies generally treat research and teaching as equally important activities; if research is favored, this is not a direct function of tenure policies but rather the impact of biases on the part of participants, or the professional culture or ethos surrounding the process. Gravestock found that most universities devote considerable attention to the assessment of teaching in the tenure process, including collecting information from multiple sources (e.g., student evaluations of teaching, teaching dossiers, peer reviews of teaching). Using findings from the research literature on the assessment of teaching as a foundation, Gravestock analyzed the assessment practices prescribed by tenure policies and related documents and noted that while a small number of universities had model policies, most could be improved. For example, most Canadian tenure policies did not include a clear definition of "teaching effectiveness" though this concept is clearly central to the assessment of university teaching.

At many universities tenure and promotion to the rank of "associate professor" are linked, but in others the processes can be separated and individuals can be tenured while retaining the rank of assistant professor. In some situations faculty with considerable prior academic experience working at another university can be appointed at the rank of associate professor with a probationary contract leading to a tenure review in a few years, or even, at some institutions, be appointed with tenure (often requiring a speedy tenure review process).

Like tenure, the process of promotion from the rank of associate professor to professor is guided by a detailed university-specific policy that is frequently a component of the collective agreement. Candidates for promotion submit a dossier documenting their research, teaching, and service activities, and the case for promotion is reviewed by a promotion committee.

The appointment, tenure, and promotion policies in public universities where faculty are not unionized are quite similar to those where unions exist. Even at non-unionized universities there are frequently binding agreements between the faculty association and the university dealing with important personnel policies (Anderson and Jones 1998).

This brief review of appointment, tenure, and promotion policies illuminates a number of key themes underscoring tenure-stream appointments at Canadian universities. The first theme is the expectation that most university faculty will engage in both teaching and research, an expectation that is clearly articulated in appointment and tenure policies. The second is that the academic career is composed of a series of relatively clear and transparent steps from initial appointment as an assistant professor, through a probationary review, tenure, and promotion to associate professor, and finally promotion from associate to full professor. Each step involves an assessment of performance by peers to determine whether the individual has fulfilled the requirements associated with progressing to the next step. The third theme is the expectation that most faculty will successfully progress along this linear career ladder; universities budget with the assumption that tenure-stream faculty will be permanent employees and career steps are regarded as a function of individual achievement rather than competition. The fourth theme is that academic work is defined through personnel policies developed at the level of the individual institution, often through collective bargaining with the faculty union. While there are common patterns of appointment across the country, there are important differences in appointment, tenure, and promotion policies by institution.

18.3.2 Fragmentation of Academic Work

Canadian universities frequently have a number of other types or categories of academic workers in addition to tenure-stream appointments. Slightly more than 10% of full-time faculty in 2008–2009 did not hold tenure-stream appointments (Canadian Association of University Teachers 2011), but it is quite difficult to generalize about the nature of these employment arrangements since they vary so much

by institution. In some institutions all full-time faculty are represented by the faculty association, and non-tenure-stream positions take the form of contractually limited appointments designed to address the needs of academic units when tenure-stream professors are on sabbatical, or on personal or health-related leaves of absence. In some institutions these appointments may include renewable contract positions and/or teaching-only appointments.

Arrangements for part-time appointments are even more idiosyncratic by institution. Individuals in these appointments are frequently employed to teach a single course and paid a modest stipend, and there are few opportunities for advancement and little job security. While some part-time appointments involve individuals who are employed full time in other positions, such as clinical teachers in medicine or expert practitioners lecturing in law, many of these employees rely on a combination of part-time appointments at one or more universities in order to earn a living wage (Rajagopal 2002). Given the limited job security and modest remuneration associated with these appointments, part-time faculty at most universities have created unions which now bargain the terms and conditions of employment with university management. At other institutions, part-time faculty are represented by the same union as full-time faculty, though often with quite different terms of employment. Almost all part-time faculty working at Canadian universities are now unionized (Rittenhouse 2012).

There is little doubt that academic work at Canadian universities has become increasingly fragmented with the increasing use of part-time, contract teachers and other categories of appointment (Jones 2013). The model of the professoriate which had emerged by the early 1970s, and which had underscored the human resource policies enshrined in collective bargaining, focused on a workforce of full-time professors engaged in teaching, research, and service with job security and academic freedom protected by tenure. While this model continues to form the centerpiece of the Canadian professoriate, there has been a gradual vertical fragmentation of academic work with the creation of new categories of academic workers, often viewed as supporting or subservient to the work of the full-time professoriate. Contingent part-time instructors, once viewed as a temporary component of the academic labor force designed to address occasional gaps in programming, have now become a permanent presence on Canadian university campuses across the country. Graduate students employed to assist with undergraduate teaching as "teaching assistants" have, on many campuses, become another key category of academic labor supporting the work of tenure-stream or contract professors teaching large undergraduate classes and, in some situations, assuming full responsibility for teaching university courses. Different sections of the same undergraduate course may be taught by three or more different categories of academic workers, and, at some universities, each category may be represented by a different labor union and be associated with quite different levels of remuneration, employment benefits, and working conditions. There have been similar trends associated with the research function, with the increasing use of technical personnel supporting and maintaining specialized research facilities, administrative support for the development of research proposals and the

management of large projects, and research assistants (who may or may not be graduate students). Postdoctoral fellows have obtained union status at several universities (Rittenhouse 2012).

One of the great frustrations associated with understanding the fragmentation of academic work in Canada is the lack of national data. While universities are required to submit data on the full-time professoriate to Statistics Canada, these data are limited to basic demographic variables such as gender, rank, and field of study. There are no national data on the number of, or magnitude of teaching/research activity associated with, other categories of academic workers. There are no common definitions that would allow for the comparative analysis of institutional employment patterns or arrangements.

These problems mean that it is difficult to generalize about the specific processes and procedures associated with the appointment of other categories of teachers and researchers at Canadian universities, or the specific terms of their working conditions, level of job security, or other key aspects of these employment arrangements. What is certainly clear is that while Canadian universities have maintained and protected a strong tenure-stream professoriate, they have also increasingly turned to a range of other categories of worker to address the teaching needs of these institutions and support the research function (Muzzin 2009). It is also true that these other categories of workers generally have quite different levels of remuneration and working conditions than full-time professors and that they are increasingly turning toward unionization as a way of furthering their interests through collective bargaining.

Given what seems to be a shifting balance toward the increasing use of contingent faculty at many universities, there appears to be a growing interest in the development of full-time faculty appointments that focus primarily either on teaching or where the balance of workload between teaching and research favors the teaching function. One of the factors underscoring this interest has been the creation of "new" universities essentially through the recategorization of existing university colleges (institutions that had previously been community colleges but had been assigned a broader role in undergraduate degree granting) in British Columbia and community colleges in Alberta as teaching-focused universities. In both provinces these new institutions have been assigned a role that is somewhat differentiated from the existing comprehensive universities, and full-time faculty at these institutions have workload arrangements that have higher expectations for teaching (and lower expectations for research) than commonly found in other universities (see Clark et al. 2011).

The second reason for this interest has been the emergence of "teaching-stream" positions within a number of the more traditional universities. While there are differences by institution in how these appointments are defined, they have generally involved the creation of a teaching stream in parallel with the traditional tenure stream or the emergence of a subcomponent of the tenure-stream with a teaching-focused workload. A recent review of the situation in Ontario found that 11 universities in that province had created teaching-stream positions, that those who held these appointments were generally satisfied with their work

and would prefer not to switch to a more traditional position, and that the universities who make these appointments feel that tenure-stream positions make important contributions to teaching and curriculum development and complement the work of faculty with more traditional workloads (Vajoczki et al. 2011). As the authors note, there are those who believe that the expansion of a well-remunerated, full-time teaching stream within Canadian universities represents a viable alternative to the current system dominated by full-time faculty who often favor research over teaching (a finding of the CAP study that will be discussed in more detail below) supplemented by part-time, contingent instructors who are paid on a piecemeal (course by course) basis. The arguments in favor of increasing the use of teaching-stream faculty are frequently linked to concerns about the quality of undergraduate education offered by Canadian universities and the need to improve the student experience (Clark et al. 2011). However, there are also those, including the Canadian Association of University Teachers, who argue that these appointments are creating a two-tier system that devalues the "traditional" professorial role focusing on a balance between research and teaching. Another component of this discussion that has received surprisingly little attention relates to the possible differences in staffing arrangements (use of contingent instructors, teaching-stream faculty, etc.) by academic program given the differences in enrolment growth between undergraduate programs in the humanities, social sciences, and sciences disciplines and the more elite professional programs, as well as important discipline differences related to teaching and pedagogy.

18.4 The Changing Academic Profession in Canada

18.4.1 Methodology

The Canadian component of the Changing Academic Profession (CAP) study was designed to obtain responses from a representative sample of faculty at Canadian universities. A two-stage cluster sample was created at the level of institutions and at the level of individuals. At the institutional level, the target population of universities was sorted by type of institution (Medical/Doctoral, Comprehensive, and Primarily Undergraduate). A random sample of institutions was created from this list. The institutional sample consisted of 18 institutions: 4 Medical/Doctoral, 6 Comprehensive, and 8 Primarily Undergraduate. At least one institution from each of Canada's 10 provinces was represented in the sample. For each of the 18 universities in the sample, full-time faculty with the titles of Professor, Associate Professor, and Assistant Professor were included in the individual-level cluster samples. Only full-time university faculty were surveyed.

At the end of October 2007, 6,693 potential participants were sent a bilingual e-mail invitation message with an embedded link to a web-based survey. The survey was closed in mid-December 2007. Another phase of the survey was initiated in April 2008 to capture more responses, and the survey was finally closed in May 2008

having obtained 1,152 valid returns for a response rate of 17.21 %. Details on the survey sampling framework and response rates are provided in Table 18.1.

The characteristics of the respondent population closely resemble the characteristics of the whole population of full-time faculty at Canadian universities in terms of institutional type, rank, and a number of demographic characteristics. Women are slightly overrepresented (40.9 % of respondents compared with 32.7 % of full-time faculty).

18.4.2 Balance Between Teaching and Research

The CAP questionnaire included a number of questions that focused on the issue of balance between teaching and research in academic work. One of these questions asked professors to estimate the number of hours they spend on different activities during terms when classes are in session and terms when classes are not in session.

Canadian academics reported working an average of 50.7 h a week during terms when classes are in session, a longer work week than all other jurisdictions included in the CAP study except South Korea. In terms of time spent on broad categories of activity, they reported spending 19.6 h on teaching, 16 h on research, 4.3 h on service, 7.9 h on administration, and 2.8 h on other academic activities. In terms of the balance of time between teaching and research, the results suggest that Canadian university devote approximately 40 % of their time to teaching and 31 % to research during terms when classes are in session.

Canadian faculty reported working an average of 47.7 h during terms when classes are not in session, a total workload that is the third highest of the countries participating in the study (slightly less than South Korean and Hong Kong respondents). In terms of time spent on broad categories of activity, they reported spending 5.4 h on teaching, 28.5 h on research, 4 h on service, 6.8 h on administration, and 3 h on other academic activities. In terms of the balance between teaching and research, faculty reported spending 12 % of their time on teaching and 60 % of their time on research during terms when classes are not in session.

In a previous study we found that there was surprisingly little difference in both the total workload and the distribution of work by category reported by junior (assistant) professors compared to their more senior peers (associate and full professors). In terms of time per activity, the only difference was that junior faculty reported spending slightly more time teaching and senior faculty reported spending more time on administration during terms when classes were in session, and junior faculty reported spending more time on research and senior faculty spent more time on administration during terms when classes were not in session. In short, the workload and balance of activity between teaching and research reported by junior and senior faculty were remarkably similar (Jones et al. 2012).

Faculty were also asked the question: “Regarding your own preferences, do your interests lie primarily in teaching or in research?” Only 6 % of respondents

Table 18.1 Canadian CAP survey sampling framework

	Gross sample				Net sample				Returned sample			
	Institutions		Faculty		Institutions		Faculty		Institutions		Faculty	
University type	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Medical doctoral	15	31.9	18,840	59.7	4	22.2	2,245	33.5	4	22.2	442	38.4
Comprehensive	11	23.4	7,806	24.7	6	33.3	3,109	46.5	6	33.3	501	43.5
Undergraduate	21	44.7	4,908	15.6	8	44.4	1,339	20.0	8	44.4	209	18.1
Total	47	100.0	31,554	100.0	18	100.0	6,693	100.0	18	100.0	1,152	100.0

Source: CAUT Almanac (2008)

indicated that their interests were "primarily in teaching," while 26 % indicated that their interests were in both teaching and research, but "leaning toward teaching." Approximately 15 % of respondents indicated that their interests were "primarily in research," while 54 % indicated that their interests were in both teaching and research, but "leading toward research." In our previous study comparing junior and senior faculty, we noted that both groups reported remarkably similar preferences.

These findings suggest that while Canadian universities have a strong teaching and research mission and while collective agreements and institutional policies discuss faculty work in terms of both teaching and research, more faculty report that they prefer or lean toward research in terms of their preferences for academic work. At the same time, the vast majority of respondents indicated an interest in both teaching and research (rather than clearly preferring one or the other), but with the majority (54 %) leaning toward research. They report spending more time on teaching than research during terms when courses are in session (though only an average of 4 h less per week) and much more time on research than teaching during terms when classes are not in session.

18.4.3 Teaching

The CAP study included a number of questions about teaching and teaching-related activities. Professors were asked to indicate the proportion of their total teaching responsibilities during the current academic year that were devoted toward instruction at different levels. Canadian university faculty reported that, on average, 63.1 % of their teaching responsibilities were associated with undergraduate programs, 21.1 % were focused on masters-level programs, 9.8 % on doctoral programs, 2.4 % on continuing professional education programs, and 3.1 % on other programs.

Professors were also asked to indicate the approximate number of students they taught at each level (in terms of number of students per course). Respondents indicated an average undergraduate class size of 59, a master's class of 9.8, and a doctoral cohort of 5.

One CAP question asked faculty to indicate their involvement in types of teaching activities during the academic year of the survey. They were given a list and asked to indicate whether they were engaged in these specific types of activities. Responses from the Canadian survey are reported in Table 18.2. Approximately 98 % of Canadian faculty indicated that they were involved in classroom instruction or lecturing, and almost all faculty are engaged in electronic (96 %) or face-to-face (94 %) interaction with students. Most faculty reported working on course and curricular development activities including the development of course materials (88 %) and curriculum or program development activities (62 %). Only 24 % of respondents indicated that they had been engaged in ICT-based or computer-assisted learning during the last year, and only 11 % reported involvement in distance education.

Table 18.2 Percentage of Canadian professors involved in specific teaching activities

Type of activity	Percentage of faculty
Classroom instruction/lecturing	98
Electronic communication (e-mail) with students	96
Face-to-face interaction with students outside of class	94
Development of course materials	88
Individualized instruction	78
Curriculum/program development	62
Learning in projects/project groups	45
Practice instruction/laboratory work	39
ICT-based learning/computer-assisted learning	24
Distance education	11

Respondents were also asked to indicate their views on a series of statements related to their teaching using a Likert-type scale. Approximately 82 % of faculty agreed or strongly agreed that their research activities reinforce their teaching, and 43 % agreed or strongly agreed that their service activities reinforce their teaching. The majority (60 %) of faculty indicated that they emphasize international perspectives or content in their teaching. Approximately 55 % of respondents indicated that they were encouraged to improve their instructional skills in response to teaching evaluations, and 58 % agreed or strongly agreed with the statement "At your institution there are adequate training courses for enhancing teaching quality."

18.4.4 Research

A number of questions on the CAP survey focused on faculty research activities. Professors were asked to characterize the emphasis of their primary research by indicating whether they agreed or disagreed with a series of statements. Approximately 69 % of faculty agreed or strongly agreed that their research was applied or practically oriented; 68 % indicated that their research was multi- or interdisciplinary; 58 % agreed that their research could be characterized as basic/theoretical; and 57 % indicated that their research could be seen as international in scope or orientation. Approximately half of respondents (48 %) agreed or strongly agreed that their research could be characterized as socially oriented or intended for the betterment of society. Only 14 % of all respondents agreed or strongly agreed that their research was commercially oriented or intended for technology transfer.

Of those faculty who are engaged in research activity, 65 % indicated that they worked independently and without collaborators on at least some component of their research during the year of the survey. Approximately 85 % of faculty indicated that they work with collaborators on at least some component of their research;

Table 18.3 Percentage of Canadian professors involved in specific research activities

Type of activity	Percentage of faculty
Writing academic papers that contain research results or findings	81
Answering calls for proposals or writing research grants	67
Conducting experiments, inquiries, etc.	63
Supervising a research team or graduate research assistants	61
Preparing experiments, inquiries, etc.	60
Managing research contracts and budgets	58
Purchasing or selecting equipment and research supplies	53
Involved in the process of technology transfer	18
No answer	14

68 % indicated that they work with collaborators at other institutions in Canada, while 63 % collaborate with colleagues in other countries.

One CAP question asked faculty to indicate their involvement in types of research activities during the academic year of the survey. They were given a list and asked to indicate whether they were engaged in these specific types of activities. Responses from the Canadian survey are reported in Table 18.3. Over 80 % of respondents indicated that they had been engaged in writing academic papers based on research findings during the year of the survey, and a majority of faculty reported that they had been involved in all of the items on the list. The exception was technology transfer, where only 18 % of professors reported that they had been involved in these types of activities. Approximately 14 % of respondents did not answer this question.

