The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13

William K. Cummings
Ulrich Teichler *Editors*

The Relevance of Academic Work in Comparative Perspective

Springer

The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13

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
4. Commitment of the Academy

The audience includes researchers in higher education, sociology of education and political science studies; university managers and administrators; national and institutional policymakers; officials and staff at governments and organizations, e.g. the World Bank.

More information about this series at http://www.springer.com/series/8668

William K. Cummings • Ulrich Teichler
Editors

The Relevance of Academic Work in Comparative Perspective

Springer

Editors
William K. Cummings
Graduate School of Education and HD
George Washington University
Washington, DC, USA

Ulrich Teichler
INCHER-Kassel
University of Kassel
Kassel, Germany

ISBN 978-3-319-11766-9 ISBN 978-3-319-11767-6 (eBook)
DOI 10.1007/978-3-319-11767-6
Springer Cham Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014957634

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Contents

About the Authors

Akira Arimoto is the President and trustee of Kurashiki Sakuyo University (KSU) in Japan and Professor and Director at the Research Institute for Higher Education (RIHE) at KSU. Professor Arimoto was Professor and Director of RIHE at Hiroshima University and also at Hijiyama University. Dr. Arimoto is Professor Emeritus of Hiroshima University, associate member of the Japan Council of Science, and President of the National Association of RIHE. He is a member of the editorial board of the book *series Higher Education Dynamics* and a series editor of the book series *The Changing Academy*. His recent publications are included in many books: *National Innovation and the Academic Research Enterprise* (2010); *Changing Governance and Management in Higher Education* (2011); *University Rankings* (2011); *The Emergent Knowledge Society and the Future of Higher Education* (2012); *The Changing Academic Profession* (2013).

Elizabeth Balbachevsky is Associate Professor in the Department of Political Science at the University of São Paulo, São Paulo, Brazil, and Deputy Director of the University of São Paulo's Center for Public Policy Research (NUPPs-USP). She is a fellow at the University of Campinas' Center for Advanced Studies, where she collaborates with the Higher Education Research Group. She was a Fulbright New Century Scholar for 2005–2006 and an ERASMUS Mundus Scholar at the European Master's Programme in Higher Education (2009).

Bojana Ćulum is Assistant Professor at the University of Rijeka, Department of Education. Her main research interests have been in the field of higher education and civil society, particularly the university's third and civic mission, university role in local/regional development, as well as the role of academics as agents of social change. Her teaching follows service-learning pedagogy and covers themes in education, didactics, and qualitative research. She authored and coauthored several books, book chapters, and articles. She has been engaged in the ESF collaborative research scheme working on the project The Academic Profession in Europe: Responses to Societal Challenges (EUROAC).

William K. Cummings is Professor of International Education at the George Washington University, USA. He received his Ph.D. in Sociology from Harvard University in 1972. Since then, he has taught at the University of Chicago, the National University of Singapore, Harvard University, and the State University of New York at Buffalo. He is the author of *Education and Equality in Japan* (Princeton University Press, 1980), *Profiting from Education* (Institute of International Education, 1990) (with Gail Chambers), *The Japanese Academic Marketplace and University Reform* (Garland Publishing Inc., 1990), and *The Institutions of Education* (Symposium Books, 2003). He coedited *Scholars in the Changing American Academy* (with M.J. Finkelstein, Springer, 2012) and *Crossing Borders in East Asian Higher Education* (with G. Postiglione and D. Chapman).

Egbert de Weert is senior researcher at the Center for Higher Education Policy Studies (CHEPS), University of Twente, the Netherlands. Subsequently, he held positions at the University of Western Ontario (Canada), the Centre for Tertiary Education in the Netherlands, and the (Dutch) Advisory Council for Higher Education. His main research areas include the relationship between higher education and employment, human resources, and organizational and institutional changes in higher education. He coordinated the European project on the International Attractiveness of the Academic Workplace in 19 European countries and coedited the book *The Changing Face of Academic Life: Analytical and Comparative Perspectives* (Palgrave Macmillan 2009).

Mariela Ferreiro: Lic. Education (National University of General Sarmiento – UNGS, Argentina); postgraduate fellowship, CONICET-Argentina. Mariela Ferreiro is PhD candidate in the Interuniversity Programme in Education (UNTREF / UNLA / UNSAM). She teaches graduate courses in Educational Policy and is currently the Academic Coordinator of the Graduate Programme of University Policy and Management at UNGS.

Jisun Jung is postdoctoral fellow at the Faculty of Education at the University of Hong Kong. She received a Ph.D. from Seoul National University, Korea, in 2011. She is involved in the international comparative research project "The Changing Academic Profession". Her current research focuses on research productivity of academics, academic career development, and university ranking.

Soo Jeung Lee is a researcher in the Educational Research Institute at Seoul National University, Korea. Her research interests are research performance and collaboration in academic profession, knowledge transfer, academic capitalism, social contribution of higher education, and education policy. She has published in international journals like *Higher Education*, *Studies in Higher Education*, and *Scientometrics*. In 2014, she was awarded a research fellowship of the Alexander von Humboldt Foundation.

Liudvika Leisyte is Professor of Higher Education at the Center for Higher Education Studies at the Technical University of Dortmund in Germany. She holds a doctoral degree from the University of Twente and has extensive experience in studying academic work, higher education, and research governance as well as transformation of universities. Her interest in quality enhancement in higher education is witnessed through more than ten years involvement in the EUA IEP programme as team coordinator. Liudvika further has been the coordinator of the IBAR Dutch project team in 2010–2013 at CHEPS, University of Twente, studying institutional quality enhancement mechanisms in seven European countries. Liudvika is a member of the Editorial Board of Higher Education Policy.

Marion Lloyd is chief project coordinator for the General Directorate for Institutional Evaluation at the National Autonomous University of Mexico. Before joining UNAM in 2011, she worked for 15 years as a foreign correspondent in Latin America and South Asia for *The Chronicle of Higher Education*, *The Boston Globe*, and *The Houston Chronicle*, among other publications. She holds a master's degree in Latin American Studies from UNAM and a B.A. in literature from Harvard University.

Mónica Marquina is a senior Professor at the National University of General Sarmiento, Argentina. She is the former head of the Education Department of the Institute of Human Development and current Academic Secretary of the Institute. She holds a doctorate in Higher Education from the University of Palermo, Argentina, and a master's degree from Boston College's Higher Education Administration Program (USA). She has authored books on the Argentinean university system, chapters and articles on educational policy, higher education policies, academic profession, and comparative education in local and international journals and books. She holds the post of a General Secretary of the Argentinean Society of Comparative Studies in Education (SAECE).

Imanol Ordorika is General Director of institutional evaluation at the National Autonomous University of Mexico. He is also a Research Professor at UNAM and a member of the National System of Researchers, specializing in international higher education policy and university governance. He holds a Ph.D. in social sciences and education from Stanford University.

Antigoni Papadimitriou is Assistant Professor and Director of the Management and Leadership program at the Hellenic College Holy Cross (Brookline, MA, USA). Before joining the Hellenic College, she was Postdoctoral Fellow in the Department of Educational Research at the University of Oslo, Norway. She was also a visiting scholar at the Center for Studies in Higher Education at the University of California Berkeley. In May 2011, she was elected as a member-at-large of the Council of International Higher Education in Association for the Study of Higher Education (ASHE). She is also a member of Comparative and International Education Society (CIES), Higher Education SIG (HESIG) Awards Committee, and member in several professional associations.

Gerard A. Postiglione is Professor and Head of the Division of Policy, Administration, and Social Science, Faculty of Education at the University of Hong Kong. He published over 100 journal articles and book chapters and 10 books. He was a researcher, consultant, and trainer for Asian Development Bank, Ford Foundation, Institute of International Education, Organization of Economic Cooperation and Development, United Nations Development Programme, World Bank, Carnegie Foundation for Advancement of Teaching, and the Ford Foundation.

Graciela C. Riquelme is Doctor of Education Sciences (University of Buenos Aires), CONICET researcher, Education Sciences Research Institute (IICE), and Director of the Education, Economy and Work Program. Full Professor of Economics of Education at the Faculty of Philosophy and Letters of the University of Buenos Aires. Graciela C. Riquelme was visiting researcher at the School of Education, Stanford University, at the Institute of Education of the University of London and at the International Centre for Higher Education Research, Kassel University.

Jorge Martínez Stack, a clinical psychologist, is a consultant to the General Directorate for Institutional Evaluation at the National Autonomous University of Mexico (UNAM). A professor in UNAM's psychology department for more than 30 years, he is now academic director of the Mexican Institute of Educational Orientation and Evaluation. He holds a M.A. and a B.A. in psychology from UNAM.

Ulrich Teichler is Professor at the University of Kassel since 1978; former Director for altogether 16 years of the International Centre for Higher Education Research, University of Kassel (INCHER-Kassel), Germany; former Dean of faculty; and Vice President of the University of Kassel for 2 years. He is a former chairman of the Consortium of Higher Education Researchers (CHER) (1988–1989 and 1992–1998) and former President (1998–2002), and a distinguished member of EAIR. His research areas are higher education and the world of work, international comparison of higher education systems, international cooperation and mobility, and the academic profession. His recent publications include *Higher Education Systems* (2007), *Universities as Centres of Research and Knowledge Creation: An Endangered Species?* (2008), *Higher Education and the World of Work* (2009), *University Rankings* (2011), and *Academic Profession in Europe* (2012).

Chapter 1
The Relevance of the Academy

William K. Cummings and Ulrich Teichler

1.1 Introduction

At the turn of the twenty-first century, frequent and profound questions are being raised concerning the purposes and accomplishments of contemporary higher education and learning. We note a lively debate on the current issues and on the future of higher education in the public policy domain, within the higher education system, and among researchers specialized on higher education as their theme of inquiry.

For a long period, issues of higher education have been addressed with little attention paid to the academic profession, i.e. those persons who are in charge of the daily life of research, teaching and whatever else is understood to belong to the core functions of higher education: How they interpret the tasks and challenges of higher education and what they do that actually shapes the processes and the outcomes of higher education. In recent years, however, the academic profession has become a focus of systematic inquiry. The comparative study of the academic profession in more than a dozen countries in the early 1990s, initiated by the U.S. based Carnegie Foundation for the Advancement of Teaching, often is considered

W.K. Cummings (✉)
Graduate School of Education and HD, George Washington University, Washington, DC, USA
e-mail: wkcum@gwu.edu

U. Teichler
International Centre for Higher Education Research, University of Kassel, Kassel, Germany
e-mail: teichler@incher.uni-kassel.de

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_1

the starting point of systematic worldwide inquiry (Altbach 1996). A more recent comparative study "The Changing Academic Profession", initiated by scholars from various countries, comprised even 19 higher education systems and also provided information on recent developments, such as the impact of internationalisation, the growing power of management, and the rising expectations as far as the relevance of higher education is concerned (see the major results in Teichler et al. 2013). Actually, various chapters of this volume draw either from both surveys or notably the latter survey. In addition, we note quite a substantial number of recent studies on the views and activities of the academic profession that focus on specific countries, specific career stages, or specific areas of context and activities.

In order to synthesize the state of knowledge and to identify key issues that deserve more attention in future analysis, an international conference "Changing Conditions and Changing Approaches of Academic Work" was held on 4–6 June 2012 in Berlin. The conference brought together more than 200 experts from more than 40 countries—among them many who had been active in research on the academic profession. The conference was arranged by the Centre for Higher Education Research of the University of Kassel (INCHER–Kassel). It was made possible by generous support from the German Ministry of Education and Research.

The coordinators of the conference came to the conclusion that a few themes were frequently touched upon by the various contributions to the conference that might deserve special attention. These eventually were reflected in the titles of two books comprising the major contributions, i.e. "Relevance of Academic Work in Comparative Perspective" (this book) and "Recruiting and Managing the Academic Profession".

The editors of this book are grateful for the substantial support provided by various institutions and persons: The Federal Ministry of Education and Research, Berlin and Bonn, for supporting the conference financially; the International Centre for Higher Education Research of the University of Kassel for arranging the conference, Katharina Benderoth and many of her colleagues for managing the conference as well as Christiane Rittgerott and Dagmar Mann for taking care of the editing process.

1.2 Relevance—From What Perspective?

Relevance is a term employed with a relatively positive normative thrust for addressing the outcomes of higher education in general or more specifically the outcomes of academia that impact society. Such outcomes might include the utilization of knowledge by graduates from institutions of higher education and the contribution of systematic knowledge to technological advancement, economic growth, societal well–being and cultural richness. It might also include the practical endeavors of higher education beyond the creation, preservation and dissemination of knowledge—for example, health services in university hospitals, community services, internships, or the direct involvement of academics and students in political processes.

Yet, the discourse on issues of relevance does not always have a positive tone. Political leaders and economic leaders might have very articulate expectations as regards what higher education should "deliver" and might assert that higher education is "esoteric" and "ivory–tower" if it does not follow suit. Parents and children might question the appropriateness of higher education if it is not geared to the expectations of "status seekers". In response, these external expectations might be viewed by academics as subordinating knowledge to "finalized" expectations, thus hindering the "pursuit of knowledge for its own sake", as well as the preparation of graduates for "indeterminate" work tasks. Finally, representatives of higher education often point out that they themselves may be "relevant" in a way that is neither called for nor desired by society: They call into question the prevailing norms of society, challenge conventional wisdom, and serve a critical function.

This book addresses the relevance issue in higher education primarily from the point of view of academics. Many contributions of this books draw from surveys aimed at understanding how academics perceive societal expectations and how they define themselves and their tasks. Their views are highly interesting in this domain, because on the one hand societal expectations as regards higher education have become quite explicit and pressing in recent years (see the overview of the discourses in Cummings 2006; Brennan 2007) and the academics, on the other hand, have enormous room for manoeuvre in reflecting on the objectives and in shaping the priorities of their professional work (see the overview of respective survey results in Höhle and Teichler 2013).

1.3 What Is "Relevant" Varies by Time and Place

In sketching the history of higher education according to its societal embedment we have to point out that the issue of relevance was high on the agenda from the beginning. By tracing the history of modern universities back to its European origins more than 800 years ago (see Rüegg 2000–2011), we note that the classical university was established to serve the needs of the Holy Roman Church in managing a large and geographically dispersed religious bureaucracy in the context of a primarily agricultural economy. Hence law, language, philosophy and theology were of high relevance. Over the decades, the religious centers diversified and the governments became the most important reference power of universities, while a similar range of disciplines, with a growing presence of medicine, dominated up to the nineteenth century. Since the nineteenth century with the emerging industrialization and modernisation, the relevant external powers became more diverse. Correspondingly the disciplines within higher education increased with a growing emphasis on the natural sciences and engineering. Over the latter half of the twentieth century we find a growing emphasis on the social and life sciences as well as medicine.

In recent years, we note an increasing variety of narratives as far as the disciplinary developments and their relationships to societal expectations are concerned. On the one hand, claims are made that global trends, for example, recently coined as heading

toward a "knowledge society" or knowledge economy, call for a growing emphasis on science, engineering and information technology. But if we take the distribution of students across disciplines as an indicators, we note a clear dominance of the natural sciences in the Soviet Union and its neighbors from the 1950s to the 1980s and recently in some Asian countries, and a strong emphasis on a balance between science and engineering on the one hand and the humanities and social sciences in most Western European countries. The dominance of humanities and social sciences in the U.S. is hardly mentioned in this discourse, and the Latin American countries seem to continue to adhere to a combination of an emphasis to the humanities and social science combined with a stress on the traditional professions, especially law and medicine. But irrespective of the diverse preferences as regards the composition and the role of the various disciplines, an increasing expectation of relevance has accompanied the growth of student numbers and research activities all over the world. In this framework, all disciplines are expected both to be relevant and not to confine them too much to the most obvious thrust of relevance, i.e. an emphasis placed on professional specialization.

1.4 Relevance and the Range of Functions of Higher Education

The history of higher education is often depicted as a vulnerable balance between exposure to the pressures to deliver what those in power like, on the one hand, against the struggle to secure space to pursue knowledge without instrumental pressures, on the other hand. The latter direction hopefully contributes to the well-being of society through enabling it to do something that was not expected, through innovation in the widest sense. The discourse on higher education and society, however, has never been "balanced" and "rational" in discussing the functions of higher education *sine ira et studio*, but rather has often been a heated and demagogic discourse. Often, external demands were so powerful that radical calls for "autonomy" and "academic freedom" were considered necessary as the antitheses. Most experts agree, though, that the university has never been an "ivory tower".

The notions of relevance in higher education might vary according to the different functions of higher education and the role attributed to these functions. For example, accounts of the academic professions in major encyclopedias of higher education describe the role of the key functions differently. On the one hand, Altbach (1991) sees higher education largely driven by its teaching and learning. On the other hand, Enders (2006) describes the academics as primarily shaped by their research identity that carries over to teaching and learning. We know that the respective views apply more convincingly to certain periods, certain countries and certain sectors of the higher education system. Beyond that, there are completely divergent views on whether higher education can be characterized as having a third function and what that third function actually is.

1.5 What Is Relevant Teaching?

In the discourse about the actual and the desirable character of teaching and learning, four dimensions are often referred to that touch upon the issue of relevance: an academic versus a professional emphasis, the emphasis placed on the cognitive domain versus a mix of cognitive and affective learning towards personality development, the attention paid to the acquisition of knowledge versus the output of the learning process, e.g. competencies, and finally the emphasis placed on learning through direct experience versus the learning in classroom settings.

First, in all disciplines, students have to learn the theories, methods and knowledge systems of the respective disciplines. The objectives of teaching and learning often were defined across disciplines. Rüegg (2011, p. 11) describes the founders' views of the University of Berlin early in the nineteenth century as follows: "The task of universities was to show how to discover knowledge by 'making apparent the principles at the basis of all knowledge in such a way that the ability to work one's way into any sphere of knowledge would emerge'." Disciplines, however, vary to the extent the knowledge system is clearly in the forefront or to what extent it is supplemented or confronted with logic and the practices of professional problem-solving. In some countries, as in the U.S., dichotomous terms such as liberal education vs. professional education or academic disciplines versus professional disciplines shape this discourse, while in other countries, the notions are less polarized. For example, higher education in Austria defines the role of university programs as academic and thereby laying the foundation for professional work, while other higher education programs have the task of professional preparation. While often the proponents of a strong role of academic reasoning are accused of advocating knowledge for its own sake and the proponents of professional reasoning as merely yielding to the customary "rules and tools" of professional practice without any critical and innovative perspective, most academics seems to believe—as surveys of the academic profession show—teaching and learning can combine a strong academic thrust with high professional relevance.

Second, study programs at universities in some countries are explicitly expected to concentrate on the cognitive domain. In these cases as well, study is assumed to affect the students' values and attitudes, but the teaching and learning processes is not expected to make learning beyond the cognitive domain part of the curriculum. "Bildung durch Wissenschaft" was the term in German idealism that influenced the Humboldtian "idea" of the university. In contrast, the explicit socialisation of a "well-rounded personality" is seen as a widespread ideal in the Anglo-Saxon world of higher education. For example, this was prominent in Martin Trow's (1976) understanding of "elite higher education".

Third, pedagogical ideas in recent decades have emerged in higher education that stress that the goal of teaching and learning should not be defined in terms of the abilities attained at the end of a teaching and learning process as exhibited on the job or in other life spheres rather than the acquisition of knowledge. Terms such

a "competences" (see Weinert 2001; Blömeke et al. 2013), "qualifications" and "learning outcomes" are employed to underscore such a call for output awareness in higher education. Views differ concerning whether or not such a shift from attention paid to the acquisition of knowledge towards attention focusing on competence leads to a stronger emphasis being placed on the relevance of teaching.

Fourth, study programs in many countries have been enriched in recent decades by activities aimed at ensuring experience beyond the usual classroom teaching and learning out of one's home university. These activities help the students to cope with the professional practice or other domains of practice. Learning in projects or similar modes of teaching and learning have become more common. Internships are not confined anymore to a few strong professionally oriented programs, and other modes of "experiential learning" are expected to serve a similar function. Finally, temporary study abroad has become a quite popular means of over-coming the possible narrowness of study programs at home by "learning by contrast", acquiring knowledge of the host country, increasing foreign language proficiency and enhancing inter-cultural understanding, whereby learning through direct experience outside the classroom setting is an integral component (see Kehm und Teichler 2007).

Irrespective of whether a distinction is made according to these three dimensions or not, we note a consensus in the analysis of the changing educational function of higher education in the recent five or six decades that the expansion from an average enrolment of the respective age groups of around 5 % in economically advanced countries in the early 1950s towards an average of about 50 % around 2010 has been accompanied with the expectation that higher education is more visibly useful for technological progress, economic growth, societal well-being and cultural enhancement. The process of increasing student enrolment in higher education was called "mass higher education" by Martin Trow (1974). The OECD employed successively from the 1970s to the 1990s the terms "short-cycle higher education", "non-university higher education" and "alternatives to universities" (see Papadopoulos 1994) to characterize the sector separate from traditional universities in which study was expected to more directly provide professional preparation and the transmission of applied knowledge. Eventually many institutions of that type in various European countries opted for the term Universities for applied sciences to indicate both the academic quality close to the traditional universities and the strong emphasis on application or relevance.

It would misleading to assume a wide division between the university sector appreciating academic highly and emphasizing a close link between teaching and research on the one hand and on the other hand the applied sector with its stress on the intended relevance of teaching and learning. According to the survey The Changing Academic Profession (see Teichler et al. 2013), 65 % of professors at universities underscored that they emphasized practically oriented knowledge and skills in their teaching—only 11 % less than was the case for professors at institutions of higher education with a dominant teaching approach.

In recent years—possibly reinforced by the growth of enrolments and the increasing belief that knowledge is essential if the labor force is to become a productive agent for technological progress and economic growth—the call for the relevance of teaching and learning is ever more frequently invoked. The popularity of the term "employability" (see Yorke 2007; Vusakovic 2007) certainly signals a call to higher education to subordinate teaching and learning to the presumed demands of the employment system.

The discussion in higher education suggests that some academics are ready to accept such a call. Others, in opposition to such demands, call for the preservation of academic freedom in such a way that students are freed from direct measures of relevance during the course of their studies. However, a sizeable minority of academics seem to have a different understanding of relevance. They suggest the most relevant education a university can provide is one that stresses a broad education and critical thinking, as was articulated by the English pedagogue, Cardinal Newman, in The Idea of the University: "A useful education is one that teaches some mechanical art or some physical secret. A liberal education develops the whole man." (Newman 1992). Similarly, Sir Alexander Hamilton elaborated on the concept of a liberal education:

> …An education in which the individual is cultivated, not as an instrument towards some ulterior end, but as an end unto himself alone; in other words, an education, in which his absolute perfection as a man, and not merely his relative dexterity as a professional man.

1.6 What Is Relevant Research?

It is generally assumed that the role of research in higher education in the modern Europe was strongly shaped by the "idea of the university" formulated by Alexander von Humboldt that ought to be incorporated into the University of Berlin founded in 1810. The call for the "unity of research and teaching" certainly spread all over the world, while the other key principles of "solitude and freedom" as well as the "community of scholars and learners" might have a less persuasive influence all over the world. Knowledge was assume to unfold its potential only, if there was a freedom of research, teaching and learning and this also meant freedom from the state and the church in contrast to the highly directive higher education reform in France some years earlier. Most scholars interpreting these concepts came to the conclusion that academic freedom implies the right of scholars to pursue knowledge for its own sake, but that free academic pursuit eventually would turn out to be more relevant for the "nation" than academic endeavors within a dirigiste regime of higher education.

While the Humboldtian ideal of research was formulated at a time when the principles of philosophy still were expected to guide the principles of research across disciplines, we note, first, the spread of the natural sciences in the universities during the course of the nineteenth century. Second, disciplines with a strong "functional" paradigmatic framework, such as engineering as well as economics and business grew. They remained outside the traditional universities in many countries

for a long time, for example Germany, but they became an integral part of the newly emerging university systems in the United States, notably through the Land Grant universities, Russia and Japan. The American notion of the more practical nature of research was not confined to these disciplines: According to Daniel Boorstin (1962), the American character was not as inclined as its European forebears to commit to deep reflection on the why's of natural phenomena but more inclined to tackling practical challenges such as improving the technology related to the how's—how to harvest cotton, how to erect bigger and safer bridges to span turbulent rivers, how to eradicate cholera.

Yet, the view gained enormous support among academics of many disciplines that research was needed and would be qualitatively most excellent, if it was kept free of pressures for relevance. In many countries, the universities being equally in charge of higher education and research were understood to have their stronghold in "basic research", and support schemes for basic research were established in many countries as deliberately separate from research under the regime of relevance and application.

Experts agree, however, that basic research clearly embarking in unforeseen knowledge creation free from pressures of relevance became an "endangered species". This is certainly to a considerable extent due to the growing interests of economy and society of receiving useful knowledge. Certainly, the vast industrialization in the nineteenth century was a major trigger, and the Nobel Prize can be viewed as both the highest symbol of academic excellence and as part of industrial history. The race for constructing an atomic bomb in the 1930s and 1940s is seen both as a dilemma in the relationships between basic and applied research as well as in the ethics of research. The Allied powers of World War II often have attributed their military success to the strength of their applied research. The cold war competition in space research is another story of linkages between politics, military regimes and applied research. When the paradigms of the cold war lost momentum, the term "knowledge economy" was the next slogan calling for the priority of application. But apart from the specific undercurrent of that slogan, many experts point out that the universities have moved from transmitting and preserving knowledge to producing knowledge as a direct productive element of society (Etzkowitz 2001; Scott 2006).

But there were also developments in the logic of research tilting towards the erosion of a clear distinction between basic and applied research. Notably, the discourse on "mode 1" and "mode 2" research spreading during the 1990s called such a clear divide into question (see Gibbons et al. 1994; Nowotny et al. 2001).

For many years, calls were made for a "balance" between basic research and applied research. For example, Vannevar Bush (1960), who was one of the founders of the U.S. National Science Board, developed an eloquent exposition of this argument: Basic to applied to development. But over the years, funds allocated to applied research and development exceeded those allocated to basic research to such an extent that most scholars considered the call for "balance" as a lost cause.

Views differ, however, on whether the allocation of funds is a convincing indicator in this respect. Academic approaches and the search for the enhancement

of knowledge irrespective of technological, economic and societal expectations are viewed by some experts as being relatively strong; this is because academics are given the strongest influence in defining the criteria for "quality" even under the growing pressures exerted by industry, governments and university managers to enhance utility and efficiency (see Kogan et al. 2000). The increased competition among research universities to be visible in international rankings as "world class" universities seems to reflect the popularity of a mix of criteria, where the role of the intrinsic value of academic quality and that of utilitarian research are interwoven.

Turning again to the comparative study on The Changing Academic Profession, we note that many academics consider the "high expectations of useful results and application" as "a threat to the quality of research". This was stated by 52 % of the professors at universities that emphasize both teaching and research and by 46 % of the professors at institutions of higher education predominantly in charge of teaching. When asked to characterize their primary research activities, however, many academic characterize their research as both theoretically and practically oriented. Actually, of the professors at the universities that emphasize both teaching and research 60 % described their primary research activities as basic and theoretically oriented, 68 % as applied and practically oriented, 20 % as commercially oriented or towards technology transfer, and 47 % as socially oriented or as intended for the betterment of society. Among professors at institutions that were primarily focused on teaching, the emphasis on basic and theoretically oriented research was somewhat less frequent (49 % on average across countries). But other approaches were also prominent: 79 % stressed an applied focus, 25 % were commercially oriented and 49 % were socially oriented (see Teichler et al. 2013).

1.7 What Is Relevant Service?

While research as well as teaching and learning are undisputed functions of higher education, we note a controversial discourse whether a third function of importance can be named and, if so, how it could be characterized. In some countries, legislation or other regulations name activities close to research and teaching as third functions, e.g. technology transfer or continuing professional education. Moreover, some regulations of that kind addressed the cross-cutting meta-functions, e.g. serving the quality of opportunity.

In recent years, along with the growing pressure on higher education to demonstrate a visible relevance to society, the view has spread that a third function can and has to be named alongside teaching and research. Macfarlane (2005) pointed out five different interpretations of the nature of these third mission activities. Culum et al. (2013, p. 175) summarized this classification as follows: "(I) administration—taken negatively in general, with third mission activities seen as increasing the burdens on academics, (II) customer service for students and business organizations, (III) collegial virtue—as a moral obligation in supporting colleagues, (IV) civic duty

as in doing voluntary work or outreach for the benefit of the local community, not necessarily connected with scholarly expertise, and (V) integrated learning which connects academic study work with community based projects and internships, carried out by students rather than by academic staff (e.g. academic service learning, social internships)."

This list certainly does not completely cover all the key issues discussed in various countries in the discourse on the tasks and activities of higher education beyond teaching and research. For example, no mention is made of the long established health service offered at university hospitals. Also, direct involvement in the political process is widely held as the task of the universities in Latin-American countries. On the other hand, activities such as internships are often understood as integral part of the teaching and learning domain.

In a review of the themes of the third function in various countries, Culum et al. (2013) identify three priorities:

- Relationships between higher education and industry/business beyond the teaching and research activities, where activities such as technology transfer and consultancy could be viewed as a third function.
- University civic links with community, e.g. direct involvement in the improvement of living conditions in the local community. Often, education for citizenship is an important theme as well.
- Activities—education, research or beyond that—to contribute to sustainable development, whereby a broad range of societal needs might be the target of these activities.

Obviously, no generally agreed term has developed for this area; the reference to the third function is kind of pointer to an area where there is a lack of agreement. If at all, the term "service function" has gained some popularity. In the framework often reference is made to the U.S. higher education expert Ernest Boyer (1990) who underscored the three "holy pillars" of academic work: teaching, research, and service. Ernest Boyer argued that these pillars represented different modes of scholarship that academics might combine in different degree depending on their personal preferences as well as the needs of the particular setting where they worked.

The term "service" met with reluctance by some experts, because it is often employed—as for example in the classification by Macfarlane (2005)—not only for elements that could be understood as outputs of higher education, but also for the internally directed services within the higher education system.

Whatever priorities and delineations we note in the discourse on the third function of higher education, issues are addressed as a rule that are linked to the outside world und understood to be "relevant" by definition. There are at least two points of caution: Those in higher education might consider activities as important for society that are hardly viewed as highly important by external stakeholders. Moreover, representatives of higher education might be involved in activities beyond teaching and research that have no sound knowledge basis of teaching and research;

according to a widespread view, activities could legitimately be called third function, service function etc. only, if they are clearly nourished by the knowledge creation, dissemination, and preservation functions of higher education; otherwise they should be understood as private activities of persons who happen to be academics and students alongside.

The lack of widely agreed concepts and terms make the study of the third function of higher education in large-scale surveys almost an impossible task. Thus, it is not surprising to note that a clear reference to the third function is made in the Changing Academic Profession survey only in a question about civic involvement of academics. Accordingly, only about 5 % of senior academics indicate that they have been substantially involved in the previous year in local, national or international politics, while about one third have been members of community organizations or have participated in community-based projects.

1.8 The Changing Context

What is behind these differences in the perception of the academy, especially the differences over time? Chapter 2 outlines several of the major trends that characterize the changing context of the academy: the globalization of the world economy including the international mobility of talent, the emergence of the knowledge society, the massification of higher educational systems, and the increased vigilance related to the use of public funds. Though with regard to public funds, there is indeed a complex pattern. In both East Asia and Latin America public funding has tended to increase whereas in the Anglophone countries the opposite trend is apparent. An extreme case of decline is Greece (as reported in Chap. 3).

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. In many countries the academic profession is ageing, increasingly insecure, more accountable, more internationalized and less likely to be organized along disciplinary lines. It is expected to be more professional in teaching, more productive in research and more entrepreneurial in everything. In many places (as discussed in Chap. 4) the very definition of an academic has become ambiguous as have the boundaries between academic jobs and the jobs of other professionals, both within and beyond the walls of the academy.