The CAP survey included a number of questions on research outputs and productivity. These data suggest that, on average, Canadian university professors are active and productive researchers. Of those faculty reporting research activities, 93 % had presented a conference paper during the last 3 years (and these faculty, on average, had presented 8.8 papers during this period); 90 % had published a book chapter or journal article in the past 3 years (and these faculty, on average, produced 7.1 chapters/articles during this period); 43 % had produced a research report or monograph for a funded project (an average of 3.2 over 3 years); and 40 % had written a professional article for a newspaper or magazine. Approximately 23 % of research active faculty had authored or coauthored a book during the 3-year period (these faculty reporting writing an average of 1.4 books during the 3 years), and 17 % had edited or coedited a book.

Finally, the CAP survey asked respondents to indicate the degree to which they agreed or disagreed to a series of statements on conditions for research. The percentage of Canadian respondents who responded positively (agreed or strongly agreed) to these statements is presented in Table 18.4. These data suggest that the university research environment is competitive, with increasing pressure to raise external research funds and high expectations for productivity (and useful results) potentially threatening the quality of research. At the same time, the majority of faculty do not believe that external sponsors influence research activities, and few faculty believe that restrictions in the publication of results funded by either public or private sources are increasing.

Table 18.4 Percentage of faculty agreeing with statements on research conditions

Statement	Percentage of faculty who agree
Your research is conducted in full compliance with ethical guidelines	96
The pressure to raise external research funds has increased since my first appointment	73
High expectations to increase research productivity are a threat to the quality of research	72
High expectations of useful results and applications are a threat to the quality of research	61
Interdisciplinary research is emphasized at my institution	59
External sponsors or clients have no influence over my research activities	57
Your institution emphasizes commercially oriented or applied research	40
Research funding should be concentrated (targeted) on the most productive researchers	23
Restrictions on the publication of results from my publicly funded research have increased since my first appointment	11
Restrictions on the publication of results from my privately funded research have increased since my first appointment	11

18.5 Teaching, Research, and the Canadian Professoriate

At the beginning of the twentieth century, most Canadian universities would have generally been regarded as teaching institutions, but where individual faculty might pursue an active program of scholarship and research. As noted above, only a few universities, especially Toronto and McGill, began to be influenced by the American model of the research university emerging south of the border. The tremendous expansion associated with the transition to mass higher education following World War II reinforced the importance of teaching within the emerging provincial systems. This expansion was, in part, realized through institutional differentiation and the creation of entire sectors of new nonuniversity, postsecondary institutions (commonly referred to by the umbrella term "colleges"). However, the expansion of university education was largely accomplished through the development of a relatively common university model of secular, comprehensive, publicly funded institutions that had both a teaching and research mission.

Under the Canadian model of the university that had emerged by the early 1970s, the job responsibilities of professors focused on teaching research and service, and it was this view of academic work that became enshrined in the appointment, tenure, and promotion policies of the new faculty union collective agreements and in the senate policies of nonunionized institutions. While there were certainly differences by institution in program mix and research funding, there was no formal hierarchy within the Canadian university sector and institutions largely treated each other as equals, including assuming that the standards of undergraduate degree programs were roughly equal. Given the country's large size and relatively small population,

geographic access to higher education was viewed as a major issue, and the Canadian approach that emerged during this period was to establish roughly similar institutions that could be accessed by local populations. The fact that all Canadian universities were members of the same "club," the Association of Universities and Colleges of Canada, also contributed to the development of a relatively homogenous institutional model (Jones 1996).

Given the reality of strong faculty unions and the common assumptions underscoring this relatively homogeneous university sector, Canadian universities have protected the core, full-time, tenure-stream professoriate. The number of full-time, tenure-stream faculty has continued to increase, though not as quickly as student enrolment. The CAP study has provided a unique opportunity to understand the perceptions and working conditions of a representative sample of this core group of academic workers, and the general profile that emerges from this analysis has been of a professoriate that has high levels of job satisfaction, is well remunerated, and has relatively good working conditions. As noted above, Canadian university faculty work quite hard; in fact they report the second highest workload among the jurisdictions included in the CAP study, and they clearly devote considerable attention to their research and teaching activities.

In terms of the balance of research and teaching activities in academic work, Canadian university personnel policies assume that faculty work includes both teaching and research, and the CAP data confirms that faculty are heavily engaged in these activities. However, while it is clear that most faculty are interested in both teaching and research, there are signs of a preference for research, and faculty report devoting considerable time on their research activities, even during terms when courses are in session.

Since most universities are comprehensive institutions, many faculty are engaged in some combination of undergraduate and graduate teaching. Most professors report that the teaching function is supported by the university, that they are encouraged to improve their teaching in response to student evaluations of teaching, and that the university provides the faculty development instruction necessary to support the improvement of teaching.

The CAP data suggests that professors view the research environment as increasingly competitive with growing pressures to obtain external research funding, perceptions that may, in part, be a response to the growth in federal research and innovation initiatives, including new competitive research funding mechanisms.

While Canadian universities have maintained a strong, full-time professoriate, they have also turned increasingly toward other types and categories of academic workers to address the increasing demands for undergraduate teaching and the need to support an increasing university research infrastructure. This fragmentation has come to include a range of worker categories, frequently with quite different levels of remuneration, job security, and working conditions, and at many universities these new worker categories are represented by distinct labor unions. There is also an increasing discussion about the role of teaching-stream faculty as a mechanism to address the increasing need for teaching and curricular leadership and development, in part to rebalance the relationship between research and teaching in the contemporary university.

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Chapter 19
Australian Academics, Teaching and Research: History, Vexed Issues and Potential Changes

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19.1 Introduction

In Australia the question of what is an academic in terms of the work he or she is engaged in is very much alive. As the system is going through a period of extensive and most likely fundamental change, questions of work and identity are moving centre stage. As we discuss in this chapter, it is too early days yet to predict where the system will end up and how academic work will be conceptualised. But there is no doubt that an academic role in 5–10 years time will be different to what it is today.

To adequately capture the extent of change, it is important to understand where Australian universities and their academics are coming from. We therefore begin our analysis with a historical expose of how universities have evolved over the last 150+ years and how teaching and research have played a role in this. Following on from this, we briefly discuss recent policy initiatives that have a bearing on the relative balance between teaching and research in Australian universities, noting that the policy environment in this respect is ambivalent. Having thus set the scene at the macro level, we then turn to the questions of academic work and careers. We sketch the personnel structure that is relatively homogeneous across our universities and note the fact that casualisation is an important phenomenon in Australia. Turning to the CAP study, we provide a concise analysis of the relevant data followed by a discussion.

It is important to note that the CAP data was collected in 2007. The system has moved on and further study has been undertaken on the academic profession. We integrate this with the findings of the CAP study, highlighting the propensity for

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change and the innovations that are taking place in individual institutions when it comes to the relative roles and importance of the teaching and research functions in Australian academe.

19.2 The Historical Development of Higher Education in Terms of Teaching and Research

In 1850 Australia's first university, the University of Sydney, was established via the University of Sydney Act. This university represented a key institution of civil society and followed the transition of New South Wales from a British penal colony to self government. William Charles Wentworth, of the New South Wales Legislative Council, saw universities as essential to the growth of a self-governing society. Although strongly British in character, the University of Sydney broke with British tradition by admitting students based on academic merit rather than social class or religion. Wentworth argued that universities should provide the opportunity for 'the child of every class, to become great and useful in the destinies of his country' (quoted in The University of Sydney 2012). In 1852, The University of Melbourne was established as Australia's second university. Both Sydney and Melbourne universities were small, with initial cohorts of 16 and 24 students, respectively. They remained small for many decades and were staffed by a teaching professoriate with a generalist focus. They survived, despite their initially meagre enrolments, by later offering professional degrees (Macintyre and Marginson 2000). Two more universities were established in the nineteenth century, The University of Adelaide (1874) and the University of Tasmania (1890). By the beginning of the twentieth century, the six Australian colonies agreed on a constitution creating a single Federal state on 1 January 1901. At the time of federation, the four universities enrolled just 2,652 students, a tiny fraction of the 3.8 million Australian citizens (Solomon 2007, p. 157).

Within the first decade of federation, the two states without universities established universities bearing their state's title: the University of Queensland (1909) and The University of Western Australia (1911). The six pre-World War I universities have been labelled the 'sandstone universities' based on their distinctive architecture. The original university governing bodies did not support freedom of intellectual inquiry for fear that academics may not conform with community expectations, damaging institutional reputation. Universities began to develop their legitimacy as public institutions by contributing towards regional and national benefit. In the early twentieth century, universities started receiving state government funding to teach in suburban and regional areas, and new chairs were created in utilitarian disciplines, such as agriculture and industry (Macintyre and Marginson 2000, p. 56). Although serving their local geographies, the sandstone universities operated largely in isolation of each other, with little movement of staff or students between universities. This was partly due to geographic isolation and historical independence prior to federation in 1901 but also due to a predisposition to look to Britain for what was

considered of scientific, social and cultural value (Partridge 1968, p. 120). The sandstone universities were Australian in location, but British in their character. They were predominantly staffed by British (or British-educated) scholars, who taught British history, politics and literature. It was not until late 1946 that Sir Stephen Roberts became the first Australian-born Vice Chancellor at an Australian university, the University of Sydney (Conant 2010, p. 9).

In the four decades following federation, the Australian population roughly doubled to seven million, but university education remained inaccessible to the vast majority of ordinary Australians. In 1941, the six sandstone universities enrolled just 10,354 students (Solomon 2007, p. 157). The limited participation in university education partly reflected the general educational situation in Australia. At the time, it was rare for people to engage in education beyond what was immediately required in a largely agricultural industry. In the 1940s, only one in ten children completed their high school Leaving Certificate and less than 0.7 % of this group entered university education (Ashby 1946, p. 67).

In terms of the teaching and research responsibilities, teaching was the paramount activity for academics in Australian universities prior to World War II. Academics needed to be experts in their field, and this came through extensive reading of published work rather than publishing research oneself (Forsyth 2012, p. 59). The University of Sydney was the first Australian university to introduce the PhD in 1947, almost 100 years after the university was established (Dobson 2012). The PhD was initially resisted in arts and humanities, where the traditional British Master of Arts was considered the most relevant academic qualification.

The end of World War II saw unprecedented injection of Commonwealth Government (Federal) funds into the university sector. The Commonwealth provided temporal funding to educate ex-service personnel, but politicians also became interested in the social value of science and technology. The Australian National University (ANU) was established as a postgraduate research university in Canberra in 1946 with a specific focus on areas of research considered of national importance. The ANU was to receive its budget through a specific allocation from the Commonwealth Government, a unique position that remains to date. At around the same time, politicians in New South Wales considered that the best pathway for Australia to progress from an agricultural society to a modern and industrial society was through a rapid expansion in the training of engineers and technology workers. This required capacity beyond the existing University of Sydney and led to the creation of a second university in Sydney, the New South Wales University of Technology (in 1949).

The New South Wales University of Technology represented a new type of university, one which reflected the shift in how university teaching and research was expected to contribute to social and economic development. The University of Technology was inspired by the principles of American universities, with a specific dedication towards applied research. In fact, the label ‘university’ was contested in Federal parliament by Kim Beazley (snr): ‘There is no such thing as a ‘university of technology’. The term is a complete misnomer’ (quoted in Forsyth 2012, p. 84). The University of Sydney also contested its establishment based on its perceived

subservience to government and industry priorities, though perhaps also due to the competition it would provide in a zero-sum game of government research funding (O'Farrell 1999, p. 19). By 1958 the University of Technology had changed its name to the University of New South Wales (UNSW) as it sought to broaden its disciplinary bases and become a comprehensive research university.

An interesting outsider's account of Australian universities at around this time was provided by James Conant, President of Harvard University. In July and August of 1951, Conant travelled to Australia and was commissioned to provide a confidential report to the Carnegie Foundation on the state of Australian universities. According to Conant, Australian academics routinely reported their core role to be the 'holding of academic standards', primarily through course preparation, setting examinations and correcting student papers (Conant 2010, p. 9). Conant bluntly concluded that Australian universities had done little beyond training doctors, lawyers and teachers, who may have anyway been better trained in professional settings (p. 13). Compared to leading American universities, he considered university teaching was underfunded, though also cheaper to implement due to the lecture-based approach and the lesser need to outlay as much money for research, given its lesser role. With few exceptions the most outstanding Australian scientists and scholars went to Britain or elsewhere in the Commonwealth to make their scientific contributions. For Australian universities to match the standard of better-endowed private and state-funded American universities, he considered they needed a three- or fourfold increase in funding.

Soon after Conant's report, Australian universities benefited from a further increase in government funding, primarily from the Commonwealth Government. Commonwealth funding as a proportion of university income had already increased from nothing in 1939 to one-fifth by 1951 (Macintyre and Marginson 2000, p. 61). In the mid-1950s, Prime Minister Sir Robert Menzies established the Murray Committee to inquire into the needs of universities. The Murray Committee recommended an almost doubling of Commonwealth funding and the establishment of an Australian Universities Grants Committee as an advisory body for government on university matters. By 1961, the Commonwealth had surpassed the state governments as the major funder of universities, providing 43 % of their income (Macintyre and Marginson 2000, p. 61). The mid-1950s also saw the University of New England became independent of the University of Sydney (in 1954) and a second university established in Melbourne, Monash University (in 1958). By 1960, the then ten Australian universities enrolled 54,000 students (DETYA 2001).

The increasing number of students enrolled in universities, reaching 76,000 enrolments by 1964 (DETYA 2001), raised many challenges for how Australian universities were to fulfil their educational missions. In the mid-1960s, the Committee on the Future of Tertiary Education in Australia (the Martin Committee) recommended the creation of colleges of advanced education (CAEs) as vocational and teaching-oriented institutions. Teaching and research was considered inseparable to university education, but not for CAE education which was narrower in focus and directed towards areas of immediate skills shortages. This had clear differential funding consequences, whereby universities were funded according to the cost of the research-teaching nexus, while CAEs were not. This placed CAEs in a subordinate

position to universities and was the substance of Australia's binary higher education policy which operated until the late 1980s. Higher education enrolments (including CAEs) reached 161,000 students by 1970, representing a trebling over the decade (DETYA 2001).

Despite the rapid increase in enrolment, higher education remained a privileged activity well into the 1970s. Only 3 % of the Australian adult population held higher education qualifications in the 1970s (Norton 2012, p. 5). Participation continued to grow throughout the decade, but the envisaged role of CAEs as the main engines for enrolment growth did not eventuate. By the mid-1970s, the CAEs began to focus more on degree-level and postgraduate programmes, leaving the Technical and Further Education (TAFE) sector to absorb the responsibilities for sub-diploma programmes. The 1973–1974 Whitlam Government dramatically changed the funding structure of higher education, abolishing tuition fees and essentially making the Commonwealth fully responsible for funding universities. After these reforms, the Commonwealth was providing 98 % of the income of tertiary education institutions (Solomon 2007, p. 161). By 1978, there were 310,000 students across 19 universities and 70 CAEs, with slightly more students enrolled in universities (DETYA 2001).

Throughout the 1970s and 1980s, policymakers and university leaders became concerned about the future of Australian higher education, which was essentially facing a transition from an elite to a mass system. In 1978, the Commonwealth established a commission to investigate the possible rationalisation of the higher education system, but in 1981 the Commonwealth pre-empted the results of this process announcing that 30 CAEs needed to be amalgamated or face no further Commonwealth funding. By 1983 there were 47 CAEs (down from 70 in 1978), and another commission was established to investigate the efficiency and effectiveness of the tertiary education sector. This commission later recommended a further commission to review the binary structure of the sector. This culminated in 1988 in a Commonwealth Government White Paper and, under the leadership of Labor Government Education Minister John Dawkins, a series of reforms that removed the binary divide between universities and CAEs and established the Unified National System. Following the mergers and amalgamation of CAEs into universities, the number of universities roughly doubled, from 19 in 1987 to 37 in 1992. The removal of the binary divide had immediate consequences to the academic profession as a large number of teaching-focused college staff were transferred to academic employment classifications and expected to become research active, which was a challenge (see below). Over the same period, the number of students increased from 394,000 to 559,000 (DETYA 2001).

The Dawkins reforms also changed the balances between sources of university income, continuing a consistent decline since the early 1980s in Commonwealth funding on a per student basis. The reintroduction of tuition fees for domestic students in 1989 via an income-contingent loan scheme saw universities generate an increasing share of income through fees. Universities were also unrestricted in the number of international students they enrolled and their level of tuition fees (Norton 2012, pp. 20–21). Double-digit growth rates for international student enrolments became common as international students increased from 5 % of total enrolments

in 1990 (25,000 out of 485,000 students) to 14 % by 2000 (96,000 out of 695,000 students) (DETYA 2001). Whereas the Commonwealth contributed 82 % of university revenue in 1989, by 2000 it contributed less than half of university revenue (Solomon 2007, p. 163). The bulk of the decline in Commonwealth funding was absorbed by students through tuition fees (and higher education loans) and other fees (Bradley et al. 2008a, p. 11). By the time of the CAP survey in 2007, the number of students exceeded one million, and students contributed around 40 % of university revenue, almost equalling the Commonwealth contribution (Bradley, et al. 2008a, p. 11). Just over a quarter of all students were international, and their fees contributed about 40 % of all student revenue, making Australian universities highly dependent on the international student market.