1.9 Differentiation of Academic Workplaces and Roles

Perhaps the most frequently mentioned recent trend in higher education has been its massification, that is, the shift from the provision to a small elite group to the provision for most if not all of the age cohort. With the expansion of higher

education has come increasing differentiation (Chap. 5), increasing expectations from society, and the evolution of professional roles that may take academics away from their original disciplines towards new forms of identity and loyalty. At the same time, knowledge has come to be identified as the most vital resource of contemporary societies, and many nations have taken great strides to improve their capacity for knowledge creation and application (Chap. 6). This new devotion to knowledge has both expanded the role of the academy and challenged the coherence and viability of the traditional academic role. As discussed in the introduction to this chapter, a prominent trend in recent years is the quest for greater relevance.

1.10 Dimensions of Relevance

Most of the latter chapters of this book explore different dimensions of relevance. Postiglione et al. (Chap. 7) highlight the relations of the coordination of academic systems to relevance, suggesting that the relations may differ depending on whether an academic oligarch, statist, or model is in place. They argue that the market model is associated with the most intrusive signals and hence with the least attractive academic environment, yet it also may be associated with the greatest responsiveness.

Lee (Chap. 8) focuses exclusively on the research side; is the classical distinction between basic and applied research still valid? What factors are associated with greater productivity and in particular what is the role of collaborative research involving partners who are in and outside of the academy?

Culum (Chap. 9) explores the service role of the academy. What is it? How important is it for academics? What factors dispose academics to engage in service? While much has been written about teaching and research, 'service' has been highlighted less in the academic world. Service is still a vaguely defined concept—or scholarly discipline—and its conceptualization has been an on-going process. Some argue that the value of and commitment to (community) service remains on the margin of reality and academic debate, and that it is still searching for a broader and a more intense scientific discourse.

Jung (Chap. 10) considers gender differences in the relevance of academic work. Are females more inclined to be responsive to clients both within academia (students) and outside? This study includes cases in five countries (Australia, Brazil, China, England, and the United States) in order to observe if the results are similar across different systems. The results show that there still exist differences between genders in terms of their educational background, employment status, and working institution. As well, regarding research scholarship, male academics have more involvement than female academics. However, female academics in the junior group and the soft disciplines are actively involved in research scholarship.

1.11 Trends in the Emerging Countries

The final chapters of the book consider the changing meaning and importance of relevance in the emerging countries. These systems start from a low enrolment ratio, but they are expanding with the infusion of new resources. This opens up new opportunities, but also leads to conflicting pressures. Arguably the universities in Latin America and East Asia start from a base of high relevance, at least in teaching. The curriculum is focused on training for the professions—in East Asia a bias to engineering; in Latin America a bias towards law, business, medicine.

But as these nations seek to develop, there is a group of scholars connected with international standards and therefore part of the global academic community (Marquina, Chap. 11). This sector, that is called "elite", has a considerable distance from the rest of academics in terms of working conditions, productivity and perceptions of their profession. This distance is significantly lower in mature countries. The comparison shows a significant difference between the elite group and the rest for each of the six countries, a difference that is not as significant in mature countries taken in the aggregate. This would be a major dynamic that reduces the difference in the academic professions of the mature and the emerging countries.

Stack et al. (Chap. 12) focus on the policy level related to the new emphasis on research, specifically contrasting Brazil and Mexico. Of the roughly dozen Latin American universities that figure in the international rankings, half are Brazilian, while just one is Mexican. This disparity is largely the result of the differences between the two countries economic development models. Since the 1960s or before, Brazilian higher education policy has focused on developing a competitive research sector as part of a broader strategy for economic development. In contrast, Mexican government policies have largely focused on increasing access to higher education, with limited investment in science and technology. Such differences appear to have an impact on the perceptions of academics in both countries toward their profession, as well as in their scientific production.

Riquelme (Chap. 13) follows up with a case study of Argentina, pointing out how there are big differences between universities with respect to their engaging in technology transfer partnerships with outside entities. The production and circulation of knowledge among professors is a reflection of different teacher-researcher activities, which vary according to the university and field they belong to. The authors identified four functions carried out by universities and their groups: research (R), teaching (T), extension (E) and transfer (Tr). The specific characteristics and scope of these four types of activities are in turn modeled by the institutions' tradition, their particular traits and status in the field as well as their connection to—according to each case—social and productive demands from local, regional and even the national environment.

Finally Balbachevsky (Chap. 14) provides an overview on the future of the Latin American model. Which among Argentina, Brazil, and Mexico will achieve the greatest progress towards excellence and relevance?

1.12 Conclusion

The chapters of this book were prepared for a special conference in Berlin seeking to capture the major highlights of three different comparative higher education research projects. Most draw explicitly on data from these projects. The focus of this volume is the relevance of the academy. A second volume is in preparation focusing on academic careers and on academic perceptions of the management of higher education.

The early chapters of this book focus on the relevance debate in the more advance countries. They report a strong bias by academics towards instruction that grapples with real-life settings and thus in that respect is relevant. Academics also espouse a determination to conduct research that is socially oriented and intended for the betterment of society. While academics strive for relevance in their teaching and research, they appear reluctant to devote time or effort for the dissemination of the findings from their research; it would appear that the increasing demands on academics related to their teaching and research obligations as well as the failures of the research system foster this reluctance.

In contrast with the academics of the more advanced societies, those in the emerging countries, most notably Argentina, Brazil, and Mexico express a greater commitment to service. But in these same systems, a division is emerging between an upper tier of academics who are more focused on world-class research and instruction and a second level of academics who embrace service along with their teaching and research. It remains to be seen whether or not the international pressures for excellence will erode the inclination towards relevant service of the academies of the emerging nations.

References

Altbach, P. G. (1991). The academic profession. In P. G. Altbach (Ed.), *International higher education: An encyclopaedia* (pp. 23–45). New York: Garland Publishing.

Altbach, P. G. (Ed.). (1996). *The international academic profession: Portraits of fourteen countries*. Princeton: Carnegie Foundation.

Blömeke, S., Zlatkin-Troitschanskaia, O., Kuhn, C., & Fege, J. (Eds.). (2013). *Modeling and measuring competencies in higher education: Tasks and challenges*. Rotterdam: Sense Publishers.

Boorstin, D. J. (1962). *The Americans: The colonial experience*. London: Penguin Books.

Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. Princeton: Carnegie Foundation.

Brennan, J. (2007). The academic profession and increasing expectations of relevance. In M. Kogan & U. Teichler (Eds.), *Key challenges of the academic profession (Werkstattberichte)* (Vol. 65, pp. 19–28). Kassel: International Centre for Higher Education Research Kassel.

Bush, V. (1960). *Science: The endless frontier*. Washington, D.C.: National Science Foundation.

Culum, B., Roncevic, N., & Ledic, J. (2013). Facing new expectations—Integrating third mission activities into the university. In B. M. Kehm & U. Teichler (Eds.), *The academic profession in Europe: New tasks and new challenges* (pp. 163–195). Dordrecht: Springer.

Cummings, W. K. (2006). The third revolution of higher education: Becoming more relevant. In Research Institute of Higher Education (Ed.), *Reports of changing academic profession*

project workshop on quality, relevance and governance in the changing academia: International perspective (pp. 209–222). Hiroshima: Hiroshima University, RIHE.
Enders, J. (2006). The academic profession. In J. F. Forest & P. G. Altbach (Eds.), *International handbook of higher education* (pp. 1–21). Dordrecht: Springer.
Etzkowitz, H. (2001). The second academic revolution and the rise of entrepreneurial science. *Technology and Society Magazine, 20*(2), 18–29.
Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., & Scott, P. (1994). *The new production of knowledge*. London: Sage.
Kehm, B. M., & Teichler, U. (2007). Research on internationalisation in higher education. *Journal of Studies in International Education, 11*(3–4), 260–273.
Kogan, M., Bauer, M., Bleiklie, I., & Henkel, M. (Eds.). (2000). *Transforming higher education: A comparative study*. London/Philadelphia: J. Kingsley Publishers.
Macfarlane, B. (2005). Placing service in academic life. In R. Barnett (Ed.), *Reshaping the university: New relations between research scholarship and teaching* (pp. 165–177). Berkshire: Open University Press.
Newman, J. H. (1992). *The idea of the university*. New Haven: Yale University Press.
Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re–thinking science: Knowledge and the public in an age of uncertainty*. Cambridge: Polity Press.
Papadopoulos, G. S. (1994). *Education 1960–1990: The OECD perspective*. Paris: OECD.
Rüegg, W. (Ed.). (2000–2011). *A history of the university in Europe.* 4 Volumes. Cambridge: Cambridge University Press.
Rüegg, W. (2011). Themes. In W. Rüegg (Ed.), *A history of the University in Europe. Volume IV: Universities since 1945* (pp. 3–30). Cambridge: Cambridge University Press.
Scott, P. (2006). The mission of the university: Medieval to postmodern transformations. *Journal of Higher Education, 77*(1), 1–39.
Teichler, U., & Höhle, E. A. (Eds.). (2013). *The work situation of the academic profession: Findings of a survey in twelve European countries*. Dordrecht: Springer.
Teichler, U., Arimoto, A., & Cummings, W. K. (2013). *The changing academic profession: Major findings of a comparative survey*. Dordrecht: Springer.
Trow, M. (1974). Problems in the transition from elite to mass higher education. In OECD (Ed.), *Policies for higher education* (pp. 51–101). Paris: OECD.
Trow, M. (1976). Elite higher education: An endangered species? *Minerva, 14*(3), 355–376.
Vukasovic, M. (2007). Deconstructing and reconstructing employability. In E. Froment, J. Kohler, L. Purser, & L. Wilson (Eds.), *EUA Bologna handbook (part 1.4–2)*. Berlin: Raabe.
Weinert, F. E. (2001). Concept of competence: A conceptual clarification. In D. S. Rychen & L. H. Salgnik (Eds.), *Defining and selecting key competencies* (pp. 45–66). Göttingen: Hogrefe.
Yorke, M. (2007). Employability in higher education. In E. Froment, J. Kohler, L. Purser, & L. Wilson (Eds.), *EUA Bologna handbook (part 1.4–1)*. Berlin: Raabe.

Chapter 2
The Conditions of Continuity and the Drivers of Change

William K. Cummings

2.1 Conditions and Drivers

As the CAP project evolved, there was increasing interest in linking these external contextual factors to developments inside higher education including to the academy. A fundamental analytical development was the recognition that, at least for some issues of interest, the continuity or stability of attitudes and behavior was more striking than the change. And this continuity can be linked to the relative stability of certain contextual factors. Hence a major thrust of this paper is to distinguish between those contextual factors that favor stability (and which we will call conditions) and those that are potential agents of change (and which we call drivers).

The CAP project at its inception proposed a six stage conceptual framework starting with the Drivers of Change and ending with Accomplishments and National Development (described in the original concept paper as outputs and outcomes). Table 2.1 provides my tentative revision/elaboration of the CAP model with Conditions of Continuity and Drivers of Change listed in the left columns and Outputs and Outcomes listed in the right columns. Each cell identifies a variable that may for a particular country in recent years be moving in a positive or a negative direction. Explicit in the conceptual framework is the logic of causality from the left columns to the right columns (though variables in a particular row

W.K. Cummings (✉)
Graduate School of Education and HD, George Washington University, Washington, DC, USA
e-mail: wkcum@gwu.edu

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_2

Table 2.1 Dimensions of the changing academic profession

Initial conditions	Drivers of change	System's response	Nature/ attractiveness of academic work	Accomplishments and national development
Ideology and culture				
Higher education perceived as a public good	Belief in the value of higher education for most citizens	Recognition that certain managerial reforms may enhance the effectiveness of higher education and research		
The state				
	Openness to market ideology as a principle for resource allocation	Increase in diversity of workplaces and goals of each place		
The economy				
Economic level	Economic growth	Continued support of sciences and engineering		Increase in higher education's share of national economies
	Shift to service economy with high tech manufacturing	Increased emphasis on the social sciences		Increase in salience of higher education for job preparation
	Increase in international trade	Increased provision of adult and professional education	Increase in use of technology for instruction and administration	Increase in scholarly productivity
	ICT revolution	Increased provision of graduate education		
System scale and demand				
Higher ed. enrollment (and number of academics) in early 1990s	Population growth or decline	Expansion of higher education	Decrease in student preparedness	Increase in educational level of the work force
	Higher perceived as leading to better jobs	Increased stress on inclusiveness	Increase in instructional accountability	

Funding and management				
State is main funder of higher education and academic research	Levelling off of government support for higher education	Increase in private sector's share of higher education and support for academic research	Increase/decrease in unit costs with corresponding impact on remuneration	Increase in private and social returns from participation in higher education
Belief in academic freedom	Increase in private sector's interest in higher education	Increase in Work Load (Nos. of Students, Administrative Tasks, Expectations for Service and Research)	Increase in proportion of academics who lack job security	Increase in social and commercial relevance of research
Belief that decisions affecting scholarship are the prerogative of the academic profession	Increase in aggregate support for research			Decrease in academic profession's institutional loyalty
Internationalization				
Reliance on "national" language for instruction	Internationalizing language of instruction and research	Increased acceptance of international students		Increased mobility within and across boundaries
		Increased internationalization of academic content and personnel	Increase in collaborative research	

do not necessarily influence others in the same row). This particular elaboration will certainly be modified as research progresses.[1]

The core of this paper considers the link between context and three of the main themes of CAP research: the teaching-research balance (one aspect of relevance),[2] internationalization, and institutional loyalty. These themes has been selected in order to highlight three contrasting patterns of "change." We suggest, in the case of institutional loyalty, there is a common pattern of decline across most of the CAP countries—hence there must be powerful drivers of change common to most higher education systems. In the case of the teaching-research balance, we see a flip-flop pattern: Several countries that were high on research in 1992 have shifted towards a greater emphasis on teaching. And vice versa several that were high on teaching have strengthened their emphasis on research. Underlying these complex shifts must be the influence of drivers unique to each national case. Finally the internationalization theme exhibits more continuity than change and can be best understood as a reflection of persisting conditions rather than the influence of new drivers of change. I will restrict my discussion to the ten countries for which we have data in 1992 and 2007. The following section introduces several of the most important contextual factors and provides a brief summary of the potential linkages between these factors and the aforementioned themes.

2.2 The Context

2.2.1 Higher Education Perceived as a Public Good

The starting point for our analysis is the mid-70s–80s when in most advanced countries higher education and academic research were mainly perceived as desirable public goods worthy of relatively generous state funding. Thus in this period in

[1] In Table 2.1, the T's refer to tables in the text. The B's, C's, and so on refer to questions in the common instrument from which data can be compiled in forthcoming research. It might be noted that the international indicators largely focus on variables in the first two stages of the CAP model whereas the data collected with the survey instrument should help us understand later dimensions, especially beliefs and the nature of academic work.

[2] Before considering these themes it is appropriate to ask who is a "member" of the academic profession, and who is not? In the early stages of the CAP project it was agreed that there are many members of modern society that identify with academia and share many of the values of academia but have employment conditions that differ from the IHE appointments of the mainstream academics. In systems with extensive public research institutes such as in France, most of the researchers in these institutes have an academic profile—and many teach part-time in IHE. So many of the staff in the research institutes have the attributes of academics. A second group worthy of inclusion in a definition of the academy are the expanding legion of part-time teachers: Some part-timers have second jobs outside of higher education and some have second or even third appointments inside higher education. While it might have been desirable to include the above groups in the CAP survey, in most systems it proved difficult to sample these groups, so the de facto sample became full and part-timers in degree granting institutions. We end up with the unresolved conceptual tension between the "true" boundaries of national systems and the imposed CAP boundaries.

most advanced countries upwards of 80 % of all higher education expenditures were provided by central and local governments, and this percentage was maintained even as system enrollments expanded. Similarly budgets for the support of academic research increased on the assumption that the basic research that took place in universities often led to the discovery of applications that could be developed into useful products.

2.2.2 *Level and Rate of Economic Growth*

Enabling the generosity of states was the overall health of most advanced economies into the early 90s. Of the ten countries/economies, as reported in Table 2.2, six have been world economic leaders for some time, two (Hong Kong and Korea) transitioned in the 1990s from a middle income position towards economic maturity (though it is notable that Hong Kong's GDP per capita exceeded that in all countries except the USA and Japan), and two are on the brink of this transition.

In terms of rate of economic growth over the 1992–2007 period, the second group is most notable experiencing very rapid growth and earning the title of Newly Industrializing Countries (NICs). Brazil and Mexico are sometimes described as near NICs; the actual size of these two economies has expanded but the population growth rate is also relatively high so the per capita income has not increased that much. The expansion in economies has been accompanied both by the expansion of academic systems and the upgrading of their research productivity. Economic growth, as it is associated with the expansion of productivity and the search for new markets, puts pressure on national academies to generate supporting technologies and relevant information, and the academic response may be to seek new partners in foreign settings.

Table 2.2 Indicators of GNP per capita, and export trade as a percent of GDP, 1992 and 2007

Country	GDP per capita 1992 (constant 2000 US$)	GDP per capita 2007 (constant 2000 US$)	Average % annual growth	Exports of goods & services as % of GDP 1992	Exports of goods & services as % of GDP 2007
Mexico	5,169	6,561	1.6 %	15	28
Brazil	3,282	4,290	1.8 %	11	13
Korea	7,841	15,158	4.5 %	27	42
Hong Kong	22,263	34,041	2.9 %	138	208
Australia	17,158	24,756	2.5 %	16	20
UK	19,728	28,915	2.6 %	23	27
Japan	34,801	40,707	1.1 %	10	18
US	28,402	38,701	2.1 %	10	12
Germany	20,566	25,249	1.4 %	24	47
Netherlands	19,354	26,889	2.2 %	55	75

Source: World Bank Economic Indicators

2.2.3 Globalization

The extent to which a national economy is integrated with the world economy as indicated by the total value of imports and exports divided by the Gross Domestic Product is one indicator of globalization. In 1992 all ten countries were substantially engaged in the world economy, though in relative terms the U.S. was towards the low end and Hong Kong was the most integrated. The U.S. nevertheless had a comparatively high level of military, social, and cultural integration.

Over the 1992–2007 period Hong Kong, the Netherlands, Germany, Korea, Mexico, and Japan have become relatively more engaged in the global economy whereas there has been little change for the U.S., the UK, Australia, and Brazil. Economic globalization places pressure on universities to internationalize curricula and to generate knowledge that enhances national competitiveness. These pressures could tilt the balance of academic work towards greater time devoted to the instructional role, notably for curriculum development and course material renewal.

2.2.4 Belief in the Value of Higher Education for Most Citizens

Steady economic growth spurred by globalization and the ICT revolution has led to an upgrading of the educational needs of the labor force. Employment rates and wages of the college educated are considerably ahead of those with lesser educational achievements. Young people and their parents have become increasingly aware of these labor market signals and thus have aspired for advanced education. Both governments and private sector educators have recognized this demand and have founded new institutions.

2.2.5 Massification and Expansion

Massification refers to the inclusiveness of higher education, systems with enrollment rates below 10 % being referred to as elite systems and those between 10 and 50 % described as mass systems. Table 2.3 provides information on the relative inclusiveness (as measured by the tertiary level gross enrollment ratio) and the scale (as measured by total student enrollment and total teaching staff) of the ten systems under consideration in 1992 and 2007.[3] Some systems by 1992 had gone a long way

[3]The UNESCO numbers are for all higher education institutions including junior colleges and technical institutes, whereas the CAP sample only includes institutions that minimally confer bachelor degrees. While the scope for the numbers is thus not strictly comparable, they are at this time the only available numbers.

Table 2.3 Enrollment in total tertiary education, gross enrollment ratios, and teaching staff, 1992–2007

	1992			2007			% increase in	% increase in
Year	Total tertiary	GER	Teaching staff	Total tertiary	GER	Teaching staff	total tertiary	teaching staff
Australia	559,365	0.40	28,417	1,083,715	0.75	34,413	94 %	21 %
Hong Kong	85,214	0.19	5,978	194,236	0.42	10,500	128 %	76 %
Japan	2,899,143	0.30	286,166	4,032,625	0.59	515,732	39 %	80 %
Republic of Korea	1,761,775	0.40	77,458	3,208,591	0.96	201,851	82 %	161 %
Brazil	1,591,176	0.10	134,403	5,272,877	n.a.	367,638	231 %	174 %
Mexico	1,302,590	0.13	134,424	2,528,664	0.28	274,618	94 %	104 %
Germany	2,033,702	0.35	279,806	2,278,897	n.a.	295,447	12 %	6 %
Netherlands	493,563	0.42	41,217	590,121	0.62	44,632	20 %	8 %
United Kingdom	1,385,072	0.33	89,500	2,362,815	0.58	129,930	71 %	45 %
United States of America	14,360,965	0.78	826,000	17,758,870	0.86	1,310,453	24 %	59 %

Source: UNESCO. For Australia: Department of Education, Employment and Workplace Relations (and its antecedents). 'STAG1992' and 'STAG2007' Staff aggregated data sets

Mexico 1993 data, Mexico teaching staff for 1991, Germany 2007 Total tertiary excludes ISCED Level 6 and hence GER 2007 (Levels 5 and 6) is not available, Germany teaching staff is for 1993. UNESCO does not provide statistics for Hong Kong, so we report estimates supplied by the Hong Kong research team. Australian figures include academic staff who only do research

towards massification (US, Germany, Netherlands); for these systems the main change since then has been the addition of lower tier institutions to further access. Institutions in a second group (Hong Kong, Korea, and arguably UK and Australia) over the past 15 years have made the transition; in this second group, the enrollment rate for Korea doubled to reach 80 %; expansion was also notable in the other countries. A third group (Brazil and Mexico) had low to moderate access. Since 1992 the institutions in this latter group have experienced an impressive infusion of resources and have experienced considerable expansion. Massification leads to the hiring of additional academic staff, and many of these new staff may be appointed to fields that have international orientations such as global business, international affairs, or the sciences.

2.2.6 Massification and the Relative Expansion of Students and Faculty

Table 2.3 provides information on the relative scale (as measured by total student enrollment and total teaching staff) of the ten systems under consideration in 1992 and 2007. Table 2.3 compares the rate of expansion of student enrolments to faculty growth. In a few systems the rate of expansion of faculty has exceeded that of students; in contrast in Australia, Hong Kong, The UK, and Brazil the student body has increased at a faster rate than the faculty; and in Germany, the Netherlands, and Mexico the rates of expansion are similar. Where the student body increases at a faster rate than faculty, the higher educational institutions may enjoy some savings–but these savings are achieved by requiring individual professors to assume heavier teaching loads.

2.2.7 Massification and Institutional Differentiation

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." Globalization has curiously led to more differentiation within national systems than across them. Teichler (1996) has argued that institutional diversity in Europe produced a similar effect—with 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. This prompts close consideration of institutional effects on internationalization alongside other system characteristics.

2.2.8 System Size

There is immense variation in the size of the ten academic systems. There are over one million academics in the U.S. compared with less than 50,000 in the Netherlands and only circa 10,000 in Hong Kong. The large size of the U.S. system enables numerous options for in-country collaboration, whereas the smaller size of the Dutch and Hong Kong academies creates pressure for international collaboration. System size also influences student behavior; where a system is small students are more likely to think of leaving their country to seek higher educational opportunities in a foreign country.

2.2.9 Rise of Market Ideology

While the 1980s was a relatively good time for most higher education systems, it was also the era when the expenses of the welfare state began to radically exceed the revenues routinely collected by the state. Whereas one option was to raise taxes, a contrasting approach of shrinking the state role in the provision of services was forcefully articulated particularly in the UK by Margaret Thatcher and in the U.S. by Ronald Reagan. Rather that have the state provide for services, this approach argued that the private sector could do a better job. Or alternately the use of vouchers or the introduction of choice would create market-like pressure and thereby improve the efficiency and effectiveness of public services. Higher education was one of the services most severely hit as this market approach was converted into policies.

2.2.10 Decline in Public Funding for Higher Education

While education continued to be valued, it came to be perceived as expensive. Also images of the good life on university campuses were circulated highlighting the consumer goods side of education. Economists sometimes argued that the private returns of higher education were now exceeding the public returns. Thus particularly in the Anglophone countries public support for higher education was slashed. In several of the Asian settings, a more gradual approach of converting national universities into public corporations was launched; while this reform was intended to encourage a market-like signal for the affected institutions of higher education, it did not lead to a significant financial cutback (Table 2.4).

2.2.11 Knowledge Production/Competition

One indicator of the prominence of an academic system is the extent to which it contributes to the international body of knowledge through the medium of refereed academic articles (Chapman et al. 2010). Large systems such as the U.S. system

Table 2.4 Public expenditure per pupil as % of GDP per capita, tertiary level

	Year		
System	1995	2005	2007
Mexico	57.8	39.0	38.0
Brazil	109.8	35.0	29.6
Korea	5.6	8.7	9.0
Hong Kong	66.2	59.7	38.5
Australia	28	21.5	20.2
UK	39.2	31.6	24.3
Japan	13.7	19.2	20.1
U.S.	24.0	23.1	21.7
Germany	39.6	n.d.	n.d.
Netherlands	45.8	42.4	40.0

Table 2.5 Relative country shares of the world total of scientific articles, 1990 to 2007

	1990		2000		2007		% change in world share 1990–2007
Country	Articles	World share %	Articles	World share %	Articles	World share %	
World Total	508,795	100.0	632,781	100.0	758,142	100.0	
Mexico	1,038	.2	2,950	.5	4,223	.6	173.0
Brazil	2,374	.5	6,195	1.0	11,885	1.6	236.0
Korea	1,170	.2	9,386	1.5	18,467	2.4	959.3
Hong Kong	995	.2	4,914	.8	7,127	1.1	510.0
Australia	10,664	2.1	14,700	2.3	17,831	2.4	12.2
UK	39,069	7.7	49,485	7.8	47,121	6.2	−19.1
Japan	38,570	7.6	55,413	8.8	52,896	7.0	−8.0
US	191,559	37.6	196,221	31.0	209,695	27.7	−26.5
Germany	32,295	6.3	43,440	6.9	44.408	5.9	−7.7
Netherlands	10,176	2.0	12,330	1.9	14,210	1.9	−6.3

Source: NSB (2010), p. 5–14. The articles included in this table are those listed in the Science Citation Index and the Social Science Citation Index. Where the authors of an article are from two or more countries, fractions are used to indicate country attribution

might be expected to contribute a greater share. Indeed as illustrated in Table 2.5 in 1990 and down to the present the U.S. is the world's greatest contributor, though over the 1990–2005 period the U.S.'s relative share has decreased, and that of some other systems, notably Korea and Brazil, have increased. Increases in academic research productivity tend to be accompanied by increases in international research collaboration and publications.

2.2.12 *Language of Instruction*

English is often considered the international language of academic communication. Several of the CAP nations use English as the language of instruction (the U.S., the UK, Hong Kong, and Australia). In Hong Kong, where most of the population uses Chinese in the home, English is the main medium of instruction in university education. English is also relatively prominent in the Netherlands academy. In contrast are several countries that have instructional languages unique to their country: Germany uses German, Japan uses Japanese, Korea uses Korean. Mexico uses Spanish and Brazil uses Portuguese.

2.2.13 *Regionalism*

All ten of the countries were participants in one of the major socioeconomic organizations promoting regional ties (the European Union in Europe, NAFTA in North America, Mercosur in Latin America, and ASEAN and APEC in Asia). Of these regional associations, the EU has placed the most emphasis on higher education notably through its promotion of student mobility and its funds to support cross-border research projects. Perhaps Asia is second in terms of promoting regional ties.

2.3 Teaching-Research Balance

Teaching and research constitute the core work of the academy, and most academics devote some of their time to both of these activities. Historically universities modeled after the German university (as in Japan and Israel) placed a greater emphasis on basic research, those modeled after the U.S. land grant model stressed applied research, and those modeled after the English university (e.g. throughout the former British empire) placed more emphasis on teaching.

The Carnegie survey and the CAP survey captured the baseline orientation by asking respondents whether their "interests lie primarily in teaching or in research" as reported in Table 2.6. This data invites more than one interpretation depending on whether the middle two categories or the teaching versus research categories are the focus. In all countries, the majority of academics for both time periods select the middle two categories. But if one focuses on the percentages inclined or somewhat inclined to teaching, a different interpretation is possible: that is, in all countries the proportions selecting primarily in teaching or inclined to teaching is less in 2007 than in 1992.

However, distinct from what professors want to do is what they actually do in response to the needs of their workplace. Table 2.7 reports by country the average

Table 2.6 Academic preferences: do your interests lie primarily in teaching or in research?

2007/Country	DE	UK	US	JP	KR	HK	AU	BRZ	MX
Primarily teaching	10	10	24	6	3	9	7	8	20
In both but leaning towards teaching	18	27	34	23	29	28	23	42	37
In both but leaning towards research	40	37	34	57	61	52	40	42	33
Primarily research	32	26	9	14	7	11	29	7	5
1992/Country									
Primarily teaching	8	12	27	4	5	11	13	20	14
In both but leaning towards teaching	27	32	36	24	40	35	35	42	45
In both but leaning towards research	47	40	30	55	50	46	43	36	37
Primarily research	19	15	7	17	6	8	9	3	4

Source: Carnegie and CAP Surveys

Table 2.7 Average hours per week devoted to teaching by country 1992 and 2007

Country	DE	UK	US	JP	KR	HK	AUS	BRZ	MX
2007	12.3	15	21.6	21.8	21.4	19.9	17.6	18.9	21.5
1992	16.4	21.3	18.7	19.7	23.1	19.0	21.8	21.9	16.9

Source: Carnegie and CAP Surveys

number of hours academics devote to teaching (when classes are in session) in 1992 and 2007. The average load ranges from 16.4 to 23.1 h in 1992 and from 12.3 to 21.6 in 2007. In four of the countries, the average teaching load has increased between 1992 and 2007 (US, Japan, Hong Kong, Mexico), and in five it has decreased (Germany, UK, Korea, Brazil, Australia).

So for half of the countries there is a widening divergence between what academics are inclined to do and what they actually do. What accounts for these complicated trends? Table 2.8 identifies several of the contextual factors that are most likely to be influencing the teaching research balance- e.g. the partial retreat in public funding of higher education so institutions of higher education (and academics) place an increased reliance on tuition, technological advances have influenced the delivery of teaching, the size of the adolescent population may have declined creating pressure to improve teaching in order to attract students, those entering the profession are more likely to have received advanced training in research so they are more inclined to spend their time on research.

2.4 Continuity or Change in Teaching Load

Working from the estimates in Table 2.8 we sought to develop an aggregate prediction of the teaching load level in 1992 and the 2007/1992 change for the nine focal countries (for which information is available). If for a particular condition a

Table 2.8 Main contextual factors and drivers influencing the teaching research balance of national systems

	Conditions				Drivers				
System	Market-based coordination	Tuition-based funding	'Private sector	Economic growth	Higher Ed. a private good	Massification: system expansion	Massification; differentiation	Population decline	R&D funding up
Mexico	Moderate	Moderate	Yes	Rapid	Moderate	High	Moderate	Low but increasing	Yes
Brazil	Moderate	Moderate	Yes	Rapid	Moderate	High	High	Low but increasing	Yes
Korea	Rising	High	Yes	Very rapid	Moderate	High	High	Moderate	Yes+
Hong Kong	High	High	No	Rapid	Moderate	High	Limited	Moderate	Yes+
Australia	Very high	Very high	Yes	Moderate	High	Moderate	Some	Moderate	No
UK	Very high	Moderate	No	Moderate	High	Moderate	Some	High	Yes
Japan	Moderate	Moderate	Yes	Slow	Moderate	Moderate	Some	High	No
U.S.	Very high	Very high	Yes	Moderate	High	Moderate	High	Moderate	No
Germany	Moderate	Moderate	No	Moderate	Moderate	Moderate & increasing	High	Moderate	No

Table 2.9 Relative aggregate strength of contextual factors for teaching load

Country	Conditions	Drivers
Mexico	2.5	2
Brazil	3	2.5
Korea	3.5	2
Hong Kong	2	2.5
Australia	3	3.5
UK	3	1.5
Japan	2.5	2
U.S.	2.5+	3.5
Germany	1.5	3

country received a high estimate it was given a score of 1; if a moderate estimate then a score of .5; and if a low estimate then a score of 0. This scoring procedure was repeated for all of the conditions and then the several scores were added up to get an aggregate conditions value. The same procedure was followed to obtain a drivers value. The outcomes of these two procedures are summarized in Table 2.9.