The dramatic increase in students has not been matched by recruitment of academic staff in continuing and fixed-term positions. In full-time equivalent (FTE) terms, the number of academic staff in such positions increased by 17 % between 1996 and 2007 (DEEWR 2007), compared to an approximately two-thirds increase in number of enrolled students over the same period (Norton 2012). The ratio of FTE students to FTE academic staff in teaching functions increased from 13:1 in 1990 to 16:1 in 1996, before roughly stabilising at 21:1 since 2003 (Group of Eight 2011; Universities Australia 2008). These broad figures would suggest that the growth in student enrolments has been partly absorbed by larger class sizes and heavier teaching loads, but the true picture is more complex. The number of academics on continuing and fixed-term contracts in combined research and teaching positions (FTE) increased by only 3 % between 1996 and 2007 compared to a 54 % increase in research-only positions. Teaching-only positions were flat over the same period, but this is primarily because teaching is often conducted by academics on casual (hourly) contracts. The number of casual employees (FTE) increased by 44 % from 1996 to 2007. In other words, the growth in student numbers and increasing reliance on revenue from domestic and particularly international students have coincided with the emergence of more specialised research-only and teaching-only career paths. This to an extent is challenging the original notion that academic careers in Australia require a balance between teaching and research. This is discussed further in the next section.

19.3 Policy Initiatives to Balance or to Emphasise Either Teaching or Research

All Australian universities must comply with a set of national regulations in order to be allowed to use the ‘university’ label. Until recently these regulations consisted of the National Protocols for Higher Education. Amongst other things, the protocols required universities to support free inquiry in research leading to the creation of new knowledge and to demonstrate that a culture of sustained scholarship informed their teaching (Ministerial Council on Education 2007). The underlying principle

for the protocols was the centrality of the traditional Humboldtian teaching and research nexus, effectively prohibiting teaching-only institutions from using the university label. Following the Bradley Review and the government's policy response, the Australian Universities Quality Agency (AUQA) was replaced with the Tertiary Education Quality and Standards Agency (TEQSA) in a move to create a more explicit standards-based approach to tertiary education. Five sets of standards are in the process of being developed, comprising provider standards, qualification standards, teaching and learning standards, research standards and information standards. The provider standards operating since 2011 are somewhat different from the National Protocols in that they introduce the 'university college' species and reaffirm the possibility of 'university of specialisation' introduced in the mid-2000s by the Coalition Government. Australian universities under the current provider standards are broad-based undergraduate institutions with higher research degree programmes in at least three of the disciplines it offers (Standard 2.1). Also, they 'undertake research that leads to the creation of new knowledge and original creative endeavour at least in those broad fields of study in which masters degrees (research) and doctoral degrees (research) are offered' (Standard 2.3). One way to interpret this is that it confirms the essential teaching-research orientation identified above for Australian universities. Another interpretation is that it allows universities the possibility to have essentially teaching-only disciplines (supported through scholarship in all fields of studies [Standard 2.5]) next to research-based disciplines, implying that academic staff need not be research active in these disciplines.

This approach reflects the fact that not all Australian universities are engaged in research to an equal extent. The Group of Eight (Go8) is an institutional grouping of Australia's most research-intensive universities which absorbs roughly double the combined spending of the other universities on research (Bradley et al. 2008a, p. 47). And the recent research assessments (the Excellence in Research for Australia (ERA) 2010 and 2012 (Australian Research Council 2011, 2012)) identify a tail of universities that have hardly any research at 'world standard' level – the benchmark used in the ERA assessments. What emerges from these assessments is the existence of a group of nine very research-intensive universities, a group of some twenty universities that have strengths in a significant number of disciplines and a group of some ten universities that could not be described as research intensive.

Does this mean that Australia is starting to move away from 'research based' as the defining characteristic of what a university is and by extension what academics are and do? It certainly is too early to assert that this is what is happening, although we will pick up on this in our final discussion section. And there are policy initiatives that would point in the opposite direction, one being the creation of the Collaborative Research Networks that are established to help less research-intensive universities develop a research basis through collaboration with their research-intensive colleague institutions (Commonwealth of Australia, 2009). The most appropriate conclusion so far would be that balancing or emphasising teaching and/or research in Australia is an area wrought with complexities and will remain so in the foreseeable future.

19.4 Faculty Personnel Systems

Australian universities do not have a formal tenure system. Academics employed on continuing contracts will generally have a probationary period of between 3 and 7 years (May 2011). All other academics have no formal expectation for ongoing employment beyond the duration of their contract. Fixed-term (limited-term) contracts are typically used for research-only positions on externally funded projects, such as postdoctoral research fellowships. Casual contracts are typically utilised for teaching-only positions and paid on an hourly basis. They may include regular teaching for a semester's duration (a 'sessional' contract) or be a one-off guest lecture. Casual academics may be dismissed with one hour's notice and are not entitled to sick leave and other entitlements, but are provided additional compensation (generally about 25 % of the hourly rate). Casual academics were not included in the CAP survey.

Academics on continuing or fixed-term contracts are employed in academic ranks ranging from Level A (lecturer/research fellow) to Level E (professor). With the exception of Level E, most academic ranks include four to eight salary increments (steps), with annual salary increases to the next increment based on satisfactory performance. Academics are eligible to apply for merit-based internal promotion to higher ranks, which are reviewed by a university committee comprising internal and external peers. 'Out-of-round promotion' may also be offered based on a counter-offer from a competing institution (Winchester et al. 2006). Fixed-term contract academics are eligible to apply for promotion but face practical problems such as required years of continuous employment or limitations based on the external funding of their positions. Casual academics are explicitly excluded from internal promotion.

Merit-based promotion is judged based on internal procedures for satisfactory performance, which will vary from institution to institution depending on the assigned workloads for teaching, research and service/leadership. Some universities set the relative weightings across duties, while others allow applicants to specify their own weightings (Winchester et al. 2006, p. 510). Academics who apply for internal promotion are usually successful, though promotion by no means is guaranteed. A 2011 survey found that 41 % of academics on continuing and fixed-term contracts had applied for internal promotion within the past 5 years, with 84 % successful on at least one occasion (Strachan et al. 2012). The usual pathway to promotion is sequential, after spending 5–6 years in the preceding rank, except for promotion to Level B which effectively operates as an entry level for some continuing and fixed-term positions (Strachan et al. 2012).

Although research and teaching are considered equally important by universities for promotion, perceptions are that research is the 'real' criterion (Winchester et al. 2006). These perceptions may or may not reflect the reality, but the differential career pathways for teaching-only versus research-only academics imply a lower value placed on teaching duties. Remuneration for casual teaching is nearer the bottom of the academic pay scale, usually the middle increments of the Level A salary scale or lower increments of the Level B salary scale. By comparison, the research-only

career pathway may potentially reach Level E (professorial fellow/research professor). In other words, one can become a professor without doing teaching but will struggle to gain promotion above the bottom ranks without performing research.

19.5 CAP Results for Teaching and Research Activities in Australia

The following section presents the CAP results for teaching and research activities for academics whose primary activities are teaching, research or both duties. This is determined by self-reported time use across both the teaching and nonteaching periods. Universities in Australia typically operate with two 14-week teaching semesters, meaning teaching is in session for roughly two-thirds of the working year. The CAP survey asked respondents for their typical working hour divisions separately for the teaching and nonteaching period. Therefore, we weight the working estimates for the teaching period as double the nonteaching period, providing an annualised estimate of teaching and research time.

It should be noted that 13 % of the Australian sample report spending less than half of their time on teaching and research. These academics are more likely to be located in higher academic ranks and are primarily engaged in university administration. One quarter of all Level E academics reported spending the majority of their time on other duties, compared to less than ten percent of those in Level B and below. Although academics whose primary duties are not teaching or research perform particular functions within Australian universities, such academics likely hold additional leadership and service positions within or outside the university. For the purpose of examining teaching and research workloads for typical academics, they are excluded from the sample as their results skew the data.

Consistent with the Humboldtian ideal, academics in continuing and fixed-term positions spend, on average, roughly equal amounts of time on teaching (36 %) and research (37 %). However, this masks diversity across universities. On average, academics in the Go8 research-intensive universities spend close to half of their time on research (44 %) and less than a third of their time on teaching (31 %). By contrast, academics in the Australian Technology Network of Universities (ATN) and other universities spend, on average, more time teaching (39 and 40 %) compared to research (33 and 32 %). These working time distributions reflect the different histories and positions of universities, whereby the Go8 universities have stronger research traditions, supervise more PhDs and dominate the external competitive research funding. Academics working in the Go8 perhaps share more in common with universities identified as having stronger research traditions (e.g. Germany, Norway, Japan, Italy, the Netherlands and Korea). Table 19.1 shows the proportion of time spent on teaching and research across university categories, for those academics who reported spending the majority of their time on teaching and research.

Traditionally, academics in Australian universities have been employed in combined teaching and research positions. Such positions have been assumed to

Table 19.1 Mean number of hours dedicated to teaching and research

	Teaching	Research	n
Go8	31	44	248
ATN	39	33	120
Other	40	32	219
All	36	37	587

Notes: The teaching and research hours are a proportion of total hours combined across the teaching and non-teaching periods, by university type

Table 19.2 Mean proportion of academics by time-use classification and university type

	Research-focused	Balanced	Teaching-focused	Total	n
Go8	43	32	25	100	248
ATN	24	33	43	100	120
Other	25	27	48	100	219
Total	32	30	37	100	587

entail a roughly equal division of time between teaching and research/scholarship, and these principles are still present in some enterprise bargaining agreement workload clauses. In some Go8 universities, a 40:40:20 ratio is stated as the starting point for discussions over workload divisions between teaching, research and other duties (e.g. administration and service). However, under the National Protocols, research and teaching are institutional responsibilities, not individual responsibilities. Many academics will not be engaged in both activities, and in some universities combined positions may include the equivalent of 1 day per week for research. Given that combined positions have also been in steady decline, the practical importance of the 40:40:20 ratio has diminished considerably.

An alternative approach used in this chapter is to classify academics into categories based on the time they report spending on teaching and research rather than their workload classification. We classify academics according to the ratio of time spent on teaching versus research. Academics spending at least 50 % more hours on teaching compared to research (e.g. 1.5 h teaching per research hour) are classified as 'teaching focused'. Likewise, academics spending 50 % more time on research are classified as 'research focused'. The remaining group is considered to have a 'balanced' workload. Roughly one-third of all fixed-term and continuing academics fall into each of these three categories. However, as shown in Table 19.2, academics in Go8 universities are almost twice as likely to be in research-focused positions compared to teaching-focused positions, while the opposite is the case in the non-Go8 universities. This may be partly the result of the high concentration of competitive research funding in the Go8 which can be used for research-only fixed-term staff.

For academics on fixed-term and continuing contracts, the balance between teaching and research is strongly related to academic rank. The proportion of academics in research-focused positions steadily increases with rank, from one-fifth of all Level B academics to close to two-thirds of all academics in Level E.

Table 19.3 Mean proportion of academics by time-use classification and academic rank

	Research-focused	Balanced	Teaching-focused	Total	n
Level E	62	30	8	100	50
Level D	50	36	14	100	72
Level C	25	29	45	100	150
Level B	21	33	46	100	245
Level A	50	14	36	100	66
Total	33	30	37	100	583

The opposite is the case for teaching-focused positions. Almost half of all academics in Levels B and C are in teaching-focused positions, compared to less than one-tenth of Level E academics. The proportion of academics with balanced workloads is stable across ranks above Level B at roughly one-third. Academics in the lowest rank (Level A) are mostly likely to be in research-focused or teaching-focused positions rather than combined positions with balanced workloads. The distribution of academics based on their time-use classification and academic rank is shown in Table 19.3.

The lack of longitudinal data means we cannot assume that academics spending a greater proportion of their time on teaching face barriers to promotion beyond Level C. Academics may shift their working preferences away from teaching as they are promoted. Additionally, higher-ranked positions require greater time devotion to leadership and administration, which probably comes through the delegation of teaching duties rather than a reduced commitment to research, thus creating a relatively stronger research focus. However, there is some evidence to suggest that the teaching-focused career pathway is less amenable to promotion. Teaching-focused academics reported an average of 14 years experience in the higher education and research sector, identical to other academics. In other words, teaching-focused academics are not concentrated in lower ranks due to less experience. Teaching-focused academics are also no different to those with balanced workloads in terms of their years of experience within their current institution. Teaching-focused academics appear to simply spend more time at their current rank compared to others. Academics in teaching-focused positions report having spent an average of 6 years at their current rank in their institution compared to 4 years for those with balanced workloads and 3 years for research-focused academics. Differences in means across the three groups are highly significant (ANOVA, $p<0.000$). These results are presented in Table 19.4.

The fact that academics in research-focused positions have spent fewer years in their current rank does not necessarily mean they are more quickly promoted than academics engaged in teaching. Research-focused academics are more likely to report fixed-term contract employment. Whereas 80 % of academics in balanced positions and 77 % of teaching-focused academics report continuing contracts, only 53 % of research-focused academics have continuing contracts. In the lowest ranks (Level A and B) the division is even more pronounced, with 13 % of research-focused academics on continuing contracts compared to the majority of balanced

Table 19.4 Academic time-use classification by years of employment

	Research-focused	Balanced	Teaching-focused	ANOVA sig.
Years since your first full-time appointment in higher education/research sector	13.6	13.8	13.7	0.976
Years at your current institution	7.9	9.7	9.6	0.057
Years at your current rank at your current institution	3.4	4.3	5.9	0.000

Table 19.5 Mean research output by time-use classification

	Research-focused	Balanced	Teaching-focused	Total	ANOVA sig.
Book authored	0.3	0.3	0.2	0.3	0.046
Book edited	0.3	0.2	0.1	0.2	0.002
Articles	11.9	6.5	3.6	7.4	0.000
Reports	1.8	0.9	0.7	1.2	0.003
Conference papers	8.1	5.9	3.8	6.0	0.000
n	182	167	174	523	

and teaching-focused academics (52 % in each category). Research-focused academics are probably more likely to move between institutions at the same rank, or temporarily outside the university sector, leading to fewer years at the current rank of the current institution, but not necessarily fewer years at the given rank. The relatively few academics in Level B who are mostly engaged in research may also reflect the 'postdoc treadmill' of short-term research-only contracts in lower academic ranks (Coates et al. 2009).

It is more difficult to explain why teaching-focused academics differ from academics in balanced positions in their years at current rank. Post hoc tests of mean differences of years at current rank show that mean differences between teaching-focused and balanced academics are statistically significant (ANOVA Games-Howell, $p<0.01$), but mean differences between balanced and research-focused academics are not significant ($p>0.05$). It may be that a lack of time dedicated to research by teaching-focused academics is a barrier to promotion, but the additional hours spent on research by research-focused academics have less effect on promotion. This is probably because institutions have stronger research expectations of research-focused academics, given they spend more time on this activity and many would be on the research-only career track.

In terms of publishing, the relative time spent on research is strongly associated with the number of publications. As shown in Table 19.5, research-focused academics have the highest mean levels of publishing across all scientific publication types: books, articles/chapters, reports and conference papers. This is not surprising given that research-focused academics tend to be in higher academic ranks. A detailed study of the CAP and 1992 Carnegie data found that academic rank was consistently the strongest predictor of scientific publishing in Australia (Bentley 2012). Research hours were also significant predictors in that study, but teaching hours were

Table 19.6 Proportion of academics agreeing with the following statements on research and teaching, by time-use classification

	Research-focused	Balanced	Teaching-focused	n
Teaching and research are hardly compatible with each other	21	28	37	577
Your research activities reinforce your teaching	82	78	69	528
You spend more time than you would like teaching basic skills due to student deficiencies	53	66	65	531

Table 19.7 Mean proportion of teaching time dedicated to each level of education, by time-use classification

	Research-focused	Balanced	Teaching-focused	Total
Undergraduate programmes	54	67	74	66
Master programmes	17	16	16	16
Doctoral programmes	25	12	5	13
Other programmes	3	4	3	3
Total	100	100	100	100
n	150	173	200	523

not significant. This supports Dever and Morrison's (2009) study of highly publishing academic women who tend not to find teaching as a barrier to their research performance.

Research commitments are rarely cited as a hindrance to teaching, but two-thirds of academics surveyed by McInnis (1999, p. 34) reported teaching loads as a hindrance to research. Most Australian academics in the CAP survey do not believe that teaching and research are incompatible, but academics in teaching-focused positions hold less positive views than others. Over one-third of teaching-focused academics find the activities incompatible (37 %) compared to just over one quarter of academic with balanced workloads (28 %) and one-fifth of research-focused academics (21 %). The vast majority of academics believe that their research reinforces their teaching, but again agreement is strongest amongst academics with research-focused (82 %) and balanced workloads (78 %) compared to teaching-focused academics (69 %). Research-focused academics are also less likely to agree that they spent more time than they would like teaching basic skills due to student deficiencies. However, given they tend to spend less time teaching overall, their more positive views on teaching may be due to their minimal engagement in this activity (Table 19.6).