2.4.1 CAP Indicator of Teaching Load

Now let's compare these predictions with the CAP findings on the number of hours devoted to teaching in the start off year of 1992. Korea and Australia receive relatively high scores in both distributions and Germany receives low scores. The six other countries lie in the intermediate zone for both distributions.

Concerning change both our driver scores and the actual 1992–2007 change in teaching hours are congruent in the cases of the U.S., Japan, Hong Kong, Mexico, and Germany. However, whereas our analysis of drivers predicted stability in the teaching load for Korea and the UK, the actual direction of change was negative; higher education in both of these countries has been under considerable policy pressure to increase research productivity, a driver that we have perhaps insufficiently recognized.

2.4.2 Internationalization

Academics work in institutions that are primarily situated in particular nations. Much of their work contributes to the welfare of these nations, but aspects of their work may reach beyond national borders. Constructed interrelations of the national, international, and global purposes and content of higher education have been shifting throughout history—depending on the socio-economic and political context.

Kerr (1990) argued that for the most part the modern history of higher education is driven by two laws—one of internationalization of learning and the other of nationalization of purposes. Scott (1998) proposes that, in the age of globalization, higher education is increasingly locked in national contexts yet it has the potential of resurrecting (albeit on different terms) its international associations and networks. Focusing on the academic profession, this chapter considers the internationalization of the academic profession as the shift in academic work that takes place in national systems and their constituent institutions on a continuum from a primarily national focus to a more borderless or international focus. This shift can be manifest in many aspects of academic work, i.e. the increase in the international mobility of students, the increase in the international content of courses, the increase in the cross-border collaboration of researchers and institutions.

2.4.3 Stability and Change in the Context

We turn next to look at some aspects of the recent supposed advance of internationalization. To what extent has Internationalization intensified over the past 15 years? What might be promoting or deterring change? Table 2.10 outlines our best judgments on the relative position of the ten higher education systems in terms of a select group of conditions and drivers that are believed to influence internationalization.[4] In the following discussion, we review the likely relation of each of the identified conditions and drivers to the internationalization trend.

2.5 Continuity or Change in Internationalization

Working from the estimates in Table 2.10 we sought to develop an aggregate prediction of the internationalization level of the ten focal countries. We undertook the same scoring procedure as in the preceding section. The same procedure was followed to obtain a drivers value. The outcome of this procedure is summarized in Table 2.11.

The implication of these computations is that Hong Kong and the Netherlands with Conditions scores of 3+ will have the highest baseline values for various indicators of Internationalization while Japan, the US, Mexico, and Brazil will have the lowest baseline values. Concerning post-1992 change, the implication is that Hong Kong will have the greatest change followed by Korea and Mexico.

[4]The selection of particular contextual factors and drivers depends on the analytical topic; for example an analysis of managerial practices might place greater emphasis on the ideology of public versus private good or the ideology of social equity versus elitism.

Table 2.10 Main contextual factors and drivers influencing the internationalization of national systems

	Conditions				Drivers				
System	Economic Level	Participation in world trade	System Size	'International' language	Economic growth	Globalization	Massification: system expansion	Massification; differentiation	Knowledge production
Mexico	Moderate	Moderate	Moderate	No	Rapid	Moderate	High	Moderate	Low but increasing
Brazil	Moderate	Moderate	Moderate	No	Rapid	Moderate	High	High	Low but increasing
Korea	Rising	High	Moderate	No	Very rapid	High	High	High	Very high
Hong Kong	High	Very high	Small	Yes	Rapid	Very high	High	Limited	Very high
Australia	High	High	Moderate	Yes	Moderate	Moderate	Moderate	Some	Moderate
U.K.	High	Moderate	Moderate	Yes	Moderate	High	Moderate	Some	High
Japan	Very high	Moderate	Large	No	Slow	Moderate	Moderate	Some	High
US	Very high	Moderate	Large	Yes	Moderate	Moderate	Moderate	High	Moderate
Germany	High	High	Moderate	No	Moderate	Moderate	Moderate & increasing	High	Moderate
Netherlands	High	Very high	Small	Yes	Moderate	High	High	High	Moderate

Table 2.11 Relative aggregate strength of contextual factors

Country	Conditions	Drivers
Mexico	1.5	2
Brazil	1.5	1.75
Korea	2.5	3.5
Hong Kong	3+	4.5
Australia	2.5	1
UK	2	2
Japan	1.5	.5
U.S.	1.5	.5
Germany	2.5	.5
Netherlands	4+	2

Table 2.12 Percent of academics who indicate they collaborate with foreign partners in research

	% that collaborate	
	1992	2007
Mexico	39.9	34.6
Brazil	24.2	28.4
Korea	25.1	29.5
Hong Kong, China	65.0	60.2
Australia	57.0	59.3
UK	43.1	61.4
Japan	28.5	23.8
U.S.	39.1	33.3
Germany	55.0	50.0
Netherlands	74.3	62.9

Sources: Carnegie survey (question 65a) and CAP survey (question D1)

2.5.1 CAP Indicators of Internationalization

Now let's compare these predictions with the CAP findings. Internationalization has been a major focus of the CAP project and was featured rather prominently in the CAP questionnaire. Some of these same items were asked in 1992, e.g. about international recruiting and international collaboration. So CAP enables a true test of the extent of change for the ten countries that participated in both studies.

First we will consider the extent of international collaboration as reported in Table 2.12 above. The pattern is exactly as predicted. Hong Kong and the Netherlands, as predicted, are the two countries in 1992 with the highest levels of international collaboration, Australia closely follows with Mexico and the US having moderate levels, and Brazil and Japan have the lowest levels; Korea has a somewhat lower level than expected. Concerning driven change between 1992 and 2007, the prediction is for Hong Kong and Korea to experience the greatest change but neither of these countries experienced much change. In contrast, the UK unexpectedly

Table 2.13 Percent reporting difference between country of training and employment

	1992		2007	
	Country of degree and employment differ 1992	Country of doctoral degree and employment differ 1992	Country of first degree and employment differ 2007	Country of doctoral degree and employment differ 2007
Mexico	10	7	9	41
Brazil	13	n.d.	2	13
Korea	31	31	1	42
Hong Kong, China	68	84	56	72
Australia	32	33	35	26
UK	6	7	43	15
Japan	7	7	15	5
U.S.	7	11	14	6
Germany	4	4	8	11
Netherlands	5	5	44	14

Sources: Carnegie survey (question 3C) and CAP survey (questions F9, A1)
n.a. stands for "no data available."

experienced the greatest positive shift in international collaboration. So we might say that the factors favoring continuity (and the model emphasizing conditions) have outweighed those favoring change in so far as the frequency of international collaboration is concerned.

Turning to international recruitment as illustrated in Table 2.13, again we find as predicted from the aggregate scores on conditions that Hong Kong stands out in 1992 in terms of international recruitment as does Australia and Korea. Japan has a relatively closed market as surprisingly does the Netherlands. But turning to change, the aggregate scores model predicts that Hong Kong will have the highest increase in openness; however, in actuality the greatest shift towards openness is found in Mexico and the Netherlands followed by the UK. As was the case with international collaboration, the driver scores are not good predictors of what changed from this baseline. So concerning the internationalization trend, conditions seem most important while the drivers have inconsistent impact.

2.5.2 Declining Loyalty

How sensitive are academics to changes in the physical, socioeconomic, and political dimensions of their workplace? In a previous section, we noted that a majority of the academy believe that the physical aspects of their workplace are relatively attractive and nearly as many suggest there may have been some improvements over the past 15 years. But when it comes to institutional decision-making, the majority feel that they have little influence, especially concerning decisions on institutional

Table 2.14 Percent of academics who indicate that their affiliation with their institution is important

	% who say institutional affiliation is important	
	1992	2007
Mexico	94	93
Brazil	96	79
Korea	97	74
Hong Kong, China	78	60
Australia	74	50
UK	84	38
Japan	80	63
US	90	61
Germany	34	51
Netherlands	Nd	50

Sources: Carnegie survey (question B4) and CAP survey (question 17)

level issues. And when the focus shifts to salaries, academics are acutely aware that their take-home pay and job security have declined in recent years (Gappa et al. 2007). Does this sense of powerlessness and deprivation impact the way academics order their priorities and go about their work?

Albert Hirschman (1970) once argued that individuals have three distinctive options when they encounter shortcomings or obstacles in an organization or social group with which they are engaged. They can suspend their reservations about current developments, trusting in the wisdom of current leaders to identify and rectify the shortcomings. They can voice their concerns in the hopes that the group will listen and attempt improvements. Or they can decide there is little hope for improvement and thus the best solution is an early exit. We suggest here that a substantial number of academics, in response to their sense of increased powerlessness and deprivation, are inclined to the exit option.

One of the most striking findings of the CAP survey is the strong sense of commitment that academics express towards their academic disciplines both in 1992 and 2007 (see Table 2.14). But they express a sharp decline in their loyalty to their employing institutions over this same 15 year period. What accounts for this drop? Table 2.15 presents our interpretation of the key factors behind this shift:

It has been argued that the 1980s through the early 1990s was a golden era for the academy. The norm of shared governance was widely accepted. Student enrollments were steadily increasing and the level of college preparedness of the incoming students remained satisfactory. Political leaders believed that higher education was primarily a public good, and in most national settings public funding for higher education was keeping ahead of inflation.

But since that time conditions have deteriorated in many of the advanced countries (as well as in many poor countries, especially in Africa). The experienced changes

Table 2.15 Main initial conditions and drivers influencing the decline in institutional loyalty

	Initial conditions			Drivers					
System	Shared governance accepted	Respect for academic freedom	State sees HE as public good	Rise of market ideology	Massification	Privatization	Decline in public support of HE	Manager's role expands	Performance evaluation strengthened
Mexico	Somewhat	Yes	Yes	Minimal	Early stages	Increasing	No	Contracts	Moderate
Brazil	Somewhat	Yes	Yes	Minimal	Early Stages	Increasing	Sharp	Contracts	Moderate
Korea	Somewhat	Moderate	Yes	Moderate	Hi	Hi	No	Stable	Considerable
Hong Kong	Yes	Yes	Yes	Moderate	Moderate	Low	Modest	Modest	Considerable
Australia	Yes	Yes	Yes	Strong	Hi	Modest	Modest	Expands	Considerable
UK	Yes	Yes	Yes	Strong	Hi	Low	Sharp	Expands	Considerable
Japan	Yes	Yes	Yes	Moderate	Hi	Hi	No	Modest	Moderate
US	Yes	Yes	Yes	Strong	Hi	Moderate	Modest	Modest	Considerable
Germany	Yes	Yes	Yes	Minimal	Moderate	Negligible	Stable	Expands	Moderate
Netherlands	Yes	Yes	Yes	Minimal	Moderate	Negligible	Stable	Expands	Moderate

Table 2.16 Relative strength of contextual factors for loyalty

Country	Conditions	Drivers
Mexico	2.5	.5
Brazil	2.5	.75
Korea	2	3
Hong Kong	3	2.5
Australia	3	4
UK	3	5
Japan	3	2.5
U.S.	3	3.5
Germany	3	1.5
Netherlands	3	1.5

are internal to higher education. In several of the advanced systems, the CAP survey found that faculty power is down and managers are perceived as less communicative. Students are not as well prepared as they used to be, but they are more demanding—in several systems their demands are linked to the fact that they now pay tuition. So work is tougher and less satisfying. And these internal realities contribute to a decline in loyalty. Behind these internal changes are several external factors.

As with the two other themes, we present in Table 2.16 our calculus for estimating the impact of the 1992 start off condition and the 1992–2007 drivers. In 1992 loyalty was high in most of the CAP countries and similarly was predicted to be high by our calculus of the relevant conditions. Concerning the impact of drivers, our calculus predicts a substantial drop in loyalty in every country excepting Mexico and Brazil, and excepting Germany the prediction is congruent with the findings.

2.6 Conclusion

2.6.1 What Constitutes Change?

Our analysis focused on three issues, and each had a different pattern of change. So what constitutes change?

2.6.2 Percentage Difference as Change

The most commonly reported indicator of change in the CAP project has been a comparison of the percent who share a belief or manifest a behavior in 2007 compared to the percent in 1992. This can be called the percentage difference or percentage gain score. The argument we presented on institutional loyalty is a good example. In 1992 for most countries roughly eight out of ten respondents indicated that they

felt a strong sense of affiliation with their institution (see Table 2.14). But in 2007 the percentages were dramatically down for most advanced countries while stable for the emerging countries. We argued that the change is primarily a reflection of external drivers.

2.6.3 Quantitative Difference as Change

A variation on the above is what might be called numerical or quantitative differences and is illustrated by the incidence of international collaboration. Table 2.12 shows for most countries that the percentages engaging in international collaboration are very similar in 1992 and 2007. For example the respective percentages for Germany are 55 and 50; for Brazil they are 24.2 and 28.4. So from the perspective of percentage differences, one might say there has been little change. However, over this 15 year period the Brazilian academic profession has expanded by nearly 250 % (see Table 2.3) whereas the size of the German academy has experienced little growth. So despite the absence of a percentage change, the number of Brazilians engaged in international collaboration has dramatically increased. Thus the question arises: do we consider both percentage differences and quantitative differences as change?

2.6.4 Flip-Flop in Relative Position as Change

Yet another way to approach change is to compare the national rankings for a particular variable at two points in time. For example, As illustrated in Table 2.4 the average number of hours that scholars devote to teaching per week has increased in about half of the countries and decreased in the other half. Most notable are the US where the increase is considerable and Korea where the decrease is also substantial. This is an example of change where both the average percentages and quantities have not changed much but the situations of particular counties have been significantly reshuffled.

In sum, it is important in mounting arguments about change to be clear about what is considered change and what is considered continuity.

2.6.5 What Is Context?

Our second concern has been with the meaning of the term context. We proposed two elaborations of this concept. First we proposed that context includes both those factors that promote change (drivers) and those factors that promote continuity (conditions). The initial Cap design minimized the role of conditions, but it is our

suggestion that many facets of academic life including specifically internationalization cannot be understood without balanced attention to both continuity and change.

Finally we have suggested that context consists both of factors that are external to academic systems (the usual understanding of context) and of factors that are Internal to these systems. A particular example is the new managerial practices in many systems that create friction with classical commitments to the norms of shared governance and academic freedom. These perceived violations of acceptable behavior by actors within the higher educational system go a long way towards explaining the dramatic decline in the loyalty of academics to their institutions.

Our analysis has identified a substantial host of contextual factors that are presented in the respective Tables 2.1, 2.8, and 2.10. While there is no need to repeat these lists, it is worthwhile noting the exceptional salience of several of these factors:

- higher education as a public good—a firmly established value through the 80s;
- higher education as a private good—a belief that became increasingly pervasive from the mid-80s, and helps to account for many of the 1992–2007 changes discussed in this analysis;
- the increasing reliance on market signals for the coordination of higher education;
- the pressures of massification;
- the demand of relevance;
- system scale, especially as it influences the availability of domestic colleagueship;
- the language of instruction, with the contrast between systems that use English as contrasted to other languages.

References

Chapman, D. W., Cummings, W. K., & Postiglione, G. A. (Eds.). (2010). *Crossing borders in Asian higher education*. Hong Kong: Springer & Hong Kong University Comparative Education Research Centre.

Gappa, J., Austin, A., & Trice, A. (2007). *Rethinking faculty work*. San Francisco: Jossey-Bass.

Hirschman, A. O. (1970). *Exit, voice, and loyalty*. Cambridge, MA: Harvard University Press.

Kerr, C. (1990). *Higher education and the great transformation*. Albany: SUNY Press.

NSB. (2010). *Science and engineering indicators 2010*. Washington, DC: U.S. Government Printing Office.

Scott, P. (1998). Massification, internationalization and globalization. In P. Scott (Ed.), *The globalization of higher education* (pp. 108–129). Buckingham: Open University Press.

Teichler, U. (1996). The condition of the academic profession. An international comparative analysis of the academic profession in Western Europe, Japan, and the USA. In F. A. van Vught & P. A. M. Maassen (Eds.), *Inside academia: New challenges of the academic profession* (pp. 15–65). Utrecht: De Tijdstroom.

Chapter 3
Coping with the Crisis: Academic Work and Changes in Greek Higher Education

Antigoni Papadimitriou

3.1 Introduction

Greek public universities operate in a legalistic environment and under a plethora of laws and regulations established by a highly politicized state bureaucracy. Universities are entitled to financial support from the state and they operate based on laws related to their organization. Reforms over the last decade reflect an effort by the state to regulate the quality and effectiveness of Greek public universities. In September 2011, the new higher education law (4009/2011) introduced substantial changes to the structure of the universities. Since its introduction several newspapers wrote against this new law, few professors supported the new law, and several universities have formed committees to study the constitutionality of the new law before they take any action. Change in Greek higher education is checkmated.

Concurrent with the introduction of these new, higher education quality assurance laws, the austere economic crisis and the current political unrest in Greece are perceived to affect academic work. Altbach and Chait (2001) stated that the work of academics is affected by major global trends evident in universities; namely, accountability, massification, managerial controls, and worsening financial support. Enders (2006) suggested the influence of state laws and the political system should not be ignored when studying the academic profession. Welch (2005) observed that there seems to be a demand to do more with less resources and thus academics experience difficulty in meeting multiple research, teaching, and administrative responsibilities. Papadimitriou (2011) also observes for the Greek case that the

A. Papadimitriou (✉)
Hellenic College – Holy Cross, Boston, MA, USA
e-mail: apapadimitriou@hchc.edu

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_3

Ministry of Education requires universities and their academics to do more with less. Finally yet importantly, other authors (Fanghanel 2012; Musselin 2007) noted that the nature of academic work has changed significantly.

Understanding contemporary changes in academic work requires systematic empirical studies. Albach's (1996) research demonstrated large differences in the way faculty members spend their working time in several research universities in different countries. Enders and Teichler (1997) indicated cross-national differences in the allocation of time in research universities as well. Recently, the study of Bentley and Kyvik (2012) provided information on working time patterns across research universities in 13 countries (2007–2008). Most of these recent empirical studies do not include the Greek case except for demographic, and salary data. Tsaoussis (2001) provided information about the status and terms of employment of Greek academics for an earlier period (2001) by explaining policies and regulations. Additionally, Stamelo and Papadiamantaki (2004) presented work in a similar vein (using laws and regulations) to report the Greek situation in relation to the international attractiveness of the academic workplace in Europe.

The objective of this chapter is to present changes in academic work in Greece, as derived from the laws and discuss challenges that academics face resulting from higher education laws and the economic crisis. The data consists of documents and interviews with academics from 16 disciplines in one large university (N = 23). Additionally, as many higher education systems are under some financial stress, we hope that a look at the Greek situation will provide a possible window for understanding what could happen elsewhere.

3.2 The Greek Context

3.2.1 Institutions and Staff

The Greek higher education system comprises two sectors (Law 2916/2001): The university sector, which consists of 23 universities (including the Open University – online) and the technological sector, which consists of 16 Technological Education Institutions (TEIs). Both sectors are nationalized and centralized. This chapter covers areas related only to public universities. Constitutionally, universities are autonomous institutions; however, their mission is uniformly determined by the law. The original governmental laws establishing the organization and operation of the universities were not amended until the late 1970s. In 1982, an effort was made to bring university education up to date in Greece by Parliament's passage of new legislation (Frame-law 1268/1982). Karmas et al. (1988, p. 264) stated "the year 1982 will remain a historical landmark for university education because Greece abandoned a model of university government based on Central European experiences and practices of the past, which had remained in operation for over 50 years". This law accounts for the major and most significant reform in Greek higher education

since 1932. I have to mention that the first "Hellenic University of Otto" was founded in Athens in 1837. A significant number of laws have followed since 1982, with partial improvements and supplements to the frame-law 1268/82 entitled "The Structure and Operation of Higher Education Institutions."

According to Greek legislation, university personnel consists of the following three major categories: (1) the academic staff (academics or faculty members), (2) the technical and laboratory staff, and (3) the administrative staff.

More specifically, the academics consist of the following categories:

1. The main teaching staff faculty members (professors, associate professors, assistant professors, and lecturers) all hold PhDs. Academics are comprised of persons who hold doctoral degrees and are members of the so-called Teaching and Research Faculty (DEP).
2. Adjunct and visiting teaching staff (who normally have a PhD but collaborate with the university on a temporary and contractual basis).
3. Special teaching staff and research associates (mostly without a PhD degree, teaching special subjects and having permanent positions).

Only the members of the two upper levels of academics: professors and associate professors are elected in permanent (tenure) positions. To safeguard academic freedom, university academics are public functionaries who may not be dismissed before the expiry of the term of their employment, save under very special circumstances.

The Greek university organization was defined by Frame-law 1268/82 and stipulated four distinct levels of internal academic structure: Institution, School, Department, and Division. The basic unit in the university's inner structure is the department. Departments correspond to an area of knowledge (discipline). They award degrees and they are also the academic units to which the positions of the main teaching personnel belong (academics). The Departments have full autonomy in the election of their academic staff at all levels; however, the Ministry of Education determines the number of positions to be filled each year and checks the legality of the staff selection processes. Departments are divided into divisions or sectors corresponding to smaller and distinct parts of the major scientific disciplines of the department, provided the department's discipline area is adequately broad and the department's faculty is sufficiently large. The teaching and research activities of a department or a division/sector may be grouped and concentrated in even smaller operational units, the so called laboratories (or clinics, in the case of medicine). Departments covering related discipline areas may constitute a School, which has mainly coordinating responsibilities to its departments. Not all universities in Greece are organized in similar ways; some do not have schools or research institutes or departments.

Each academic unit has its own leadership and decision-making structure. There is a hierarchical relation between the four levels of academic structure concerning leadership and decision-making, with the institution situated at the top and with the division situated at the base (see Table 3.1).

Table 3.1 The structure of leadership and decision-making in Greek universities

	Academic level			
Authority	Institution	School	Department	Division
Governance leadership	Rector (+vice rectors)	Dean	Head (+deputy head)	Director
Decision-making (superior/major)	Senate	General assembly	General assembly	Assembly
Decision-making (inferior/minor)	Rector's board	Dean's board	Governing council	
Executive	Rectorate council	Dean's board	Governing council	

The final authority for setting up new academic units and for renaming, merging, splitting or closing down existing academic units belongs to the Ministry of Education. The number of new students enrolled in each university and department is predetermined by the Ministry of Education through the Pan-Hellenic examinations.

3.2.2 Academics' Work and Tasks as Derived from the Law

Academic activities and precise tasks regulated by the law (1268/82) require teaching, research, and administration. Respectively, professors, associates, assistants, and lecturers are required to teach a minimum 6 h per week, participate in research (basic and applied), supervise undergraduates (capstones if any), including master's and doctoral theses as well. Additionally, they must participate in conferences, research seminars, and projects. Concerning administrative work (services/activities) they have to participate in decision making processes as board members and are also required to serve in electoral bodies and as members of the recommendation committee. Also common across all universities is the tenure and promotion process (see details in Tsaoussis 2001). The new law (4009/2011), to be covered later, may bring sweeping changes to all the above mentioned duties – stated or implied – but in the Greek case, these changes may never be implemented.

3.2.3 Quality Assurance in Greece

Only as recently as 2005, the Greek Government established a national system for quality assurance in higher education. The Greek National Reports provided for the Bologna ministers' meetings in 2003 and 2005 declared that the framework for

operating a National System for Quality Assurance in higher education was under consultation before the Greek Parliament. This framework was submitted to the Greek Parliament for discussion, following the Bergen meeting on May 30, 2005. Then, the law was passed on July 10, 2005 and was published on August 2, 2005 (Law 3374/2005, Greek Government paper issues, FEK 189/2005).

Quality assurance (QA), notably as evaluation, had debatable meaning (at least until 2009) within the universities in Greece except in the Open University where the quality assurance system was fully applied (Papadimitriou 2011). The quality assurance policy change (development) was one of the most hotly debated issues among higher education policy makers in many EU countries (Papadimitriou 2011). Until 2006, the quality assurance law in Greece was inactive. The Ministry of Education stated that the quality assurance process would begin in 2007 (YPEPTH 2007: 12). Stamoulas (2006, p. 437) noted that "stakeholders were viscerally opposed in their particular ideas for the structure, scope, operation and the results of the evaluation". Asderaki (2009, p. 112) observing "evaluation has never been an easy subject to tackle". Asderaki (2009, p. 113) noted that "in the early 1990s an attempt was made to introduce institutional or departmental evaluation (article 24 Law 2083/1992, 21.09.1992)". Papadimitriou's (2011) study illustrated the complexity of the adoption of quality management by the academics and the introduction and implementation of policy related to quality. Papadimitriou (2011, p. 271) stated "[the data] indicates that the quality assurance law (3374/2005) was adopted mainly due to mimetic pressure from other European countries (through the Bologna Process)".

According to the QA law, the Greek national QA system is composed of two levels: internal assessments and external evaluation and review process. Additionally, a single National Agency in charge of QA namely Hellenic Quality Assurance Agency for Higher Education (ADIP), established in 2007, is an essential feature of the Greek higher education system. The QA system and assessment established in Greece aspired to support universities in their efforts to improve continuously on quality development and to advise the government on the necessary actions and policies to be taken to achieve that end. At the same time, it aimed to improve transparency, comparability, and accountability of the Greek higher education system. Therefore, the Greek QA system and assessment does not contain accreditation characteristics, nor does it aim to rank or grade the Greek higher education institutions. Additionally, ADIP does not have authority to impose any penalties or rewards. However, from September 2011, universities were required to operate under the newest law, 4009/2011, "Structure, function, quality assurance of studies and internationalization of higher education institutions" (Law, 4009/2011, Greek Government paper issues, FEK A' 195/6.9.2011). This new law, for the first time, includes an accreditation process. Article 64 of the 4009/2011 law announced that the Quality Assurance Agency for Higher Education would change its name to become the "Hellenic Quality Assurance and Accreditation Agency". Additionally, it covers 10 articles with details on ADIP's new role.

3.2.4 Quality Assurance and Academics' Work

According to the QA law universities are encouraged to set up their own internal QA mechanisms to provide a sound basis for external evaluation. The aim is to combine effectively institutional autonomy and accountability within the national quality regulations framework. Each university has the right to independent decision-making and therefore is responsible for devising its own QA system for assessing the educational, administrative, and research functions, although general provisions are provided by the QA law. Furthermore, academics, administration personnel, and students are viewed as the main participants and contributors to this process. Each university in Greece was required under this law to establish a QA unit (MODIP) to coordinate and support evaluation procedures. This unit was to be chaired by the university's vice-rector and involved representatives of the academic and administrative staff. Additionally, each academic department was to appoint an internal evaluation committee (OMEA) responsible to collect data, documents, and information in order to develop the department's self-assessment report.

Papadimitriou (2011) discussed that "in Greece, for the moment (2009), it seems that one of the urgent challenges for the Greek Ministry of Education was to link the quality movement with rules and regulations and with the hope that these rules and regulations would be adopted by academia to culminate in the achievement of longer-term goals (performance improvement) by Greek higher education".

3.2.5 New Higher Education Law 4009/2011

The Law 4009/2011 named above introduced substantial changes to the structure of the higher education institutions with the intent to restructure the whole higher education system (universities and TEIs). This change is in the process of implementation. According to this law, there are three categories: professors, associate, and assistant professors, but no lecturers. This law permits academics to teach abroad for one semester; additionally, departments could invite academics for teaching from abroad. Courses could be taught in English. We think a well-deserved remark needs to be made about the academic promotions within this new law, which changed academic promotion so that it requires a report by a committee of two members, replacing the previous law that required three. In addition, the new law requires inclusion of one or two committee members from universities from abroad. It is also possible for the professor-candidate to self-nominate one member of the committee. Universities need to discuss and develop their organization. In this organization we could see changes concerning teaching, research, and services. Rectors need to appoint deans, and several other issues remained unresolved as of December, 2012.

Finally, the new government (coalition) in August 2012 passed another new law (4076/2012) in order to "help" the implementation of the 2011 law. Only as recently as November 2012, almost all academics had voted for new board members (by using e-voting). These new board members are professors who selected external board members and appointed the President of the university. Currently, almost all universities have board members and Presidents; thus, it remains to be seen whether changes will begin in 2013. As these new laws (4009/2001, 4076/2012) are not fully implemented they cannot have had much impact on the nature of academics work.

3.2.6 Academics' Salaries

The Ministry of Education directly controls the salaries of the academics and there are no differences within universities and disciplines. The amount covering salaries is inflexible in the sense that the salary of every employee of each university is determined by rank, years of service, and marital status in accordance with Law 2530/97. Hence, universities have no autonomy in this regard. The basic monthly salaries of all ranks for teaching and research faculty members are derived from the basic salary of a lecturer through a set of multiplication factors: Lecturer: 1,00; Assistant Professor: 1,10; Associated professor: 1,30; Professors: 1,50.

Greek legislation allows universities and their academics to develop entrepreneurial activities in both research and services. The Greek legislation encourages universities and their academics in such activities, as it provides them with a legal framework for financial management that is much more flexible than the one for state resources. Louloudis (2010) discussed that universities in Greece know that there are private funding sources; however, in practice, some Greek universities are "rich" and can access private funds, others are "poor" and remain "poor" because they cannot find private sources. Private sources can be attracted through research projects and sometimes the sums involved are greater than the university's regular public budget.

3.3 Budget and Economic Crisis

All public universities in Greece are entitled to financial support (Law 2083/92, 2158/93, and 2327/95). The main sources of funding are the state budget and European funds. The Ministry of Economy and Finance, the Ministry of National Education and Religious Affairs, agree with the Conference of the Rectors of universities and the Presidents of TEIs on the amount of funds, the types of expenses (infrastructure, equipment, etc.) and the standards and guidelines for the 4-year planning of higher education institutions (YPEPTH 2007: 3–4). Actually, the funds increased from 827 million € in 2004 to 1,036 million in 2007. In 2004–2005 the

22 Greek universities employed 9,048 academics, (2,558 female and 6,490 male): Professors 2,367; associate professors 2,289; assistant professors 2,442, and lecturers 1,950. Data from the Ministry of Education shows that in this academic year, there were 364,045 registered undergraduate students (192,282 female), however, active undergraduate students were 192,913. Additionally there were 26,922 master students (15,124 female), and 22,314 doctoral (9,660 female).

ADIP's 2011 (p. 29) annual report shows that the overall budget for the higher education in academic year 2008–2009 was 1,026,563,003 euro while the amount of 449,000,000 euro covered salaries for 10,430 academics. During this same period, there were 171,882 active students attending Greek universities.

On July 30, 2009, the Ministry of Education announced that the state budget will increase unless the economic problems are big. Regarding the period 2009–2012 the Ministry of Education reported: "Operating expenses for the period 2009–2012, the regular budget will be 1 billion 70 million euro". Infrastructure from the public investment budget, the amount for the same period allocated for universities will be 494 million euro, for students' care (food and dormitories) will be 126.5 million euro, and for text books will be 173 million euro.

On March 1, 2010 (FEK 258/B), (on paper) the higher education budget was 229,670,000 euro. However, on October 11, 2010 due to the economic crisis in Greece, the Ministry of Education decided that the operation budget for the universities for the 2010 would decrease by 25,490,000 euro (229,670,000–25,490,000). During that same period there was about a 12 % decrease in academic salaries.