Research-focused academics do not just spend less of their time teaching, they are also less likely to be teaching large undergraduate classes. As shown in Table 19.7, undergraduate programmes comprise roughly two-thirds of all teaching hours for most academics. However, for research-focused academics undergraduate teaching comprises only just over one-half of their teaching time. The different patterns of undergraduate and postgraduate teaching undoubtedly relate to the rank

Table 19.8 Relative interest in teaching and research, by time-use classification

	Research-focused	Balanced	Teaching-focused	Total
Primarily in teaching	1	2	17	7
In both, but leaning towards teaching	7	26	44	26
In both, but leaning towards research	45	59	29	43
Primarily in research	47	14	9	23
Total	100	100	100	100
n	190	176	213	579

and qualifications of research-focused academics. Less than one-third of all teaching-focused academics supervise research teams or research assistants compared to half of all academics with balanced workloads and two-thirds of research-focused academics. Research-focused academics also teach smaller undergraduate courses with a median enrolment of 100 students compared to 200 students in the courses taught by other academics. The smaller class sizes may be the underlying reason for having a research-focused workload, while the relatively stronger focus of teaching in doctoral programmes probably also unpins their more positive views on the complimentary relationship between teaching and research.

It is common knowledge that some academics are more motivated towards research. Cole and Cole (1973) describe the 'sacred spark' or inner compulsion some academics have towards research. Research time is partly a residual category based on the working hours that remain after all formally assigned work has been completed, and partly discretionary based on whether one prefers to trade leisure for work. A previous study of research time based on the CAP data found that relative interest in research was the strongest predictor of research hours in Australia and most other countries (Bentley and Kyvik 2012b). Gottlieb and Keith's (1997) study based on the 1992 Carnegie data showed similar results for research hours, but they additionally examined factors associated with teaching hours. Their results indicated that the relationship between interest in teaching and teaching hours was weaker than the relationship with research hours. This is probably because academics deeply engaged in research generally work longer hours, thus trading leisure for work. The cross-tabulated results in Table 19.8 show that research-focused academics overwhelmingly report a stronger interest in research, while most teaching-focused academics report stronger interests in teaching. The vast majority of academics with balanced workloads share an interest in both teaching and research (85 %). The importance of these results is that diversity in teaching and research hours matches self-reported interest in these activities for most academics, though there are many academics interested in research who are in teaching-focused positions.

19.6 Discussion

The previous analysis of the CAP data shows that in Australia there has been a decrease in the proportion of academics employed in combined teaching and research positions. Teaching and research are increasingly being performed by

specialised academics, with separate career paths. The tendency has been for teaching-only academics to be employed in casual contracts, with very limited formal career pathways or opportunities for promotion. The trend in the research-only track has been fixed-term contracts. Although job security and access to promotion remain strongest for those in combined research and teaching positions, comparably few such positions have been created over the past two decades. One of the core findings of this chapter is that academics in combined positions are very diverse, including teaching-focused academics with only limited engagement in research and publishing. It is probable that academics in combined positions will become more diverse, with research time distributed towards those academics with demonstrated research potential or outputs and heavier teaching loads for research-inactive staff in combined positions. Such trends are already becoming part of enterprise bargaining agreement negotiations, further weakening the relevance of the traditional 40:40:20 workload distribution between teaching, research and other duties.

Coates and Goedegebuure (2012) argue that as higher education grows in size and complexity, academic work progressively becomes more differentiated and this requires the core academic functions to move freely together (or apart). In turn, this requires a reconceptualising of academic work beyond the crude 'research active' and 'non-active' conceptualisations and the traditional notion that all academics in combined positions should be engaged in teaching and research equally. They present 'academic career profiles' including a range of possible workload divisions, including senior academic leaders who spend most of their time on management and leadership. In many ways, the data presented in this chapter indicates that diverse career profiles already existed at the time of the CAP survey in 2007. One quarter of all Level E academics were not included in the sample used in this chapter precisely because they represented senior academics in leadership roles which do not require active engagement in research and teaching. The remaining sample of academics differed in their engagement in teaching and research, partly reflecting the relative interests in these activities.

The reconceptualising of academic work means the 40:40:20 principle has become increasingly obsolete for academics in combined positions, particularly outside the Go8 universities. For example, Curtin University of Technology employees will soon vote on a new enterprise bargaining agreement which expands the definition of combined teaching and research positions to include subcategories for 'research emphasis' and 'teaching emphasis'. Academics with a research emphasis can expect a teaching workload of 40–50 % and a research workload of 30–40 %. Academics in teaching-focused positions may have a teaching workload of up to 60 % and a research workload of 20 %. Essentially the 40:40:20 ratio represents an upper limit for research engagement under these changes. By contrast, staff at Central Queensland University (CQU) will soon vote on a new enterprise agreement which will divide academics into five categories, including a 10 % teaching load for the most effective researchers in combined positions (Rowbotham 2012). At the Australian Catholic University, there is even greater diversity, with the possibility of research-only staff being assigned teaching duties. The great diversity within and between universities in what is considered a reasonable balance between teaching and research makes it difficult to generalise a typical workload pattern for

academics based on their employment classification. Estimates about student-staff ratios and the proportion of teaching completed by casual staff typically assume academics with common labels (e.g. teaching-only, teaching and research or research only) spend the common proportions of time on teaching (e.g. 100 %, 40 % and zero percent, respectively). However, this is clearly not the case.

Although new enterprise bargaining agreements demonstrate a formal reconfiguration of academic work for existing academics, it is unclear whether these changes will make academic work more attractive to potential entrants. According to the Australian Technology Network of Universities, attracting and retaining high-quality academic staff is 'the single biggest issue confronting the sector over the next decade' (ATN in Bradley et al. 2008b, p. 22). Like other countries, Australian universities have an ageing demographic profile. Almost half of all senior academics (associate professors and professors) are expected to retire over the coming decade (Coates et al. 2009). The relative weak growth in recruitment over the past decades has meant that there are relatively few academics under the age of 40. This has been labelled the 'lost generation' of academics (Hugo 2008). There are concerns that aspiring academics have been dissuaded to commit to an academic career, with half of all domestic PhD graduates preferring to work outside the university sector (Bexley et al. 2011). The replenishing of the academic workforce is also very likely to coincide with substantial growth in demand for tertiary qualifications (Hugo and Morriss 2010).

The Commonwealth Government's 2008 *Review of Australian Higher Education* (the 'Bradley Review') acknowledged that the quality and capacity of the academic workforce is critical to meet Australia's long-term needs for a qualified labour force. The Bradley Review recommended urgent attention and proposed three strategies for improving the attractiveness of the academic profession: increase the number of home-grown academics through more training of postgraduate researchers, improve the relative attractiveness of working conditions and offer greater job security and flexibility (Bradley et al. 2008b, pp. 22–25). Academics are drawn to the profession out of their commitment to scholarship rather than salary or job security, but the rejuvenation of the academic profession has probably been hampered by relatively low academic salaries. From an international perspective, Australian academic salaries compare favourably with other English-speaking countries (Coates et al. 2009). Australian universities strongly benefit from migration; over 40 % of the academic workforce is foreign-born (Hugo and Morriss 2010). However, compared to other full-time jobs in Australia, academic salaries have declined (Horsley and Woodburne 2005). Salary is reported as one of the strongest weaknesses of an academic career from both academics (Bexley et al. 2011) and research higher degree students (Edwards et al. 2011). The greatest decline in salary relativities has been in the lowest and highest academic ranks (Coates et al. 2009), but the deterioration in the lowest academic ranks is particularly troublesome because it has been compounded with job insecurity through casualisation and fixed-term contracts.

The National Tertiary Education Union (NTEU) estimates that casually employed academics are responsible for more than half of all undergraduate teaching (Rea 2012). The use of casual positions for undergraduate teaching has been charged

with creating an 'underclass' of workers with a high level of job insecurity, low wages and poor working conditions (Kimber 2003). May and colleagues (2011) claim that many of the 'lost generation' of younger academics were not lost to academia, but were consigned to casual teaching roles. Not all casual employment is involuntary, but academics preferring casual employment tend to hold additional full-time professional positions elsewhere or are entering retirement (Junor 2004). Job security is a concern for the bulk of the casual teaching workforce and the most frequent issue raised by casual academics (Bexley et al. 2012). The extent of involuntary casual employment was revealed by a recent survey of 2,900 casually employed academics (Strachan, et al. 2012). Only one-tenth of those surveyed preferred casual employment in the medium-term future (5 years), with a majority (54 %) preferring continuing appointment and just over one-fifth (22 %) preferring work outside the university sector.

There is no way to know what proportion of academics currently employed in casual contracts (preferring secure employment) will ultimately gain secure positions. One of the strongest criticisms is that Level A positions no longer offer an entry point to an academic career, but just a 'revolving door' of casual and fixed-term employment (May et al. 2011). Regular casual contracts are common, most casuals report being employed at their university for more than 1 year (62 %), and almost three quarters believed that they will probably be employed on a casual basis in the subsequent year (Strachan et al. 2012). In cases where there is an implicit expectation for ongoing employment, there are strong arguments to convert casual positions into merit-based fixed-term or continuous employment positions (Coates and Goedegebuure 2012; Junor 2004).

On the surface it seems that universities gain the ongoing commitment of casuals without offering any formal commitment to ongoing employment. The same may be said for research-only academics on the postdoc 'treadmill' of regular fixed-term contracts which do not lead to tenured positions (Coates et al. 2009). However, there are also costs to universities in terms of the quality of academic staff. Edwards and colleagues (2011, p. 40) believe that the lack of perceived availability of academic positions amongst research higher degree students may be a core reason for aspiring academics to pragmatically switch their career preferences away from academia. Perhaps more importantly, the perceived low salaries and lack of career opportunities within academia, combined with the poverty-level Australian Postgraduate Award scholarship scheme (Palmer 2011), probably discourage many of the most capable researchers from even contemplating academic careers in Australia.

The role of casual employment should not be viewed entirely from a negative standpoint. Flexible contracts help universities manage fluctuations in student enrolment and research funding. The need for flexibility has become particularly important given the inexorable decline in guaranteed Commonwealth funding and reliance on student contributions. For individual academics, casual positions often lead towards regular employment. For example, the vast majority of academics on fixed-term and continuing contracts have spent some time employed casually either during their PhD (82 %) or afterwards (45 %) (Strachan et al. 2012, p. 41). Furthermore, academics in casual positions are no less satisfied with their positions

than those in secure positions. Seventy-eight percent of casuals report being satisfied with their jobs compared to 69 % of fixed-term and continuing academics (Strachan et al. 2012). A clear majority (62 %) of casuals also agreed that casual work allows them to balance their work and home life.

However, the lack of commitment to ongoing employment also increases the demands for effective human resource management practices. Contracts must be renewed, and performance measures should be designed to ensure that the most capable people enter the academic profession and the most effective remain. Unfortunately many of these human resource management functions are conducted informally by individual academics on an ad hoc basis. Most universities cannot even estimate the proportion of teaching conducted by casuals because their employment is not recorded centrally on human resource systems (Percy et al. 2008). The vast majority of academics in casual positions obtained their position either through their friends (36 %), an approach to the department (31 %) or through their supervisor (16 %) rather than through an advertised and competitive process (8 %) (Strachan et al. 2012). The relative decline in the number of continuing positions means that the majority of academic staff on continuing or fixed-term contracts report supervising casual staff each semester (Strachan et al. 2012, p. 38). This probably also leaves a heavier administrative burden on senior academic staff, as demonstrated by the long administrative hours in Australia compared to other countries (Bentley and Kyvik 2012a).

Essentially, casuals are employed to perform one of the most important functions of universities to society – the teaching of undergraduate students – but are not subject to formal competitive processes for recruitment or performance management. These processes strongly lend themselves to bias, favouritism and patronage rather than merit (Martin 2009). In a plan to reduce dependency on casual teachers, Curtin University plans to introduce Scholarly Teaching Fellow positions (up to 75 % teaching duties) as an explicit strategy for converting casual teaching positions into merit-based appointments on continuing or fixed-term contracts. While this addresses many of the problems of a lack of career pathway for teaching-only staff, such positions will be confined to the lowest academic ranks (Level A and Level B). In 2011, CQU offered its academic staff the possibility to transfer to 'teaching scholar' (teaching-only) positions, and nearly one-third accepted the offer within 5 weeks (Hare 2011). According to Scott Bowman (CQU Vice Chancellor), teaching scholars can be promoted to full professorship (Rowbotham 2012), though in practice the current CQU promotion criteria for teaching scholars include demonstrated research publishing for promotion to associate professor (Level D) and above.

Although these approaches are improvements over the ad hoc use of casual teachers, shifting academics from combined positions into teaching-focused positions will probably have detrimental effects on job satisfaction for those holding a stronger interest in research. The lack of available research time for academics in teaching-focused positions is related to the self-reported satisfaction for Australian academics. Bentley and colleagues (2013) found that academics who declare an interest in research but fail to have adequate research time are less likely to be satisfied overall and across a range of job-related measures.

In view of the above, there seems little doubt that the further diversification of academic career pathways will remain high on the agenda for the coming years. With further expansion of the system in terms of number of students enrolled, and budgets remaining tight from an institutional perspective, issues of efficiency and productivity will be core to institutional change strategies. There is very little doubt that this will profoundly impact on the conceptualisations of academic careers by both national and institutional policy makers and by individual academics.

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Part V
Concluding Observations

Chapter 20
Teaching and Research Across Higher Education Systems: Typology and Implications

Jung Cheol Shin and William K. Cummings

20.1 Introduction

This book focuses on similarities and differences in the linkages between teaching and research across the 19 countries included in the CAP study. For the organization of the book, these 19 higher education systems were separated into three groups: the research focused, teaching focused, and teaching-research balanced types. This typology was based on an analysis of the historical development of the higher education systems participating in CAP. The European countries tend to be in the category of research focused systems, the Anglo-American countries tend to be in the teaching-research balanced systems, and the other systems tend to be teaching focused.

While this typology proposed in Chap. 1 explains many of the long-standing differences and similarities of the teaching and research activities across the 19 systems, it may or may not fit the contemporary pattern of similarities and differences in the teaching and research activities of the 19 countries. To better capture the contemporary pattern, this chapter strives to classify the 19 teaching and research systems using the inductive statistical method of cluster analysis. As the chapter authors in Parts B, C, and D of this book stressed in their respective chapters, teaching and research in each country cannot be explained without looking into the respective institutional forms as well as considering the managerial reforms since the 1980s. Thus, this chapter drawing on the social systems perspective strives to relate the teaching and research activities to these institutional and managerial factors.

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20.2 Teaching and Research in the Changing Environments

Social system models are composed of inputs, throughputs, outputs and their environments. The four components of social systems help to explain how teaching and research function in modern universities. University inputs include resources, staff, students, and their time. These inputs are transformed to outputs through throughput processes—mainly the processes of teaching and research. The throughput process is conducted by academics. Academics teach their students, and they participate in knowledge production to produce teaching contents, to contribute social betterment, and to industrial development. The outputs of the teaching and research activities are measured by student learning outcomes such as students' knowledge, their changing attitudes, and behaviors. The research outputs are books, journal articles, research reports, patents, artistic productions, etc. Some of the outputs are relatively easy to measure; others are not.

The CAP survey includes several questions related to these inputs, throughputs, and outputs. Concerning inputs, the CAP survey asks about the quality of resources for teaching and research, the qualification of academic staff, their psychological preference for teaching and research, and the actual time they devote to teaching and research. In addition, the survey asks the details of teaching activities (e.g., their curriculum, instructional methods) and research activities (e.g., their research orientation between pure and applied research and collaboration). Finally, the CAP survey also asks about research outputs, but not about teaching outputs. This is because the CAP survey is based on academics' perceptions and does not include questions directed to students. In addition, the CAP survey provides useful information on how both teaching and research reinforce each other that is a critical question in studying teaching and research. While the CAP study has the limitation that is based solely on questions to academics about their perceptions of teaching and research, it provides useful insights on the ways teaching and research interact with each other inside of academia.

These inputs, throughputs, and outputs are interrelated to each other through feedback functions. The final component of the system model is the role of environment factors. As we discussed, teaching and research functions are conducted in an institutional setting, so an understanding of institutional forms is critical for the analysis of teaching and research. Some systems are relatively mature, and others are relatively young; some systems apply a division of labor between teaching and research, while others do not; government is a strong stakeholder in some systems, while academic managers enjoy considerable autonomy in other systems. As well as the institutional forms, the social demands for teaching and research differ across systems. Some systems are struggling to enhance access to higher education, while others are approaching near universal tertiary enrollment. In addition, the knowledge economy enhances the social demands for knowledge production, and this heightened demand affects teaching and research activities.

Among the systemic differences across systems, we in this chapter will not pay much attention to the impact of dual systems where there is a distinction between

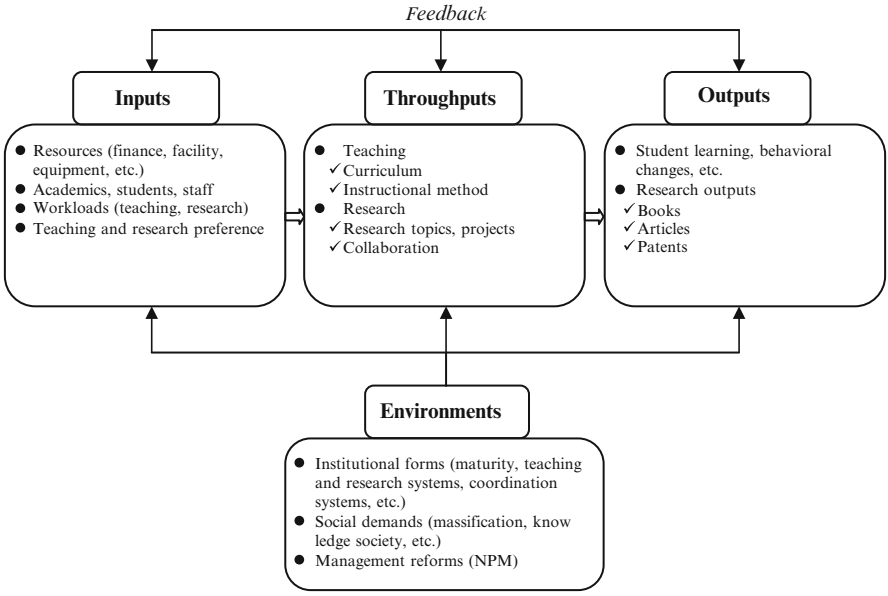

Fig. 20.1 System model of teaching and research in changing environment

the university sector and the technical training sector (e.g., polytechnics, community colleges, or similar institutions). The research-driven teaching model is characteristic of most European universities, while teaching and applied research are more prominent in the technical training sector. However, the division of labor between the university sector and the technical training sector is declining, and the differences between two sectors are fading in recent days, as discussed in many case studies in this book. The academics in the technical sector (4-year institutions) in most of the countries with a dual sector system are becoming more active in research.

Governments prefer to incorporate the social demands through reforming university governance and management. The mega trend of public management since the 1990s is neoliberalism and its managerial forms including the new public management. Especially, the new public management has reduced direct government involvement in higher education, but nevertheless governments retain indirect involvement in university management through their reliance on performance indicators. As a result, performance-based management has been broadly adopted in university governance and management since the 1990s (neoliberalism began in the late 1970s in the UK and the early 1980s in the USA, but it became a global phenomenon in the 1990s) (Locke et al. 2011). The relationships between these four components are represented in Fig. 20.1.

The system perspective contributes to our understanding of the current teaching and research systems included in this book. From our overview of the 15 case studies in this book, we recognize that higher education systems are becoming homogenized.

The increasing similarity is most evident in the management reforms, especially performance-based management. Performance-based management is widely evident in academic management, and performance indicators are at the core of government policy and institutional management (Shin 2010). The most common performance indicators focus on outputs rather than inputs or throughputs (Shin and Toutkoushian 2011). Institutional outputs and individual outputs have become a core factor in faculty personnel and budget allocation mechanisms. Through the output-based management, individual academics are evaluated and rewarded accordingly. One related trend is toward the diversification of employment status with a decrease in the proportion of faculty with a "regular" professor status and increases in those on contract-based and part-time employment. The academic oligarchy is fading away in academic governance.

First, under performance-based management research outputs become the major indicator because research outputs are relatively easy to measure. In addition, research has become a main policy goal in the knowledge societies where policy-makers perceive knowledge as a core engine of economic production. As a result, in many countries academics are regularly evaluated by their managers and/or governments (or funding agencies), and they are rewarded according to their research performance (Shin and Kehm 2013). Some institutions (e.g., polytechnics or teaching-focused institutions) pay attention to teaching outputs, but the majority of contemporary higher education institutions tend to focus on research. The research performance is mainly quantified by the number of publications and citations or the number of patents. Universities and academics tend to have a negative perception of these changes, but it is not easy to move away from the trend.

Second, a surprising observation is that academics are fragmented with full-time tenured or tenured track academic having different responsibilities and interests than the part-time, nontenured contract-based employees. Universities began to hire temporary academic staff to provide more courses to the mass higher education enrollees. In addition, universities sought to enhance research productivity by hiring contract-based full-time researchers rather than regular full-time academics. The proportion of part-time staff varies across countries (e.g., about 10 % in Canada, 50 % in the UK, 16 % in Argentina, and 84 % in Brazil). The regular full-time academics work both on teaching and research, while part-time or contract-based academics focus either on teaching or research. University's response to the changing environment leads to fragmented academics and leads to the division of labor between teaching and research by different employment status.

Third, the changing environment leads to changes in power relationships between academic managers and professors. Due to managerial reforms, the power relationship has shifted with a greater reliance on institutional managers relative to senior academics in many systems (e.g., Locke et al. 2011). The managerial reform is happening in European systems and the rest of worlds as well as in the Anglo-American systems. As a global trend, governments empowered university managers through governance reforms. A representative governance reform is the corporatization of national universities in Europe and Asia. The corporatization is proposed and initiated to empower university managers and to reduce professors' involvement in

the university management process. In the new environment, managers extend their roles in university administration and began to become deeply involved in the black box of teaching and research through the quantified measures such as research evaluations or course evaluations. Academic activities increasingly rely on what the managers think rather than what professors think.

20.3 Teaching and Research Across Higher Education Systems: A Cluster Analysis

Teaching and research systems differ by the historical origins of the university model (e.g., German, French, British, and USA) and/or by their management model (e.g., Clark's state, market, and oligarchy). These typologies provide conceptual and practical frames for understanding the ideals and realities of higher education from a comparative perspective. Higher education scholars use these typologies to explain similarities and differences across systems. However, these typologies are based on the historical development of the modern university (e.g., Ben-David 1977; Clark 1983; Cummings 2004), but the historical classification may or may not fit contemporary systems of teaching and research. The CAP survey provides the empirical data for developing a contemporary inductive typology of teaching and research systems across 19 countries.

20.3.1 Strategy

The CAP study is based on the assumption that teaching and research are on a continuum in terms of the preferences and time budgets of academics. The preference for teaching or research is an internal perception, while the time budget are based on the actual time that academics devote to their various activities (teaching, research, administration, service, and others) in the CAP survey. Both internal preference and actual activities are affected by environmental factors including the historical higher education model and the management model. Previous typologies paid attention to these systemic or management factors, but not to the teaching and research activities or the personal preferences. This study combines attention to these systemic factors with their impact on academics perception and their activities, so as to better explain the practices of teaching and research in contemporary higher education. The conceptual frame is represented in Fig. 20.2.

The empirical analysis requires careful consideration for the data collected because the data collection is based on systemic differences across 19 countries. For example, the German and the Netherlands data include polytechnics, while many other countries do not include polytechnics; the Norway data include research only institutions, while the other countries do not; and some countries (Germany, the Netherlands, Argentina, Australia, etc.) include part-time academics as well as

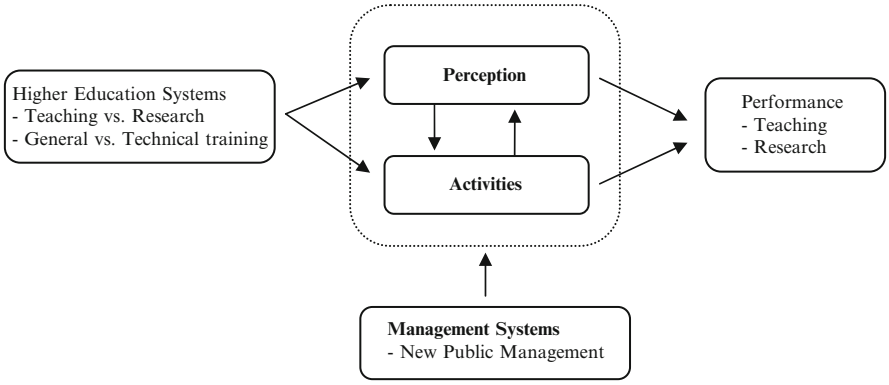

Fig. 20.2 A model for teaching and research systems

full-time academics, while other countries (Korea, Japan, Mexico, etc.) do not. To enhance comparability across the 19 countries, this study includes only full-time academics (so that, contract-based academics are included, but part-time academics are excluded) in the university sector (so that, polytechnics and research only institutions are excluded).

20.3.2 Data and Method

This study only analyzes full-time academics who are in the university sector. Hence for many countries the data size is reduced, as shown in Table 20.1. We used cluster analysis to classify the 19 systems in terms of two variables—research preference and the share of time on research. The time on research is based on "in session" rather than "off session" because academics shift their relative weight between teaching and research during their "off session." The share of time input on research is computed as follows: time on research/(time on research + time on teaching). Table 20.1 shows the descriptive statistics of research preference and time on research across 19 higher education systems. For the analysis, we employed k-means cluster analysis which enables to classify objects into groups by predetermined factors according to statistical algorithms.

As shown in Table 20.1, some countries show noticeable differences between their preference and actual time on research. This tendency is relatively large in the research-focused European systems—the Netherlands (36.25), Norway (31.64), Italy (30.35), Japan (27.49)—followed by the UK (29.93) and Australia (28.63). This fact shows that academics in these systems prefer to be research scholars, but their institutional environments require them to teach more and more courses, especially in the post-massified higher educational setting. The discrepancy of the desire for research and the actual time for research may be related to their job stress.

Table 20.1 Descriptive statistics of classification variables and covariates

Country	Sample	Analysis sample	Preference (research)	Proportion of time for research	Time per week (research)	Job satisfaction (%)	Job stress (%)	Publication (article only)
Argentina	826	419	68.0	56.09	19.39	70.2	25.3	6.17
Australia	1,370	705	74.8	45.97	16.22	57.8	52.0	8.52
Brazil	1,147	458	61.0	39.46	13.00	64.4	33.0	5.88
Canada	1,152	1,112	67.9	43.34	15.95	74.0	42.6	6.30
China	3,612	2,902	49.8	38.75	14.29	58.2	56.5	8.92
Finland	1,452	905	76.5	52.59	18.35	69.2	46.4	6.26
Germany	1,265	817	72.7	52.77	17.32	65.0	43.9	10.03
Hong Kong	811	749	65.9	40.83	15.45	63.7	41.9	9.46
Italy	1,701	1,644	76.9	46.41	17.48	64.9	29.9	8.66
Japan	1,408	1,392	71.8	44.21	16.72	68.5	57.4	9.18
Korea	900	899	68.1	45.32	18.11	76.9	67.6	10.63
Malaysia	1,220	906	46.2	28.94	7.81	65.2	19.3	4.21
Mexico	1,973	651	60.2	41.95	14.65	86.7	25.2	4.84
Netherlands	1,167	442	81.6	44.13	15.97	75.5	57.9	10.78
Norway	1,035	856	83.0	51.26	14.67	69.2	35.1	5.96
Portugal	1,320	797	59.5	38.79	13.79	54.2	47.5	6.48
South Africa	749	558	45.8	28.66	8.63	51.6	34.8	2.96
UK	1,565	915	70.7	39.17	13.15	48.6	59.5	6.49
USA	1,146	799	52.8	39.65	14.03	62.6	36.8	5.17

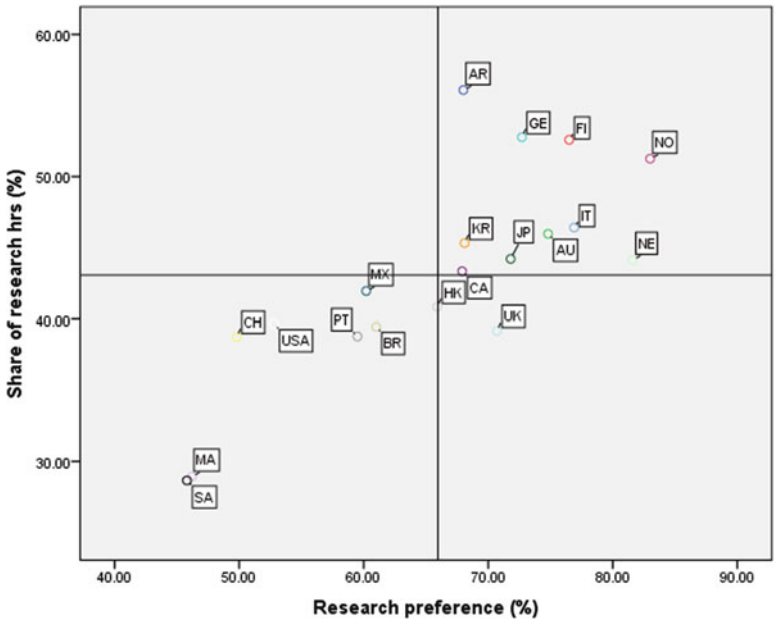

Fig. 20.3 Research orientation across countries (Notes: AR (Argentina), AU (Australia), BR (Brazil), CA (Canada), CH (China), FI (Finland), GE (Germany), HK (Hong Kong), IT (Italy), JP (Japan), KR (Korea), MA (Malaysia), MX (Mexico), NE (Netherlands), NO (Norway), PT (Portugal), and SA (South Africa))

20.3.3 Typology and Profiles

The graphic representation of the data provides insights on the typology of teaching and research systems. Figure 20.3 shows how each country stands in terms of research preference and the share of time on research. According to the scatter plot, most European countries show up in the quadrant of high research preference and high research time. On the other hand, Malaysia, South Africa, and the Latin American countries are in the low research preference and low research time quadrant. These graphic representations fit the general perception that this book is based on—European countries show strong research orientation, while developing higher education systems including Malaysia, South Africa, and Latin America show a relatively strong teaching orientation. Interestingly, the USA is close to developing systems because US academics show relatively lower research preference and lower time input on research. The US case may be related to its sampling where academics from research-focused universities are relatively less represented in this study.

We conducted k-means cluster analysis to produce more evidence-based classification of teaching and research systems across the 19 systems. We initially classified the 19 systems with a two-cluster solution and then a four-cluster solution though this study is based on three clusters (research-focused, teaching-focused,

Table 20.2 Typology of teaching and research systems

Types	Higher education systems
Research-focused systems (8 systems)	Germany, Japan, Italy, Netherlands, Finland, Norway, Australia, Argentina
Teaching-focused systems (4 systems)	USA, China, Malaysia, South Africa
Balanced systems (7 systems)	UK, Canada, Portugal, Korea, Mexico, Brazil, Hong Kong

and balanced systems) to simulate how the clusters change according to the numbers of clusters. As expected, the three-cluster solution best fits our empirical data (Table 20.2). Most European countries (Germany, Italy, Netherlands, Norway, and Finland) are in research-focused systems. Developing systems such as China, Malaysia, and South Africa are in teaching-focused systems along with the USA. The other systems are in teaching-research balanced systems. The typology needs further discussions to explain the classification results because some countries (e.g., US, Australia, Argentina, Portugal, and Korea) are classified in categories that differ from what this book is based on.

One strong feature of US higher education is that it has systemically embedded mission classification, so that the majority of academics are affiliated in teaching-focused institutions rather than research-focused systems—less than 10 % of US universities are research intensive (more or less 200 universities are in the research-intensive categories among over 2,400 bachelor degree-granting universities). Therefore, the CAP data placed the USA in the cluster of teaching-focused institutions. In addition, faculty evaluation and research systems in the teaching-focused institutions do not place much weight on research productivity. This initiative was led by Boyer (1990), as discussed in our introduction.

Australian higher education applies a division of labor between full-time academics and part-time academics. The full-time academics mainly conduct research and have light teaching loads. On the other hand, the major share of teaching is provided by part-time academics ("casual" academics). Through the division of labor between full-time and part-time academics, Australian academics maintain the balance between teaching and research. Argentina is another case where most of the academics are part-timers. Readers are reminded that only 16 % of the academics in Argentinian universities are full time.

Interestingly, recently developed (Korea and Hong Kong) or developing higher education systems (Mexico, Brazil) are classified in the balanced systems. These countries are different from the established balanced systems such as UK and Canada because these counties are on the way toward becoming research-focused systems. The balance may be temporary or for a longer time period. As discussed in the case studies, Korea, Mexico, and Brazil have strong incentive systems based on research productivity, and most of these incentives encourage project-based research. Interestingly, many Latin American systems are classified in the teaching and research balanced systems (Mexico and Brazil) or research-focused systems (Argentina). This is related to the fact that the full-time academics in the

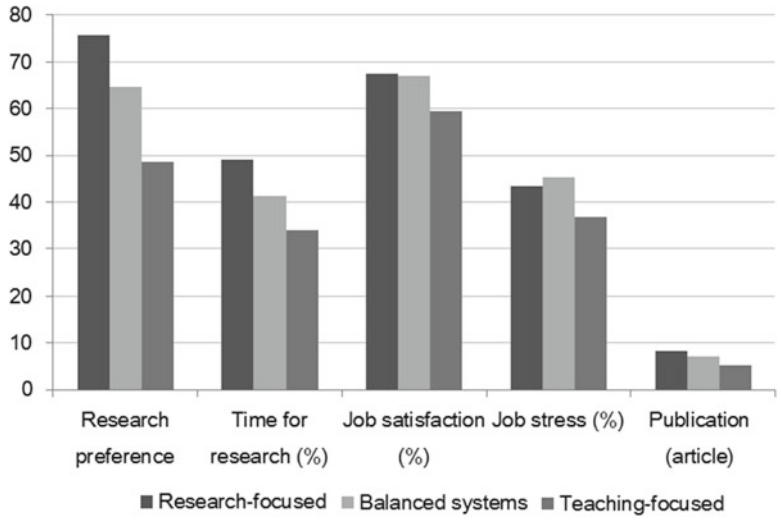

Fig. 20.4 Profiles of teaching and research systems

Latin American systems have a balance between teaching and research or place more weight on research, while part-time academics focus on teaching.