Data published by Greek Statistics show that the total number of teaching staff at Greek institutions of higher education declined from 2008/2009 to 2010/2011 by 8 %. In contrast, as Table 3.2 shows, the total number of students increased during this period by 12 %.

Table 3.2 Overview of academics and students

	2008/2009	2009/2010	2010/2011
Academics	9,407	9,515	9,366
Adjuncts	3,024	2,739	1,953
Faculty member in other universities	1,204	1,460	1,359
Teaching staff members	878	823	724
Total teaching members	14,513	14,537	13,402
Total students (undergr. + grad. + doctoral)	429,224	452,301	480,655
Undergraduate active students	173,256	235,293	238,009
Total undergr. register students	375,517	378,935	397,309
Undergraduate completed	31,602	36,265	36,668
Graduate students	31,071	44,656	46,185
Masters completed	8,127	10,345	10,475
Doctoral students	22,636	28,710	37,161
PhD completed	1,892	2,009	2,101

Source: Based on data provided by the National Statistical Services in Greece (www.statistics.gr)

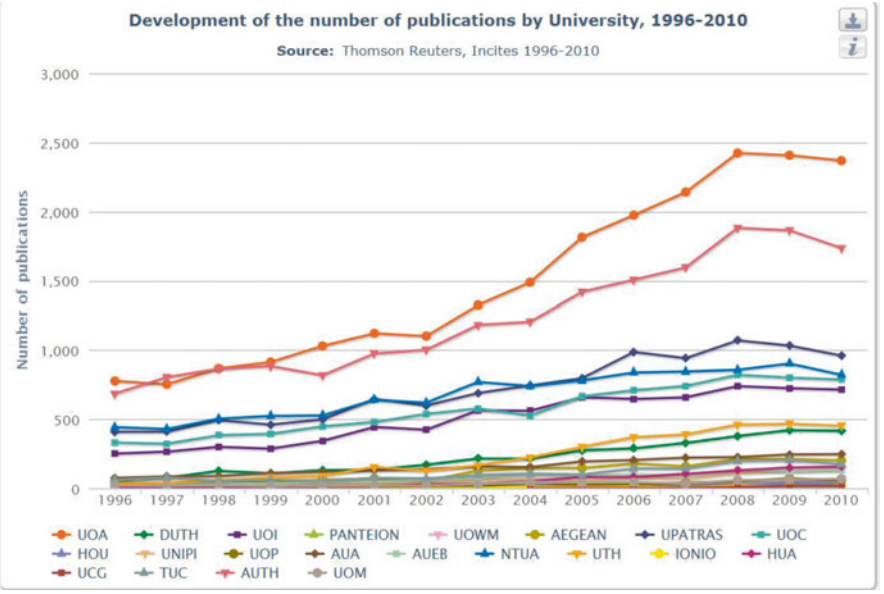

Fig. 3.1 Number of publications for each university in Greece 1996–2010 (*Source*: http://metrics.ekt.gr)

As already pointed out, salaries decreased. Also the Government did not replace academics and other personnel who retired. The increase of student enrolment did not provide the opportunity of increasing staff numbers or their salaries, because no tuition fees have to be paid for undergraduate and for doctoral study. Universities can only charge tuition fees for master study.

Academics in Greece continue to produce and serve Greek universities by teaching, doing research and by providing administrative work. This can be illustrated by the increase of publications. Figure 3.1 shows the development of the number of publications of academics of the major universities from 1996 to 2010.

In Greece, there is increasing demand by the universities and the government on academics to perform more effectively and efficiently (QA law) while at the same time they are expected to operate under adverse conditions and decreased compensation. In several universities, we could see that institutionally, they do more with less faculty and income. The question here is, how do Greek academics cope with the economic crisis since the laws (higher education policy and quality assurance) now delineate their tasks? In the following section, I will try to answer that question.

3.4 Academics' Perceptions and Concerns About Changes and Challenges in Their Work

3.4.1 Methods and Data Collection

To investigate the factors contributing to Greek academic job satisfaction (or/and dissatisfaction) and academic work changes, I employed a small-scale study in one large university (N = 23) where I interviewed academics.

In order to learn about conditions of employment of academics (permanent staff), I developed a questionnaire with open ended and semi-structured questions. All interviews took place in May–June 2012. Besides demographic characteristics, I also asked questions about respondents' academic rank, discipline, and years in academia. I asked academics three sets of questions concerning changes in teaching, research, and services due to the quality assurance law, to the newest 4009/2011 higher education policy, and due to the economic crisis. Additionally, I asked them to report the number of hours they typically spend per week across the above mentioned tasks (teaching, research, administrative services). I asked academics to report estimates for two separate time periods: during 2009 (before the crisis) and after 2010 (current situation). I also asked academics to report if they work outside of the university. As we saw above, professors can teach in other universities and it is also possible to work in a private profession (lawyer, doctor, engineer, etc.) while having a part-time academic position in the university.

The author also asked if they were satisfied with their working environment (yes-no-neutral). And finally yet importantly, I asked them to report under the current circumstances about their motivation for quality work concerning teaching, research, and services.

Bentley and Kyvik (2012, p. 533) stated that "given the professional autonomy academics have beyond teaching and administrative hours, self-reports seem appropriate when estimating typical working hours in academia" (for more information about methodological problems see Bentley and Kyvik 2012; Kyvik 2012). Also Kyvik (2012, p. 5) noted that

> the methodology used in the surveys by Bentley and Kyvik (2012), has its limitations. In the first three surveys, staff members were asked to estimate the approximate allocation of their time in the previous year, while in the latest survey they are asked about the current academic year. These surveys involved drawing on memories of working life in the past and such self-estimates of typical working hours are subject to errors or recall.

The same situation could arise in this survey as well; however, the author perceives that academics under these difficult circumstances in Greece have clear memories about their working conditions before and after the economic crisis.

The demographic data of interviewees was wide ranging. The majority were male (18 of 23). Fifteen were professors, five associate professors, and three assistant professors. Academics were employed in 16 different disciplines: Agriculture, Archaeology, Biochemistry, Biology, Chemistry, Dentistry, Economics, Engineering, English, Forestry, Geology, Law, Pharmacy, Physics, Political Science, and Primary Education.

Professors worked at the university between 7 and 32 years (average 23.6 years of employment) and they reported working as a professor for 3–14 years (average 9.3 years). Associate professors worked at the university between 10 and 28 years (average 22.4 years of employment) also reported that they worked in associate professorate rank between 4 and 15 years (average 8.8 years). Assistant professors worked at the university between 8 and 21 years (average 13 years of employment) also reported that they worked at the assistant professorate rank between 3 and 10 years (average 5.3 years).

3.4.2 Results

3.4.2.1 Changes in the Way of Teaching

Concerning changes in the way of teaching due to quality assurance policy only two (one professor and one assistant professor) mentioned that they observed changes. One assistant professor noted: "yes I feel more responsible and I look [at] what students comment on in their evaluation, then I try to change the way of my teaching". The other 21 did not observe changes in their way of teaching. Several noted that they "always try to improve their way of teaching not because of the evaluation; however, they enjoy seeing students' comments".

All 23 did not report changes concerning the new law. Almost all noted "they wait to see what will be happen in the future when the law becomes fully implemented".

Due to the economic crisis, 16 did not observe changes in their teaching approach while seven noted "yes". Academics who observed changes in their teaching mostly belong in the disciplines that require laboratory and hands-on exercises. Retirement of supporting staff and budget cuts did affect supplies and the infrastructure; these created challenges in maintaining positive experiences in lab courses. One respondent noted an inability to support his students with photocopies and another respondent started to use the online repository to help students with extra resources. In difficult situations, it seems that new technologies provide a help. A professor of economics said, "yes, I am aggressive as I have to teach Public Economics to students when politicians don't listen" (the professor referred to politicians that introduce changes without listening to professors in economics which suggests a different approach to escape from the crisis).

3.4.2.2 Changes in Research

Only two academics noted changes in research due to the quality assurance law. They mentioned that the quality assurance law requires counting the number of articles citing their work; hence, professors need to look and select carefully where they will publish their research outcomes. They noted that now they are looking to

publish in highly selected quality journals. Other academics who reported no changes in their research commented: “I always wanted to publish in high quality journals” and “our department introduced high standards in research and publications before the evaluation law”. One professor was “very angry with the colleagues who expected the evaluation process to motivate them for high quality research and publications”.

Concerning changes in research due to the new higher education law, all the answers were negative.

Regarding changes in research due to the economic crisis, seven mentioned that until now the crisis did not affect their research; however, the majority of these respondents were from the social sciences and education where it is very common to do research without extra resources. Explanations from the 16 academics who said “yes” are stated as follows:

> “More work on proposal development (for research grants) vs. research per se. It is very hard to find money.”
>
> “It is very hard to find resourses for excavations; I really don’t know what to do in the future.”
>
> “These days we have to look for research money in private sources; that was not the case a few years ago."
>
> “No resources for supplies- we try very hard at least to help our PhD students to complete their experiments.”
>
> “The problem is not only the money, we lost our trust abroad, even if we have the money to pay [for] materials and supplies the order process is very complicated and these enterprises require firstly to deposit the money and then deliver the materials.”
>
> “The situation is hard as most of our research money [is] derived from our bonds; however, now we lost most of them due to PSI.”
>
> “Hard to invite and cooperate with colleagues from abroad – now we need invitations and is not fair only to visit other universities without having money to invite them.”
>
> “It is hard to participate in conferences as there is no money for that; previously we self-funded for conferences but now due to the crisis and salary cuts participation in a conference is a ‘luxury’.”

3.4.2.3 Changes in Services

Fourteen academics reported no changes concerning administrative services due to quality assurance, while nine reported “yes”. Most of the latter were board members either in their department quality assurance committee or in the university QA unit. While all 23 academics pointed to changes in their services due to the higher education law, 6 noted changes due to the economic crisis: “administrators retired without replacement”.

Table 3.3 presents an overview of the changes or not due to quality assurance law, to new higher education law and due to economic crisis. Accordingly most of the changes reported were due to the economic crisis and related to research. Fewer overall changes were reported as due to quality assurance law and no changes at all were due to the new higher education law.

Table 3.3 Academics' task and changes overview

	Changes due to QA law		Changes due to new HE law		Changes due to economic crisis	
Academics' tasks	Yes	No	Yes	No	Yes	No
Teaching	2	21	0	23	7	16
Research	2	21	0	23	16	7
Services	9	14	0	23	6	17

Source: Author's survey

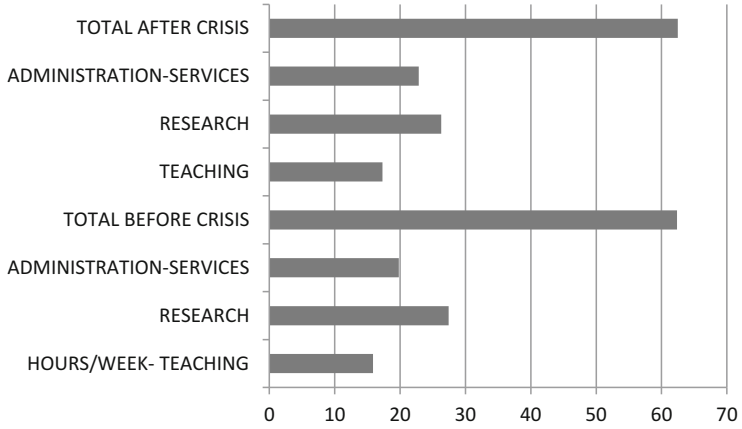

Fig. 3.2 An overview of hours per week that academics reported pre and post economic crisis (*Source*: Author's survey)

3.4.2.4 Workload and Working Time Due to Economic Crisis

Interview data indicates that the average number of weekly hours these professors worked was 62.3 (average) before the crisis and 63.5 after the crisis. Data indicates that teaching hours increased a little, time used for administrative work increased somewhat and time related to research declined (see Fig. 3.2).

Associate professors seem to have worked less on average than the professors; however, the total number of hours per week have increased from 45 (average) to 49.6 post crisis period. Also in this category, data indicates that they used more time for teaching and services and their time for research slightly decreased.

Data from assistant professors also shows that they worked on average, more hours per week after crisis, from 54 to 58. However, in this situation data shows that assistant professors used most time for teaching and research in the after crisis period and less for services. Figure 3.3 presents the overall data.

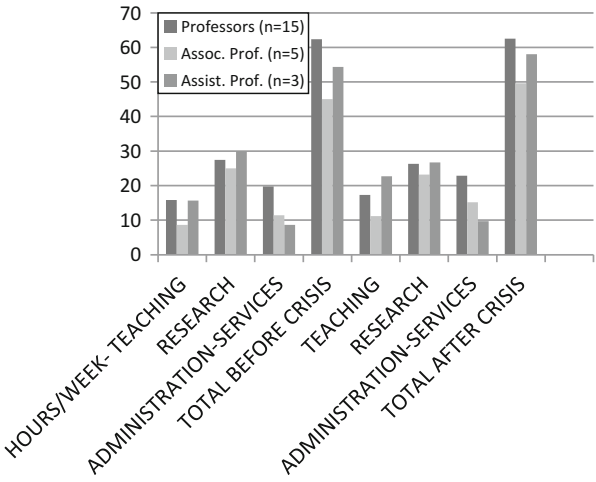

Fig. 3.3 Overall view concerning working hours before and after the economic crisis (*Source*: Author's survey)

3.4.2.5 Working Outside of the University

Only five academics currently work in their profession outside of the university; however, all of them mentioned that they worked in their professions before the crisis.

3.4.2.6 Satisfaction-Dissatisfaction and Motivation

Thirteen academics reported dissatisfaction with the working environment, eight found the working environment satisfactory, and two were neutral. Dissatisfied academics noted many problems in the infrastructure and administrative staff (due to retirement and not replacement) that it does not allow them to work properly. Satisfied professors simply noted they were satisfied and did not offer additional comments.

Motivational factors under these circumstances, even from academics, noted dissatisfaction with their working environment and frequently mentioned factors that reflect self-motivation. Sources of motivation mostly reported a personal desire for research and respect in their profession. One professor said: "I am in love with my research and I want to be ok with my conscience". Although the most common factor related to their motivation comes from their students and desire to teach. More precisely, they said: "need to respect our students and help them to complete their studies and to help our university to remain open". Several also noted that in this difficult time "we need to show our patriotism" while some others said simply we work because we have "filotimo" (pride).

3.5 Epilogue

Rules and regulations are a trademark concerning the operation of Greece's higher education. This study's perception is that it contributes to the understanding of academic work in Greece in the context of the economic crisis as it affects higher education policy changes in which academics are working. Under such changing circumstances, this small study shows that professors, with more than 25 years of work at this university, (also including associate and assistants professors) work hard and perhaps more than other colleagues abroad in order to keep the university open and help students to complete their degree. Bentley and Kyvik's (2012) study shows that full-time faculty at universities across the countries worked 48.4 h per week during the teaching semester. Perhaps this study can account for limitations and find a paradox that professors worked 60 h per week. Perhaps a limitation could be that the author interviewed "work-alcoholic" academics. However, data from the Ministry of Education shows that during the academic year 2010–2011, this university had 39,805 active undergraduate students, 5,322 graduate students and 4,583 doctoral students. Data also shows that during the 2009–2010 academic year 7,617 undergraduates, 1,288 graduate students and 441 PhD students completed their studies. Also unique to this particular university, graduate students do not pay tuition. The number of students, as well as the number of publications is an attempt to explain that academics in Greek universities still maintain many hours for teaching, research, and services. When I asked academics if they felt any changes due to quality assurance policy, to new higher education law, and to the economic crisis, they mostly reported not feeling that many changes. However, when I asked them to count their working hours by activities (teaching, research, and services) before and after the economic crisis, they suddenly began to realize how much they really were working. Some academics took for granted their duties because they never used a paper and pen to account for actual hours worked per duty. From their responses, it was clear to me that they had not expected that number of hours. Then the "moment of truth" came when I asked them about their motivation. It was very romantic to hear self-interest, pride, and patriotism.