For further discussion, we analyzed how academic research preference, their time on research, their job satisfaction and job stress, and their academic productivity differ by the three types. As shown in Fig. 20.4, academics in the research-focused systems show higher research orientation in terms of their preference and their time on research followed by teaching-research balanced systems and teaching-focused systems. The profiling analysis presents how each group differs on the classification variables. On the other hand, their job satisfaction and job stress show a somewhat interesting pattern. Academics in the balanced systems show relatively higher job satisfaction and job stress at the same time. This profile relates to the fact that academics feel satisfied with their job when they conduct both teaching and research; however, they feel stress when they conduct somewhat different types of activities (Shin 2011). Teaching and research are different types of academic activities because research stresses the discovery of knowledge, while teaching involves the transmission of knowledge.

20.4 Discussions and Implications

This typology of teaching and research has many benefits for higher education research. The typology provides a basic answer as to why and how higher education in each country differs from that in other systems. But the typology has certain limitations. This section discusses three issues brought from the classification of teaching and research across the 19 countries. The first topic is about the methodological

issue in comparing different systems that arise in the study; the second topic is whether there is a converging trend in teaching and research across systems and how each system approaches excellence both in teaching and research; and third, how teaching and research patterns differ in the macro and micro levels.

20.4.1 Methodological Considerations

This study analyzed a subsample by downsizing samples to full-time academics in university sector, so that we excluded "part-time" and "polytechnics" and "other types of higher education institutions." This consideration enables us to compare different systems by the same criteria. On the other hand, this approach does not exactly represent the reality of each system. For example, a large proportion of academics in many Latin American countries are part-timers and hence excluded. Possibly, due to the exclusion the remaining cases may not represent the reality of academic profession in these countries. In addition, we compared only the university sectors in this study by excluding polytechnics and other types of institutions. However, this approach led to substantial exclusions—e.g., over 50 % of the Dutch academics.

Nevertheless, this approach has benefits for higher education research because it compares different systems by the same criteria. The limitations discussed above might be complemented by adopting ideas from "systems of higher education" which holistically classify higher education systems by historical or cultural contexts such as the typology proposed by Ben-David (1977), Clark (1983), or Cummings (2004). For example, the systems of higher education approach provide the grand picture of how each system differs from other systems, while the empirical approach suggests the degree to which each system shares similarities with other countries within the same group or differs from other groups.

20.4.2 Systemic Considerations in Teaching and Research

One of our queries of interest is whether there are converging global trends, and if so how do different systems that approach teaching and research in their unique ways yet manifest converging trends. In the case studies covered in this book, many European countries are discussing systemic differences between university sector and the nonuniversity sector to address teaching and research activities. On the other hand, case studies from the UK, Australia, Canada, and many Latin American countries pay more attention to differences in employment status—casual academics, part-time academics, contract academic, etc. On the other hand, two representative Asian systems—Japan and Korea—do not pay much attention to these systemic differences. Then, our core interest is how and why different systems address the excellence in teaching and research in different ways.

In the USA where mission classification is institutionalized, research universities adopt the research-driven teaching model, while teaching-focused institutions focus on teaching. Differently from the USA, in the European systems university sector is in charge of research-driven teaching while polytechnics focus on teaching. Compared to systems with a strong mission classification tradition or binary systems, the UK and Australia that abandoned functional differentiation between higher education institutions lead in the de facto differentiation between institutions through a reliance on evaluation and funding systems, especially research funding systems. Similar trends are identified in Japan and Korea where mission differentiation is not adopted at the national policy level. Both Japan and Korea have adopted a project-based research funding scheme to build research competitive universities for the knowledge society (e.g., Shin 2013; Yonezawa 2013).

As well as the systemic differences, similar approaches are identified across the 19 systems. We identified that nontraditional academics such as part-time, contract-based, or nontenure-track academics are growing in most higher education systems. The trends are related to policy initiatives in each country. Among them, quality assurance and performance-based management are at the center of the trends. With the increased access to higher education, government adopted quality assurance schemes in many developing countries as well as in developed countries. The quality assurance focuses on quality of teaching, and this leads to hire teaching only academics. Most of them are hired contract based or part-time based. In addition, research productivity became a major indicator of institutional performance in the knowledge society. This trend reinforced with the emergence of global rankings since the mid-2000s (Shin et al. 2011). This leads to contact-based full-time researchers in many countries.

20.4.3 Teaching and Research Across Systems: Convergence or Divergent?

Our final discussion point is how long the similarities or differences between the three types or 19 systems will continue. As this study shows, the differences between developed and developing systems are converging which implies that the patterns of teaching and research is becoming similar across countries. This may be true at the system level (e.g., teaching and research in a country), institution level, or academic unit levels in an institution; however, this may not be true between academics. The typology of this chapter pays attention to systemic differences across countries, but how the teaching and research differ across different levels is also of interest.

At the individual academic level, the employment status and assigned activities will be increasingly divergent though the divergent activities might be integrated at the department, faculty, or institutional level. This is because the division of labor will be widely applied in the work of the academic world. Universities will hire growing numbers of academics whose main job is either teaching or research service. Some academics work only on administration in the USA. In addition,

the differentiation between professors and administrative staff is decreasing in some administrative positions. For example, some PhD holders work only on student personnel. Are they academics or administrative staff? The border between academic and nonacademic jobs is not clear in many professionalized jobs on campus. The work of individual academics may increasingly diverge in the future.

On the other hand, teaching and research across academic units might converge which means that most academic units from the department level up to the institutional level will prefer to conduct both teaching and research. Therefore, the teaching and research functions are converging in most academic units. However, the details of teaching and research will differ across academic units. For example, some academic units will focus on the discovery of knowledge, while others will focus on the application of knowledge, though both units conduct "research." Teaching activities also differ across academic units—some units teach theoretical knowledge, while other units focus on practical knowledge; hence, teaching and research activities across academic units may diverge. Put differently, teaching and research may converge at the macro level, but both will be divergent at the micro level. Therefore, higher education researchers are urged to pay more attention to the details of teaching and research as well as to the formal activities of naming "teaching" or "research."

20.5 Concluding Remarks

This chapter developed a system model of teaching and research activities to conceptualize the CAP survey, then narrowed the model by focusing on how academics' perceptions and their activities are interrelated with each other and how they are influenced by contextual factors such as the historical origin of higher education systems and their management reforms. Based on these discussions, this study classified the 19 higher education systems by academic research preference and their actual time input in research using k-means cluster analysis. This study found that eight systems are research focused and most of them are in Europe, four systems are teaching focused, and the remaining seven systems are teaching-research balanced systems.

Although the typology produces similar results as proposed in the introduction to the book, some countries are in the different types. For example, we tend to assume that academics in the USA are balanced system, while those in Argentina are teaching oriented; however, this is not true among the full-time academics as this study has shown. This is because we narrowed the data to full-time academics in university sectors, so that systemic differences across countries were not considered in this study. Nevertheless, this study shows similarities and differences of teaching and research orientation of full-time university-affiliated academics across 19 systems. Most of our perceptual presumptions are supported by empirical data and statistical analysis, while some are not. The empirical study provides empirical and theoretical grounds for studying and comparing academics in different systems.

In addition, this study shows that many developing systems are moving from teaching-focused systems toward balanced systems through emphasizing research activities. This trend is highlighted in the case studies included in this book. By emphasizing research functions, the 19 systems are converging toward balanced or research-focused systems from the teaching-focused systems. Now, teaching and research are core functions in academic units regardless if the institution is teaching focused or research focused. The differences are not in the formal activity of teaching or research, rather the differences come from the details of teaching and research. Therefore, higher education institutions converge in their teaching and research on the one hand, but they diverge in the details of teaching and research activities on the other hand. Follow-up studies are recommended to pay more attention to the details of teaching and research in the future. In addition, follow-up studies might use the typology in their analysis of academics' perceptions and performance in variant contexts.

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Chapter 21
Teaching and Research: A Vulnerable Linkage?

Ulrich Teichler and Akira Arimoto

21.1 The Variety of Perspectives

The comparative project "The Changing Academic Profession (CAP)" brought together almost 100 scholars from various countries of the world. They collaborated for many years, even though their conceptual frameworks, methodological approaches and working styles were based on a bewilderingly wide range of disciplinary and paradigmatic biases as well as cultural backgrounds. This is eye-opening and creative in many respects. But it poses a considerable challenge to the editors of a book who seek to present a collection of parallel papers neatly following the same format and overarching framework.

The readers of the chapters of this book will discover manifold findings and interpretations. But they will not find a well-structured set of major results. It becomes the task of this final chapter to offer a selection of a few issues that stand out amongst these notions and observations.

21.2 In Favour of a Linkage but Not a Balance

The international comparative survey on the academic profession clearly suggests that the credo of the academic profession that is generally viewed to be indicative for the modern university has remained alive for about two centuries: Three quarters

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of the academics surveyed on average across countries point out in response to a corresponding question that they are interested both in teaching and research. Only about 10 % express a clear preference for teaching and a similar small proportion express a singular preference for research.

This does not mean, however, that academics favour research and teaching equally. It is not surprising to note that a stronger leaning or a clear preference for research is expressed by almost six out of every ten academic surveyed. A stronger leaning or clear preference for teaching is indicated by only slightly more than four out of every ten academics surveyed.

As one might expect, the latter is more widespread amongst academics at those institutions of higher education that are explicitly expected to put the prime emphasis on teaching but even at those institutions sizeable shares of the academics indicate a preference for research.

21.3 Slow Change over Time

In recent years, the research role of universities has been strongly emphasised. Top universities consider themselves to be in a competition to be or to become "world-class universities", strong in the research function. Also, the terms "knowledge society" and "knowledge economy" are more frequently employed in order to underscore the utility of research over teaching. Finally, the competition for quality and reputation is emphasised at the national level, whereby again the research function is more in the limelight than the teaching function. Thus, one could expect an increasing preference of academics for research.

A comparison of the findings of this study with the previous comparative survey undertaken in the early 1990s in fact shows that research is somewhat more strongly emphasised now than some years ago. A closer look, however, reveals that this shift has taken place on average across countries not at those universities that strive strongly both for teaching and research and are even in some countries called "research universities", but rather amongst academics at institutions with a prime focus on teaching. This finding reflects the "academic drift" of teaching-oriented institutions.

21.4 No Consistent Typology According to Country, Institutional Type or Career Status

The analysis of the views and activities as regards teaching and research in the framework of this volume started off with the assumption that one could observe three groups of countries: those with a clear dominance of research (e.g. Germany), those with a balance of teaching and research (notably Anglo-Saxon countries),

and those with a dominance of teaching (e.g. the Latin American countries). The findings of this study confirm some differences along those lines, but they are not consistent across all countries. Moreover, more striking differences are visible between subgroups of academics within those countries—for example according to career status, institutional type, the discipline or the individual job assignment. It is interesting in this context to note, as pointed out in the respective chapter, that only about half of the academics at universities in England are officially both in charge of teaching and research.

In analyzing the views and the actual activities of academics, we have to bear in mind that a balanced option for research and teaching is not an open choice for all academics across career status and institutional setting. Senior academics (in this study defined as professors and associate professors in US terms) at universities both in charge of teaching and research certainly are in the best position to choose whether they want to strive for balance between research and teaching or for an even stronger emphasis on research. In contrast, senior academics at institutions with a strong teaching emphasis—named "other institutions of higher education" in this study irrespective of whether they are called universities in some countries or have other names in other countries—might be inclined to underscore the teaching functions more strongly in consonance with more of the work time being spent on teaching. Actually, we note that a clear distinction between "universities" and "other institutions of higher education" according the terminology chosen here is visible in some countries (e.g. in terms of teaching load and resources for research), while the functional differences are small in other countries. Also, distinctions of preferences and working time are substantial in some countries and marginal in other countries. By and large, we note a relatively clear distinction of the views and activities in countries with higher education systems that are often described as "two-type" or "binary" systems, e.g. Finland, Germany and the Netherlands.

On average across countries, junior academics emphasise research more strongly and spend a higher proportion of their work time on research, but looking solely at such averages would be misleading. Junior academics at universities both in charge of teaching and research often have less room for manoeuvre in shaping their work tasks. In some countries, a stronger emphasis on research is expected in early career stages than in professorial positions, while in other countries, the work tasks as well as the views and activities of junior and senior academics are quite similar. In addition, a certain proportion of positions are characterised by a high teaching load, whereby the chances are limited on the part of those holding such positions to progress to senior academic positions.

21.5 The Precarious Balance of Work Time

The allocation of the actual work time is a conflicting arena. Frequently, teaching assignments and internal administrative and service functions are more highly regulated than research tasks and external service activities. This often reinforces the

notion amongst academics that they have to "fight" in order to allocate sufficient time for research (or external services as well). In this context, we have to take into consideration that customs vary substantially across countries and other dimensions as regards the extent to which academics spend more hours on their professional work than the official normal work time in their country. There are different customs by country, ranging amongst university professors—according to their own estimates—from more than 50 h weekly in Germany, Hong Kong and Korea to slightly less than 40 h in Norway, whereby strongly research-oriented professors are more inclined to work longer hours. On average across countries, junior academics as well as academics at other institutions of higher education are less inclined to work additional hours than university professors.

Occasionally, concerns are expressed that a balance of time devoted to teaching and research cannot be achieved anymore. On the one hand, voices are heard that a high teaching load, substantial needs of guidance and large student numbers do not leave sufficient time for research. On the other hand, a strong preference for research, reinforced in recent years by various factors, as pointed out above, is viewed as possibly leading to a neglect of teaching. In most of the chapters presented in the volume, emphasis is placed on averages—of all academics surveyed or subgroups, while it remains the task of further analysis to look at interindividual diversity. Looking at the time allocation on average of university professors and on average across the whole year, more time is spent on research than on teaching in all advanced countries, but this ratio varies substantially: between 1.1 times as much for research as for teaching in Portugal and Finland and 1.8 times as much in Australia. In three emerging countries, professors at universities both in charge of teaching and research spend more time on teaching than on research: most strikingly in South Africa, but also in Brazil and Malaysia.

21.6 Specific Issues of Teaching and of Research

Various issues have been addressed in the survey as regards teaching and as regards research. For example, the academics have been asked about the range of teaching modes they are involved in beyond merely lecturing in classes, e.g. individual guidance, e-teaching and learning, and supervising internships. In this respect, we note substantial differences according to country. Around 4.5 out of seven different modes addressed in the questionnaire are reported by respondents from Australia, Malaysia, Mexico and the United Kingdom, but less than three on average by respondents from Germany.

One of the key issues in the public debate about research in higher education has been in recent years the extent to which the goals of academic quality and social relevance are conflicting or compatible. The CAP survey did not explicitly address the linkages between these goals, but it asked the respondents to explain respondents' research approaches according to four possible objectives: to strive for the generation of original knowledge, to emphasise academic quality, to consider the

application of knowledge to real life settings and to apply knowledge to problems in society. Actually, most respondents underscored two or three of these objectives, whereby each of them was named by about six tenth of the academics surveyed. One can infer from these findings that many academics consider a broad range of research objectives and thrusts as compatible with each other.

21.7 Substantially Heterogeneous Academic Productivity

"Academic productivity" is the term widely employed in measuring research "output". The term, first, suggests that academic achievements with respect to teaching and learning hardly have any chance these days to be considered on equal terms with those in the area of research irrespective of the claims of balance and nexus between teaching and research. Second, the term underscores the popularity of measuring quality through quantitative measures.

Academic productivity in terms of publications and other "products" of academic work cannot be addressed in an international comparative study as sophisticated as assessment schemes in individual countries and institutions of higher education, because categories of high-quality publications vary by country. The respondents have been asked in the CAP questionnaire to name the numbers of books authored and edited, the number of articles published in books, academic journals, popular magazines, the number of research reports written, etc. over a period of 3 years.

The responses show that the frequency of publications differs strikingly between status groups and institutional types. Senior academics publish much more than junior academics, and, as one might expect, academics at universities more than those at teaching-oriented institutions. But even amongst the professors at universities both in charge of teaching and research, substantial differences are visible by country: University professors in Korea and Germany—according to the measures chosen in this study—publish about twice as much as university professors in Norway and the USA amongst the advanced and twice as much as well on average as professors in the emerging countries—thereby even four times as much as the university professors in South Africa.

21.8 By and Large Compatibility of Teaching and Research

The nexus between teaching and research has been explicitly addressed in the questionnaire with a few overarching questions. Three quarters of the academics state in response to a respective question that their research activities reinforce their teaching activities. The opposite question has not been asked whether their teaching activities reinforce their research.

Moreover, less than one quarter of all respondents respond affirmatively to the statement "Teaching and research are hardly compatible with each other".

This proportion, however, varies strikingly according to country. Problems of compatibility of that kind are stated by less than one tenth of respondents in Argentina and Brazil and slightly more than one tenth in Korea, Mexico, the USA, Italy and Norway. But more than half of respondents from Japan, more than four tenth in China and more than three tenth each in Finland, Germany and Portugal note problems as far the compatibility of teaching and research is concerned.

Certainly, it would be fruitful theme for a future study on the academic profession to explore what major problems of compatibility between research and teaching are noted. It would be interesting as well to explore why such a notion is so rare in some countries and so frequent in other countries.

21.9 Some Caveats

The individual chapters of this volume provide substantial contextual information that helps explain the variation of findings across countries. It would surpass the possibilities of this concluding chapter to summarise these interpretations appropriately.

The various chapters vary strikingly with respect to the aggregation or disaggregation of findings. Some chapters present primarily the results for all respondents from the respective country, in some cases in comparison to all respondents from other countries. Other chapters often point out differences according to universities and other institutions, senior and junior academics, respondents from various disciplines, differences by gender, etc. Actually, the proportion of senior academics (professors) amongst all academics at universities both in charge of teaching and research varies by country from less than 20 % to more than 80 %, and there are not smaller differences in the proportion of academics at other higher education institutions amongst all academics surveyed. This is not an issue of high or low return rates for different subgroups, but weighing was undertaken, and certainly not an issue of overall return rates, but rather that of a different composition of institutions and staff categories between countries.

The above named findings vary in many respects according to such subgroups, but the authors obviously assess the importance of analysis according to such subgroups differently. Some want to pay attention to the academic profession as a whole, while others consider the differences according to institutional type and career position so salient that one might question the notion that there is a single academic profession. The authors of the chapters take different views in this respect—in some instances obviously influenced by the diversity of findings in their respective countries.

It should be pointed out in this context as well that the views and definitions vary as to who should be viewed as belonging to the academic profession. The survey addressed here has included as a rule academics in charge of teaching and/or research who are employed by an institution of higher education full time or at least half time. In some countries respondents were included with an even lower share of

the usual work time employed in academia. Not included are academics with a lower proportion of their time active at institutions of higher education as well as academics in tertiary education sectors with programmes not at least equivalent to a bachelor. But these definitions do not guarantee comparable groups. For example, many doctoral candidates in some countries are employees at universities, while they are students in other countries. Some young teachers and researchers in some countries might be excluded because they are considered auxiliary staff or because contract-paid scholars are not counted as employees of higher education institutions, while their peers are included in other countries. As a consequence partly of these different notions and partly of real differences, we note that less than one quarter of the academics surveyed at universities in Japan and Korea are junior academics in contrast to more than 85 % in Argentina and Germany. Similarly, the proportion of respondents from other (teaching-oriented) institutions of higher education ranged from none (non-existing or not surveyed) via less than one tenth in Norway to a clear majority in Japan, Korea, Mexico, the Netherlands and Portugal. These definitions are salient for the result of the study. First, the question has to be raised whether the total responses by country are meaningful under these diverse configurations. Moreover, we have reason to assume that the nexus between teaching and research is weaker amongst persons active at institutions of higher education who cannot be viewed as the core staff.

We have to name further limitations of the study. The authors of only a few chapters embarked in thorough analyses of the interrelationships of the responses to the different questions posed. Moreover, the questionnaire survey as a whole had to make compromises and could not embark into a detailed analysis in each of the various thematic areas addressed. Finally, we have to bear in mind that information was collected only by asking the academics themselves to present their perceptions and views and to describe their activities. Subjective elements might be pervasive in some thematic areas, for example, in the description of the quality of their working conditions. Certainly, further analyses of the material addressed in this survey could be valuable, future questionnaires might address issues of the nexus between teaching and research more thoroughly, and a more complex mix of methods of investigation is certainly desirable for future research in the area.

Index

A
Academic board, 170, 171
Academic career, 65, 67, 95, 96, 135, 142, 144, 151, 154, 155, 160–161, 163, 172, 181, 182, 205, 214, 228, 239, 241, 256, 263–265, 269, 325, 344, 362, 371–373, 375
Academic culture, 42, 90, 151, 264, 272
Academic discipline, 18–19, 28, 62, 113, 183, 184, 191, 192, 214, 215, 237, 299, 306–308, 321, 326, 327, 329, 332
Academic field commodification, 300
Academic fields, 35, 36, 40, 41, 251, 299–303, 306, 308, 310, 312, 314, 317, 318
Academic freedom, 10, 65, 66, 81, 115, 150, 169, 170, 173, 181, 238, 257, 281, 282, 294, 340, 345, 358
Academic knowledge, 10, 18, 65, 66, 77, 139, 153, 167, 168, 187, 210, 211, 256, 282, 290, 291, 390, 393
Academic life, 2, 7, 8, 41, 77, 81–83, 167, 183, 211, 217, 222, 232, 243, 252, 290, 291, 306, 399
Academic management, 160, 170, 172, 203, 243, 244, 262, 384
Academic oligarchy, 92, 116, 384
Academic perceptions, 140–144, 149, 150, 153, 154, 162, 163, 165–167, 169–171, 178, 185, 186, 193, 194, 237, 256, 272, 382, 384, 385, 393, 394
Academic preference, 3, 7, 9, 24, 45, 56, 69, 70, 81, 108, 109, 140–142, 148, 149, 165, 166, 184–185, 191, 192, 194, 206, 209–212, 215, 237, 247, 286, 350, 373, 382, 385, 390, 393, 396
Academic productivity, 4, 11, 19, 79, 178, 180, 190, 191, 193, 206, 216, 229, 260, 272, 390, 399
Academic profession, 1, 15, 45, 61, 90, 119, 153, 182, 214, 224, 237, 265, 277–294, 319, 340, 357, 391, 395
Academic professionalism, 28, 154, 155, 160, 166, 167, 172
Academic quality, 38, 66, 105, 203, 230, 260, 263, 292, 300, 331, 372, 373, 398
Academic rank, 4, 95, 96, 103, 107, 108, 122, 124, 125, 140, 160–162, 165, 181, 201, 205–206, 217, 226–228, 263, 265, 343–368, 372, 374
Academic research, 3, 7, 9, 24, 45, 56, 69, 70, 140, 148, 149, 165, 184, 185, 191, 192, 390, 393, 396
Academic satisfaction, 1, 147, 214, 374
Academic tasks, 90, 97, 105, 111, 122, 126, 154, 156, 165, 241, 242, 247, 252, 253, 272
Academic unit(s), 18, 49, 51, 54–56, 90–93, 95, 105, 118, 151, 171, 288, 289, 345, 392–394
Academic work, 2, 15, 18–21, 40, 41, 66, 78, 83, 85, 90, 120–124, 139, 150, 153, 155, 156, 158, 160, 162, 165–167, 170, 171, 173, 174, 199, 202, 210, 212–214, 216, 233, 237–241, 249, 250, 255, 256, 262, 272–275, 299, 301, 303–304, 314, 317–336, 340, 342–348, 350, 353, 354, 357, 371, 372, 399
Academic workload, 96, 165, 273, 365, 367, 369, 370

J.C. Shin et al. (eds.), *Teaching and Research in Contemporary Higher Education*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 9, DOI 10.1007/978-94-007-6830-7,

Accountability, 98, 117, 149, 159, 203, 256, 272, 282
Administration, 8, 17, 18, 66, 90, 91, 97, 103, 107, 108, 116, 120, 138, 139, 143, 144, 161, 164, 169, 173, 181, 183, 184, 201, 203, 243, 248, 249, 255, 257, 275, 282, 321, 324, 327, 334, 348, 365–367, 385, 392
  hours, 2, 324, 374
Affiliations, 18, 81, 82, 96, 205, 214, 215, 217, 319, 321, 332, 339
The American academic professions, 299
Anglo Saxon type, 25, 26
Applied research, 4, 37, 38, 40, 63, 76, 91, 104, 120, 129, 130, 136, 188, 189, 353, 359, 382, 383
Appointment, 66, 67, 76, 90, 94, 102, 118, 124–126, 137, 163, 215, 221, 224, 256, 263, 264, 281, 292, 300–303, 305, 310–314, 317, 318, 330, 336, 340–347, 353, 368, 373, 374
Arbiters of faculty work life, 299–301, 317
Argentina, 5, 6, 9, 11, 24, 27, 37–39, 42, 237–253, 286, 290, 384, 385, 387–389, 393, 400, 401
Attenuation, 305, 309
Attractiveness of the profession, 319, 321, 372
Australia, 2, 3, 5–7, 9, 11, 23, 24, 26, 27, 29, 37–39, 42, 43, 136, 184, 286, 357–363, 365–370, 372–374, 385–389, 391, 392, 398
Autonomy, 89, 92, 96–99, 101, 102, 110, 116, 117, 156, 168, 171, 221, 243, 258, 273, 280–282, 294, 321, 322, 339, 382

B

Bachelor programs–Master programs/phases, 103
Balance between teaching and research, 1, 3, 11, 62, 65, 85, 109, 111, 118–121, 131, 171, 299–319, 333, 335, 347–350, 357, 362, 366, 371, 389, 390, 397
Basic research, 4, 36, 40, 139, 178, 188
Basic unit, 170, 171
Berlinguer, Luigi, 98
Bologna Declaration, 98
Book publication, 6, 44, 124, 191–193
Brazil, 2, 3, 5–7, 9, 11, 23, 24, 26, 27, 37, 38, 42, 43, 221–235, 282, 284, 286, 287, 289, 384, 387–389, 398, 400

C

Canada, 5–7, 9, 24, 27, 37–39, 42, 130, 273, 290, 335–342, 346–354, 384, 387–389, 391
Canadian higher education, 335, 338–340
CAP. *See* Changing Academic Profession (CAP)
Career mobility, 67
Career pathways, 256, 263–265, 274, 364, 365, 367, 371, 374, 375
Career stages, 114, 177–194, 199, 205, 302, 303, 305, 310, 318, 332, 397
Carnegie International Survey on the Academic Profession, 1, 23
Casati, Gabrio, 91
Cattedre (chairs), 93
Centralisation, 90, 92, 99
Changing Academic Profession (CAP), 2, 17, 37, 45, 62, 90, 114, 135, 153, 180, 208, 224, 237, 256, 277, 302, 320, 347, 357, 381, 395
Changing environment, 382–385
Characterization of research, 291
Civil servant, 66, 67, 90, 98, 101, 138, 263, 279
Cluster analysis, 381, 385, 386, 388, 393
Collective bargaining, 144, 340, 342, 344–346
Collegiality, 158, 168–170, 232
Commercially oriented research, 76, 188, 189, 269, 291, 328, 351, 353
Commitment to research, 101, 205, 222, 225–228, 367, 369
Comparative perspective, 35–46, 55, 65, 385
Compatibility of research and teaching, 80, 83, 166, 246–249, 271, 399–400
Compensation, 212–214, 240, 248, 263, 364
Competition, 3, 19, 30, 92, 95, 96, 104, 117, 156, 159, 160, 172, 256, 273, 275, 330, 333, 341, 344, 360, 396
Conceptualization of research, 285, 290–291, 293
Confucian tradition, 177
Convergence, 263, 392–393
Corporatization, 384
Corsi di laurea, 95, 98
Curricular diversification, 110
Curriculum, 22, 31, 45–56, 72, 73, 83, 118, 120, 127, 129, 130, 157, 239, 246, 262, 286, 287, 339, 342, 347, 350, 351, 382

D

Decentralization, 201, 202, 280
Decentralized approach, 338
Declaration, 98
Didactic autonomy, 97, 98, 102, 110
Differential rewards model, 127

Dipartimento (departments), 95
Diploma universitario, 98
Disciplinary research styles, 40–41, 249
Discipline, 4, 16, 45, 62, 93, 113, 140, 157, 181, 199, 237, 262, 291, 299, 321, 337, 358, 397
Diversification, 3–7, 21, 23, 28, 38–40, 89, 96, 109, 110, 137, 138, 201, 202, 241, 262, 319–334, 375, 384
Doctorate/Doctoral degree, 39, 63, 66–68, 93, 95, 96, 99, 132, 137, 206–217, 221, 223, 225, 228–230, 232, 234, 259, 263, 284, 290, 337, 340, 363
Domestic journals, 124, 180, 185, 192, 193
Dutch HBO, 113
Dutch Research Council, 117

E
Early career academics, 181, 182, 269
Economic development, 100, 158, 177, 178, 259, 359
Elite higher education, 20, 22, 29, 89
Elite institutions, 223, 225–227, 231, 232
Employment contract, 9, 123, 124, 126, 333, 342, 367
Employment status, 124, 384, 391, 392
Enrollment growth dilemmas, 216
Entrants, 300, 302, 306, 310, 312, 315, 316, 318, 372
Entrepreneurial, 101, 117, 147, 156, 161, 171, 173
European Union, 100, 119, 138, 321
Evaluation
  of research activity, 37, 101, 102, 157, 170, 290, 292–293, 319, 321
  of service activity, 102, 319, 321
  of teaching activity, 55, 86, 98, 110, 174, 261, 288, 289, 319, 321
Expansion of higher education, 8, 38, 56, 136, 137, 202, 338, 339

F
Facoltà (schools), 90, 91, 93, 94, 96, 99, 100
Faculty
  pesonnel systems, 364–365
  recruitment, 4, 21, 67, 90, 94, 95, 98, 100, 109, 139, 146, 147, 160, 258, 263, 284, 362, 372, 374
  unionization, 340
Fascism, 89, 92
Financial autonomy, 97
Finland, 5–7, 9, 24, 27, 29, 37–39, 42, 43, 64, 70, 73, 74, 76, 90, 105, 106, 118, 131, 135–151, 387–389, 397, 398, 400
Fragmentation of the academic profession, 157
Freedom of arts and sciences, 92
Freedom of teaching, 92
Functional differentiation, 120–121, 126, 130, 131, 392
Functional diversification, 89, 96, 109, 110
The Functions of academics, 61–64

G
Gender, 108, 123–126, 140–142, 162, 183, 191, 201, 215, 265, 281, 300, 301, 303, 308–310, 312–318, 321, 322, 324, 332, 346, 400
Generation, 4, 5, 8, 95, 96, 110, 178, 179, 187–189, 228, 238, 248, 249, 258–260, 302, 372, 373, 398
Gentile, Giovanni, 92
German type, 25, 26
Germany, 2, 3, 5–9, 11, 21, 23, 24, 26, 27, 29, 36–38, 42, 43, 61–86, 90, 105, 106, 131, 137, 337, 365, 385, 387–389, 396–401
Governance, 2, 8, 66, 90, 99, 100, 116, 117, 138, 153, 156, 158–160, 169–172, 174, 217, 232, 238, 239, 243, 245, 252, 255, 257, 262, 265, 281, 282, 383, 384
Government policy, 11, 114, 119, 136, 137, 159, 178–180, 184, 240, 279, 281, 322, 340, 341, 363, 384

H
Hard disciplines, 183–191, 193, 194, 245
Hard sciences *vs.* soft sciences, 183, 238, 251
Higher education
  development, 20, 28, 29, 177, 256–259, 284
  policy, 116, 338, 342, 361
  reform, 89, 92, 93, 172, 237, 393
Historical development, 11, 89, 91–94, 135–138, 335–341, 358–362, 381, 385
Historical evolution, 278–285
Horizental differentiation, 40
Hours
  administration, 2, 324, 374
  research, 2, 3, 6, 7, 9, 25, 104, 107, 122–124, 142, 143, 164, 185, 207, 242, 266, 303–317, 324, 366, 368, 370
  service, 2, 244, 275, 324
  teaching, 62, 72, 102, 103, 122, 123, 142–144, 164, 173, 208, 252, 263, 266, 272, 301, 303–314, 317, 366, 368–370

Humboldtian model, 19, 26, 115, 154, 170, 224
Humboldtian revolution, 154, 155, 172
Hybridism, 170, 173

I
Incompatibility, 107, 128
Institutional attitudes, 144–147
Institutional career, 110, 114, 160, 194, 226, 228, 263, 302, 305, 317, 375, 396–397, 400
Institutional differentiation, 39–40, 114, 223, 284, 294, 322, 339, 353, 392
Institutional governance, 2, 66, 100, 153, 169, 171, 172, 174, 217, 239, 262, 282
Institutional homogenization, 300
Institutional policies, 151, 180, 214, 216, 240, 251, 344, 350, 375
Institutional regulations, 74
Institutional type, 39–40, 47, 61–64, 74, 78, 84, 122, 123, 125, 126, 131, 266, 270, 271, 284, 300–303, 305–306, 308, 312, 314–318, 330, 339, 348, 396–397, 399, 400
Instructional method, 53, 56, 182, 185–187, 382
Instruction time, 103, 266
Internationalisation, 105, 256, 257, 287, 290, 293
Internationalization of teaching activities, 287, 290
International journal, 124, 127, 178, 180, 185, 190–193, 264
International profile, 226, 228, 290
International research collaboration, 83, 104, 105, 190–191
Istituti (institutes), 91, 93
Italian Constitution, 89, 97
Italy, 5, 6, 8, 9, 11, 24, 27, 29, 37, 38, 42, 64, 65, 72, 74, 76, 89–91, 95, 101, 103, 105, 107, 365, 386–389, 400

J
Job experience, 181, 183
Job satisfaction, 81, 82, 147, 150, 206, 214–215, 354, 374, 387, 390
Junior academics, 62, 64, 65, 67, 70, 71, 73, 74, 76, 77, 80, 84, 135, 141, 142, 151, 181, 182, 184, 186–189, 191, 192, 227, 397–401
Junior academic staff, 62, 64, 66–68, 70–72, 74, 75, 77–80, 85

K
Key performance indicators, 256, 260
Knowledge economy, 115, 120, 159, 168, 173, 178, 300, 333, 382, 396
Knowledge epistemology, 153, 155
Knowledge functions, 18, 31, 256
Knowledge production, 39, 156, 157, 160, 168, 180, 194, 249, 253, 382
Knowledge society, 3, 15, 17–18, 20, 22, 23, 28, 31, 77, 138, 159, 168, 173, 384, 392, 396, 399
Korea, 2, 3, 5–7, 9, 11, 23, 24, 26, 27, 29, 36–40, 42, 43, 177, 178, 180, 182, 183, 190–193, 273, 284, 290, 348, 365, 386–389, 391, 392, 398–401

L
Late career academics, 181, 184, 325
Laurea, 93, 95, 98, 99
Laurea magistrale, 99
Laurea specialistica, 99
Leadership, 67, 68, 98, 117, 138, 158, 169, 170, 173, 262, 354, 361, 364, 365, 367, 371
Logistic regression analyses, 303, 314

M
Malaysia, 5, 6, 9, 11, 24, 27, 37, 38, 42, 255–261, 263, 264, 275, 282, 287, 387–389, 398
Malaysian Qualifications Agency (MQA), 258, 261, 262
Malaysia Research Assessment Instrument (MyRA), 260, 262
Management of teaching, 158–160, 240, 288–289
Managerialism, 68, 117, 156, 168, 172, 280–282, 284, 288, 291, 292, 294
Market coordination, 117
Marketization and privatization, 28, 294, 300
Market rationality, 256
Mass higher education, 6, 89, 93, 97, 103, 353, 384
Massification, 21, 28, 38–40, 44, 136, 238, 245, 283
Mass oriented institutions, 222, 223, 226
Merit-pay programs, 202
Mexican academics, 205

Mexican higher education, 200–206, 210, 214, 217
Mexico, 2, 3, 5–7, 9, 11, 23, 24, 26, 27, 37, 38, 42, 200, 202, 203, 282, 284, 286–289, 398, 400, 401
Mid career academics, 182, 184, 186
Middle management, 170
MQA. *See* Malaysian Qualifications Agency (MQA)
MyRA. *See* Malaysia Research Assessment Instrument (MyRA)

N
Napoleontic (model), 115
The National Higher Education Strategic Plan, 255, 258, 262
National policy, 138, 274, 392
National Researcher's System, 100, 202, 206, 217
Neo-liberalism, 180, 383
Netherlands, 2, 3, 5–7, 9, 11, 23, 24, 26, 27, 29, 37–39, 42, 64, 71, 72, 74, 76, 79, 114–116, 122, 124, 125, 137, 365, 385–389, 397, 401
New economy, 156, 158
New public management (NPM), 116–118, 130, 156, 168, 172, 174, 256, 383
Nexuses between teaching and research, 192–193
Non-STEM fields, 44
Non-tenure track, 300, 310, 392
Northern Ireland, 320, 321
NPM. *See* New public management (NPM)

O
Open door policy, 93
Organisational and management work loads, 95, 102, 110, 119

P
Para-academics, 109, 139, 334
Pedagogical autonomy, 168
Peer-review, 106, 206, 260, 343
Performance agreements, 117
Performance-based evaluation, 180, 261
Performativity, 284, 292
Personnel ranking systems, 11, 364–365
Policy initiatives, 10, 11, 89, 90, 97–101, 178, 179, 184, 191, 193, 332, 340, 357, 362–363, 392
Polytechnic, 101, 135–137, 139–147, 150, 151, 158–166, 172, 202, 320, 321, 383–386, 391, 392
Portugal, 5, 6, 9, 11, 24, 27, 37, 38, 42, 43, 64, 74–76, 131, 153–174, 387–389, 398, 400, 401
Power concentration, 170, 172
Practically oriented teaching, 51, 52, 55, 56, 75, 103, 187, 327, 328
Preferences in teaching and research, 3, 45, 56, 69–73, 81–84, 106, 126, 140–142, 148, 163, 165, 184, 192, 246–249, 267, 272, 285, 286, 382, 385
Primary interests, 319, 321, 324–326
Private higher education, 257, 258, 283
Probationary period, 302, 364
Productivism, 156, 157, 172, 245
Productivity, 6, 94, 105, 118, 123, 156, 160, 172, 180, 194, 200, 206–209, 217, 229, 248, 249, 272, 273, 281, 330, 332, 333, 352, 375
Professional autonomy, 117, 171
Professional culture, 343
Professional identity, 37, 156
Professional knowledge, 117, 171
Professional training, 92, 269
Professore associato (associated professor), 95
Professore ordinario (full professor), 95
Professors, 3, 36, 61, 91, 120, 160, 179, 221, 238, 263, 282, 299, 324, 335, 364, 384, 397
Promotion, 1, 11, 36, 67, 90, 94, 104, 121, 160, 161, 165, 178–180, 182, 184, 192, 239, 249, 251, 256, 260–264, 272–274, 281, 336, 340, 342–344, 353, 364–368, 371, 374
Publication, 5, 6, 36, 40, 41, 43, 44, 47, 64, 65, 78, 79, 83, 85, 106, 122–127, 135, 156, 157, 178–180, 182, 190–194, 206–208, 217, 230, 241, 247, 258, 260, 261, 263–265, 271–274, 282, 284, 285, 290, 292, 299, 300, 303–318, 330, 352, 353, 368, 384, 387, 399
Public higher education, 66, 163, 203, 228, 257–259
Public policies, 158, 201, 203–206, 216, 242
Public research institutions, 63, 65, 100, 101, 223–227, 322
Public universities, 7, 101, 161, 172, 200, 201, 203, 221, 222, 233, 234, 255–275, 340, 341, 344

Q
Quality, 5, 8, 19, 38, 39, 66, 69, 74, 79, 85, 98, 100, 104–106, 110, 111, 118, 120, 127–132, 139, 146, 147, 149, 150, 159, 172, 179, 180, 193, 194, 199, 200, 203–205, 212, 222, 223, 230, 233–235, 240, 241, 248, 251, 253, 255, 256, 258, 260–263, 265, 268, 269, 272–275, 284, 292, 300, 320, 321, 324, 332, 334, 341, 347, 351–353, 372, 373, 382, 392, 396, 398, 399, 401
  assessment, 116, 160, 168, 171, 331, 340

R
Ranks of staff, 68, 121, 122
Recruitment, 90, 94, 95, 98, 100, 104, 136, 139, 146, 147, 160, 258, 362, 372, 374
Regional universities, 222, 224–229, 231, 232
Regulated professions, 91
Research
  activities, 11, 22, 31, 45, 56, 63, 79, 82, 89, 90, 93–97, 100–102, 105, 107–109, 111, 120, 127, 128, 142, 145, 160, 162, 164, 166, 182, 188–194, 201, 203, 205, 207, 209, 210, 212, 216, 217, 225, 226, 234, 238, 240, 241, 243, 246, 248, 251, 253, 256, 258, 262, 264, 265, 269–272, 274, 277–294, 322, 327, 341, 342, 346, 351–354, 365–370, 381, 382, 385, 391, 393, 394, 399
  collaboration, 83, 104, 183, 184, 188, 190–191
  and development, 16, 138, 179, 337, 341, 345, 358–362
  emphasis, 4, 11, 21, 24, 30–31, 44, 63, 69, 71, 76, 77, 81, 83, 85, 111, 139, 141, 146, 166, 167, 178, 180, 187, 224, 231, 255, 260, 264, 273, 324, 328, 362–363, 371, 397
  environment, 11, 102, 127, 147–150, 228, 352, 354
  funding, 42, 43, 68, 82, 83, 102, 118, 130, 148, 150, 178, 179, 188, 190, 191, 250, 253, 260, 275, 293, 319, 321–323, 331, 332, 340, 341, 353, 354, 360, 365, 366, 373, 392
  hours, 2, 3, 6, 7, 9, 25, 104, 107, 122–124, 142, 143, 164, 185, 207, 242, 266, 303–317, 324, 366, 368, 370
  infrastructure, 114, 119, 292–293, 341, 354
  mission, 272, 273, 337, 339–341, 350, 353
  orientation, 5, 7, 9, 21, 23–27, 29–31, 122, 123, 180, 193, 291, 304, 306, 308–310, 312, 314, 317, 363, 382, 388, 390, 393
  output, 43, 104, 105, 123, 124, 183, 261, 280, 281, 289–290, 293, 324, 329, 330, 352, 368, 382, 384, 399
  paradigm shift, 21, 22, 28
  productivity, 4–6, 11, 19, 35, 126, 127, 132, 178–182, 184, 185, 188, 191–193, 200, 204, 206, 207, 217, 240, 260, 270, 292, 309, 331, 336, 353, 384, 389, 392
  role, 35–44, 125, 126, 225, 396
  support, 37, 41, 42, 82, 102, 105, 131, 148, 150, 178, 188, 250, 259, 293, 304, 340, 341
  universities, 7, 9, 19, 30, 36, 40, 61, 114, 130, 132, 157, 173, 180, 181, 224–232, 258, 260–263, 265–267, 269–271, 273, 274, 284, 300, 308–310, 312–314, 318, 337, 353, 359, 360, 384, 392, 396
  vitality, 44
  work loads, 111, 119, 365, 371
Research Assessment Exercise (RAE) (UK), 324
Research-only contracts, 332, 368, 371
Research-teaching-learning nexus (R-T-S nexus), 19, 22, 31
Restructing of academic appointments, 300
Reward system, 11, 114, 120–121, 145, 181, 194, 242
Ricercatore (researcher/assistant professor), 95
R-T-S nexus. *See* Research-teaching-learning nexus (R-T-S nexus)

S
Satisfaction, 1, 81, 82, 84, 147, 150, 182, 206, 214–215, 249, 262, 265, 271, 272, 288, 293, 319, 321, 354, 374, 387, 390
Scholarly contributions, 41, 319, 321, 329, 330
Scholarship, 2, 3, 21, 22, 29, 30, 37, 40, 41, 44, 77, 78, 104, 113, 115, 121, 130, 132, 163, 167–168, 173, 185, 200, 204, 205, 210–212, 217, 260–262, 290, 291, 293, 304, 337, 341, 353, 362, 363, 366, 372, 373
Science, 4, 19, 36, 68, 91, 113, 137, 155, 178, 201, 223, 238, 259, 300, 329, 340, 359
Science, technology, engineering, and mathematics (STEM)
  fields, 41, 44, 125
  subjects, 124–126
Scientific autonomy, 168

Scientific productivity, 19, 44, 106, 111, 161, 229–230
Scotland, 320, 321
Senior academics, 62, 64, 67, 70, 74, 76, 79, 103, 135, 142, 182, 184–187, 189–192, 281, 371, 372, 374, 384, 397, 399, 400
Seniority, 136, 141, 142, 178, 192, 263, 272
Service, 2–5, 17, 18, 31, 44, 47, 68, 69, 81, 95, 96, 98, 100, 102, 107, 108, 113, 116, 130, 139, 143, 144, 146, 147, 151, 155, 159, 172, 181, 183, 184, 192, 193, 198, 205, 216, 223, 230, 232, 235, 243–245, 247, 252, 255, 259, 263, 264, 272, 275, 279, 293, 299, 300, 319, 321, 324, 327, 334, 340, 344, 345, 348, 351, 353, 359, 364–366, 385, 392, 397, 398
Sistema Nacional de Investigadores and highest degree (SNI-HD), 206–217
Social demand for higher education, 93, 94
Socially oriented research, 189, 328
Soft discipline, 183–194, 247, 251
Sorbone Declaration, 98
South Africa, 5, 6, 9, 11, 24, 27, 37, 38, 277–294, 387–389, 398
South African higher education, 283
State control, 138, 257
State monopoly, 90
State-university relationships, 136
Students, 1, 15, 39, 48, 62, 91, 114, 135, 154, 180, 201, 223, 238, 256, 281, 301, 320, 336, 358, 382, 398
Study degree(s), 56, 95, 113, 363
Study programmes, 90, 93–96, 98–100, 109, 110, 168
Synergy, 127, 190, 274
System model of teaching and research, 383, 393

T

Teaching
- activities, 1, 11, 15, 21, 45, 46, 51, 53–56, 73, 74, 85, 102, 103, 107–109, 120, 142, 170, 173, 181, 185–188, 194, 200, 207, 217, 233, 238, 246, 266–269, 272, 286–288, 290, 293, 326, 327, 342, 350, 351, 354, 382, 393, 399
- approaches, 75, 192, 391
- contents, 51, 52, 55, 185–188, 382
- correction, 304, 317, 318
- environment, 102, 148
- hours, 62, 72, 102, 103, 122, 123, 142–144, 164, 173, 208, 252, 263, 266, 272, 301, 303–314, 317, 366, 368–370
- infrastructure, 288, 293
- and learning, 20
- levels, 274
- mission, 259, 272, 353
- performance, 124, 233, 234
- quality, 104, 127, 130–132, 146, 147, 180, 193, 233, 240, 251, 265, 268, 340, 351
- and research profile, 81–83
- role, 373
- strategies, 51, 55, 56, 245, 252, 259

The Teaching–research continuum, 285–286
Teaching–research nexus (R-T-nexus), 19, 29, 31, 334
Teaching–research relationship, 199–200, 216
Teaching-stream faculty, 347, 354
Teaching work loads, 99, 102, 108, 110, 111, 371
Technology, 1, 41, 43, 55, 100–102, 130, 148, 149, 154, 155, 172, 173, 179, 186, 188, 189, 202, 205, 223, 245, 268–270, 275, 280, 288, 291, 293, 300, 322, 326–329, 334, 341, 351, 352, 359
Tenure, 11, 121, 123–125, 156, 160, 163, 179, 181, 182, 263, 302, 310, 312–318, 321, 336, 340, 342–347, 353, 354, 364
Tenure and promotion policies, 336, 340, 342, 344, 353
Tenure-stream faculty, 344, 354
Tenure-track, 136, 160, 163, 302, 310, 312–318
Third Stream funding, 320, 332
The Third Wave, 15–31
Time allocation, 108, 316
Time budget, 71, 81–83, 107–109, 184–185, 385
Time spend conducting research, 289
Training for teaching, 269, 288
Transformation, 5, 8, 202, 255, 262, 275, 286, 300, 339
Trends in academic work, 303–304
Type of appointment, 126, 301, 302, 310–313, 317
Typology, 5, 9, 23, 183, 222, 381–394, 396–397
Typology of institutions, 222, 385

U

UAS. *See* Universities of Applied Sciences (UAS)
United Kingdom (UK): England, 2, 3, 5–9, 11, 23, 24, 26, 27, 37–39, 42, 43, 49, 50, 52–54, 64, 65, 70–80, 85, 90, 102, 106, 107, 124, 136, 264, 284, 319–325, 328, 332, 333, 360, 383, 384, 386, 387, 389, 391, 392, 397, 398

United States (US), 3, 4, 7, 10, 36–38, 42, 49–56, 85, 138, 177–179, 181, 183, 192, 284, 290, 299–305, 307–313, 315–318, 341, 388, 389, 397
Unity of research and teaching, 79, 84, 85, 115
Universities of Applied Sciences (UAS), 63, 65, 68, 70, 71, 73, 80, 84, 86, 113, 114, 119–126, 129–132, 137
University
  autonomy, 89, 90, 96, 97, 99, 101, 158, 339
  functions, 17, 30
  governance structure, 116, 117
  managerialism, 281, 282, 284
  mission, 273
  personnel policies, 342, 354
  reform, 89, 90, 93–97, 245
  research, 7, 19, 30, 36, 40, 61, 69, 101, 116, 117, 119, 130, 157, 172, 173, 178–180, 223, 258, 260, 266, 269, 271, 284, 300, 308, 309, 313, 314, 336, 337, 340, 341, 352–354, 359, 360
  system, 22, 89–91, 115, 135, 136, 138, 158, 185, 240, 241, 246, 255–257, 262, 264, 274, 275, 392
  teachers, 19, 20, 22, 137, 138, 240, 242, 246, 340, 344, 347
  teaching, 80, 94, 110, 151, 155, 238, 245, 271, 343, 345, 359, 360
US. *See* United States (US)
Use of time, 9, 206–209

V
Value oriented teaching, 75, 186
Vertical differentiation, 39–40, 322
Vertical diversification, 96

W
Wales, 320, 321, 358–360
Working conditions, 69, 150, 216, 246, 249, 250, 253, 271, 272, 345, 354, 372, 373, 401
Working hours, 3, 71, 81, 82, 122, 123, 144, 185, 273, 365, 370
Workload, 2, 3, 95, 96, 99, 102, 107, 108, 110, 111, 120, 156, 165, 181, 185, 265, 266, 273–275, 284, 341, 346–348, 354, 364–367, 369–371
Work roles, 114, 120–127, 256, 274, 275, 299, 301–303, 310, 312–314, 317, 318