Although these interviews took place in May 2012, the Greek government announced new austerity measures and salary cuts that began in January 2013. In order to be productive and effective, academics around the world expect and assume a relative stable and healthy professional environment. Without a stable economic and political environment, universities cannot effectively and efficiently actualize a plan and operationalize it; therefore, all stakeholders' interests are depreciated. Productivity is generally linked to satisfied staff that are confident of economic stability. Maslow's hierarchy of needs speaks to the basic human psychological need for shelter, food, and water. Next step up is security, which includes employment, resources (income), and health. Academics certainly require these two levels before they can feel motivated to be productive

and creative. In the Greek case, distractions about the stability of an income are reflected in several comments. One professor recently stated, “I am jealous as professors in other counties have both the political and financial support by their Ministries; here in Greece we have a war with the Ministry and suspicion”. This instability signals that more changes are coming in Greek higher education. In this small study several professors noted patriotism as a motivation; however, if Maslow’s needs cannot be met at the lowest level, patriotism alone cannot suffice to meet basic human needs nor can patriotism provide resources sufficient for effective and efficient operation of the universities. Perhaps a national survey could provide sufficient data to explain the Greek paradox: not only working for less but working for “nothing” or working because they have “filotimo”.

References

ADIP. (2011). *Report for the quality of higher education* Year 2010–2011. Athens.

Altbach, P. (Ed.). (1996). *The international academic profession: Portraits of fourteen countries*. Princeton: The Carnegie Foundation for the Advancement of Teaching.

Altbach, P. G., & Chait, R. (2001). Introduction. *Higher Education, 41*, 1–2.

Asderaki, F. (2009). The impact of the Bologna process on the development of the Greek quality assurance system. *Quality in Higher Education, 15*(2), 105–122.

Bentley, P. J., & Kyvik, S. (2012). Academic work form a comparative perspective: A survey of faculty working times across 13 countries. *Higher Education, 63*, 529–547.

Enders, J. (2006). The academic profession. In J. J. F. Forest & P. G. Altbach (Eds.), *International handbook of higher education* (pp. 5–21). Dordrecht: Springer.

Enders, J., & Teichler, U. (1997). A victim of their own success? Employment and working conditions of academic staff in comparative perspective. *Higher Education, 34*, 347–372.

Fanghanel, J. (2012). *Being an academic today*. Ealing: University of West London Professorial Lectures Series.

Karmas, C. A., Lianos, T. P., & Kalamatianou, A. G. (1988). Greek universities: An overview. *European Journal of Education, 23*(3), 261–269.

Kyvik, S. (2012). Academic workload and working time: Retrospective perceptions versus time-series data. *Higher Education Quarterly*, 1–12 (2012). doi:10.1111/hequ.12001

Louloudis, L. (2010). The ‘underfunding’ of universities; yes, maybe, maybe not? In A. Dimitropoulos, N. Maravejias, & A. Mitsos (Eds.), *The university today: Aspects of the crisis and adjustment steps* (pp. 148–171). Athens: Themelio, EPE.

Musselin, C. (2007). Transformation of academic work: Facts and analysis. In M. Kogan & U. Teichler (Eds.), *Key challenges to the academic profession* (pp. 175–190). Kassel: International Centre for Higher Education Research Kassel.

Papadimitriou, A. (2011). *The enigma of quality in Greek higher education: A mixed methods study of introducing quality management into Greek higher education*. Enschede: University of Twente, CHEPS.

Stamelo, Y., & Papadiamantaki, Y. (2004). The attractiveness of the academic workplace. Country report Greece. In J. Enders & E. de Weert (Eds.), *The international attractiveness of the academic workplace in Europe* (pp. 183–203). Frankfurt: GEW.

Stamoulas, A. (2006). Greece before the Bologna process: Confronting or embracing quality assurance in higher education? *Higher Education Policy, 19*(4), 433–445.

Tsaousis, D. (2001). The academic profession in Greece; current state and conditions of employment. In J. Enders (Ed.), *Academic staff in Europe: Changing contexts and conditions* (pp. 137–152). London: Greenwood Press.

Welch, A. (Ed.). (2005). *The professoriate. Profile of a profession*. Dordrecht: Springer.

YPEPTH (Ministry of National Education and Religious Affairs). (2007). *National report Hellas 2005–2007*. Athens.

Chapter 4
Changing Academic Identities in the Context of a Managerial University – Bridging the Duality Between Professions and Organizations

Evidence from the U.S. and Europe

Liudvika Leisyte

4.1 Introduction

In the past decades changes in occupations and service work in professional organizations has been in the center of attention of numerous contributions. The New Public Management oriented reforms driven by the value for money logic have influenced professional work in manifold ways in health care, accounting, law and education (de Bruijn 2010; Noordegraaf 2011). Reforms focusing on privatization, deregulation, and cutbacks have increasingly 'drawn professional services into organizational settings' (Pollitt 1993; Pollitt and Bouckaert 2000; Morrell 2006). In the higher education sector these reforms have been pronounced since 1990s (Braun and Merrien 1999). They have centralized and strengthened university management and sought efficiencies in work processes by performance monitoring and competition (Leisyte et al. 2010).

Occupations are seen as threatened by the organizational management in this context as they become a 'victim' of organizational standards and performance monitoring while managers are portrayed as the 'carriers of neo-liberal reforms and organizational control' (Noordegraaf 2011: 1350; Ackroyd et al. 2007; Scott 2008; de Boer et al. 2007). The reaction to the threats results in professions creating protective spaces in their organizations by 'return to professionalism' (Freidson

I acknowledge useful comments of A. Kottmann and R. Ossewaarde. Thank you for taking the time to read my draft and for the inspiring discussions. I further thank the audience in the international conference Changing Conditions and Changing Approaches of Academic Work held in Berlin, June 4–6, 2012 for their helpful comments.

L. Leisyte (✉)
Center for Higher Education, Technical University of Dortmund, Dortmund, Germany
e-mail: liudvika.leisyte@tu-Dortmund.de

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_4

2001; Noordegraaf 2011; Rip 2011). Similarly, the scholars of the relations between occupations and organizations note the duality between the two (Suddaby et al. 2007; Noordegraaf and Schinkel 2010). On the other hand, scholars argue that maintaining the duality between occupations versus organizations needs to be bridged and one needs to find typologies which incorporate the two in a productive way (Noordegraaf 2011). It is suggested that professionals may take up organizing roles and professional workers can develop organization capacities (Ibid.). However it is not clear how professional identities are transformed due to this duality.

This can be clarified by exploring an extreme example of a profession and an organization which are well known for their strong professional roles and identities and their protective spaces – i.e. academics. The academic profession and universities as organizations are the examples of the profession and type of organization which have been comparatively 'slow' in adapting to the changes in the institutional environment. The academic profession has been traditionally governed by scientific norms and disciplinary communities for centuries. Research suggests that the welfare state reforms have increasingly targeted universities to become more 'complete and corporate' organizations and this has resulted in more managed universities as we can observe in the Anglo-Saxon countries (Krücken and Meier 2006; Bentley and Kyvik 2012). The duality between occupation and organization management is well documented in higher education studies literature (Amaral et al. 2003; Huisman 2009; Deem et al. 2007). However, it is not clear whether and how disciplinary community values and norms are transformed by the organizational values and norms and thus, how the duality of the two can be bridged in this particular sector? To answer this question it is useful to turn to the work roles and identities of academics as they are ultimately the carriers of professional values and norms and to answer the two sub-questions: What kind of dynamics threatens the holistic academic identity? Does organizational managerialism replace disciplines as the source of identity for academics?

I will first discuss how the changes in the institutional environment of academics in the U.S. and in European contexts reflect on the changing working conditions for academics. Further, the dynamics of roles in academic work will be presented and discussed with a focus on changing academic roles and identities. Finally, a reflection and a typology of academic identities in a managerial context will be presented with the implications of these developments for the future discussions on the relationship between occupations and organizations.

4.2 Changing Institutional Environments for Academics in the U.S. and in Europe

In European countries, the reforms of the past two decades have increasingly been geared towards performance measurement and competitive output based funding, rewarding excellence and priority setting in research. The New Public Management like rhetoric of efficiency and effectiveness, doing more with less has permeated

national government's agendas as well as the agenda of the European Commission (Amaral et al. 2008; Huisman 2009; de Boer et al. 2007). These trends have been shaping the organizational fabric of universities, such as personnel policies, centralization of decision-making and reward structures to name a few as well as raising performance expectations from academia. In general these policies had an instrumental view, stressing economic values such as effectiveness, efficiency and economy instead of traditional academic values (Leisyte et al. 2009). Governments and universities are pressing for more and better teaching, more and better research outputs as well as knowledge commercialization. Some argue that the boundary between university and its environment has been blurred with stronger university engagement with industry and community. Largely the shift from state to market oriented higher education coordination has been observed (Clark 1983; Whitley et al. 2010).

As in the European context, the boundary between the university and the external environment in the U.S. has become much less defined due to government policies and institutional strategies that encourage more extensive interactions with the market (Geiger 2004; Slaughter and Rhoades 2004).

The relationship between state governments and public research universities has changed significantly in terms of funding, governance, and accountability. Although traditionally the role of the markets in the U.S. higher education has been more pronounced than in European higher education systems, the changes since 1980s have shifted towards even more dependence on competition for funding via state agencies or student fees rather than state funding (Leisyte and Dee 2012). Public universities have experienced a decline in the state's share of institutional revenues, especially visible in the recession period since 2008. Some large public research universities receive less than 10 % of their revenues from the state. These reductions in the relative share of state funding have triggered changes in the governance relationships between states and universities (Eckel and Morphew 2009). Despite these drastic reductions in public research universities, the accountability to the taxpayers and students has been more pronounced (Leisyte and Dee 2012).

These changes prompted universities to strive and compete for prestige. This has meant focusing on research, merging or making alliances with more prestigious institutions, recruiting "star" faculty. A few developments having direct impact on academic work roles can be identified, such as structural changes creating entrepreneurial/new administrative units, and changing hiring and promotion criteria (Ibid.).

Research universities in the U.S. have developed a range of new structural divisions, which specialize in the capitalization of knowledge. These units include new research institutes, technology transfer offices. Such units are typically located outside the boundaries of conventional academic department structures and faculty governance committees. One can see strong administrative structures and professionalized administrators, such as the technology transfer officer. Such administrative departments in the European universities have started to professionalize only in the past decade (Leisyte and Dee 2012).

In terms of hiring and promotion, the main change has been an emphasis on performance criteria, which depend not only on the preferences of the academic

community, but also on the priorities established by university administration, and in European systems performance criteria increasingly are linked to the national research evaluation systems. These criteria typically emphasize research productivity and the acquisition of external funding, and sometimes extend to include relevance to industry and economic development (Leisyte 2007).

What have these changes brought to the academic identities? First I will introduce how we can understand academic identities and subsequently will discuss what changes in academic identities may be observed both in Europe and in the U.S.

4.3 Understanding Academic Identities

Academic identities are usually perceived as shared identities, where individual identities are intertwined with the identity stemming from a particular discipline (Henkel 2000). This implies that identity first and foremost is connected to the disciplinary affiliation and the scientific norms such as academic freedom. Teaching and research however have been at the core of the holistic view of an academic as noted in the Humboldtian model (Schimank and Winnes 2000). At the same time, being an academic traditionally has meant belonging to a disciplinary community and adhering to a set of scientific norms and values.

For Hakala (2009) the traditional understanding of academic identity is related to ideas of truth, autonomy, academic calling, and passion for knowledge – which collectively constitutes a moral framework. In Henkel's (2000) study the constructs of discipline and academic freedom were the source of meaning and self-esteem among the academics. Disciplines have been shown to be a source of identity also by Becher and Trowler (2001). They have developed their own conceptual worlds, with their own 'ways of thinking and practising' (McCune and Hounsell 2005: 255).

Immersion within these worlds and practices has traditionally constituted the process of academic formation, through engagement with distinctive epistemic modes of reasoning and explanation, 'manners of justifying, explaining, solving problems, conducting enquiries, and designing and validating various kinds of products or outcomes' (Perkins 2006: 42). In this way the ascribed identity of the academics has stemmed from the socialization into and belonging to the disciplinary community. Academics belong to communities, 'guilds', occupying distinct territories with 'gatekeepers' and 'hostile natives' which allude to the community norms and guild like behaviour (Becher 1989; Clark 1963) that is typical of the classic Tönnies' *Gemeinschaft* (Loomis and McKinney 2002). Disciplinary communities thus have the features of *Gemeinschaft*, such as commonality (e.g. in disciplines it can be a common language), limited interaction with people outside the community (in disciplines this is witnessed by boundary maintenance), closeness via shared beliefs, norms and traditions (in disciplines, for example, one can see Mertonian norms of communalism, skepticism, universality, disinterestedness) which presuppose a clear pattern of behaviour (such as academic publishing and peer review). Identity in *Gemeinschaft* is ascribed by the community to an individual (in academia this is

done by forming the young generation into disciplinary ways of reasoning and carrying out research and following the academic ethos which are largely unquestioned).

Thus, academics only secondarily would identify themselves with their employing institution (Clark 1998). However, following Douglass (1970) and Thompson et al. (1990), social embeddedness of individuals and context are crucial for their identity formation. Although institutional arrangements in this context traditionally have focused on academic cultures (Maassen 1996), with the earlier mentioned changes in the institutional environment, the organizational management logic becomes much more important. Today academics increasingly have to account to their managers, organizational structures and routines are getting more blurred and diversified. Universities are establishing new research centers and institutes that become important venues for academic affiliation and agency (Mallon 2006). Universities more than ever also prescribe and standardize performance and promotion criteria in the managerial rather than the collegial governance regime, set strategic organizational profiles and priorities which potentially may influence academic work roles and identities, as academics are expected to be aligned to the mission and profile of the organizations within which they work (Leisyte and Dee 2012).

Alignment to the policy imperatives may be another impetus for change in academic identity. The growing policy emphasis on collaborative research suggests that the academic discipline may be only one of many sources from which faculty derive their sense of identity. Further increasing emphasis on valorization brings forward the new or sometimes 'rediscovered' identity of an academic entrepreneur (Leisyte et al. 2008).

In this regard Slaughter and Rhoades (2004) argue that academic capitalism may alter significant aspects of academic identity. The theory of academic capitalism suggests that the boundaries between universities, governments, and market actors have disintegrated considerably. In the profit making scenario of academic capitalism academics become simply another actor in political and economic exchanges, rather than remain a disinterested expert. He/she becomes an opportunity seeking and risk-taking academic entrepreneur (Ibid.) to whom the moral framework of a traditional academic and guild like behavior may be changing towards a choice of new self-concepts, 'the hats that can be changed each day'. Other structures and values are beginning to shape academics' sense of self. Academics may begin to derive their sense of self from broader entrepreneurial networks that provide access to resources, prestige, and status. If faculty begin to assume entrepreneurial identities, then they may no longer maintain the values of openness and disinterestedness in carrying out their work. In the Tönniens' terms – academics working in universities can be seen as belonging largely to *Gesellschaft* where the employer and employee, student and teacher relationships are based on contractual ties. Academics choose universities as universities choose whom to employ, they have rights and duties towards organization and increasingly have to show their 'organizational persona', acquire the social capital to be promoted within the organization. The relationships between academics and their universities can be seen as impersonal monetary connections based on individualism – another characteristic of *Gesellschaft*. Social ties within departments and faculties can be seen as instrumental and superficial,

with self-interest and exploitation becoming the norm. In such a system identity formation becomes a complex dynamic process whereby identities are achieved and less ascribed as individual freedom is at the center.

Thus the relative importance of the disciplinary communities in shaping academic identity may be changing both due to the process of self-identification whereby academics are choosing their roles from a more diversified pallet of roles ranging from teaching to academic entrepreneurship and from building credibility in increasingly multiple arenas (their university, policy, business as well as academic community).

At the same time academic identification with their disciplines has continued to be a strong theme in the findings of research into the academic profession (Henkel 2005; Enders and de Weert 2009). Studies have shown that academic identity maintenance may be related to the amount of reputation academic possesses within the academic community. Prestige accrues through the ability to produce outcomes (publications, grant proposals) that are valued by academic elites within the discipline via a continuous credibility building cycle (Alpert 1985; Leisyte et al. 2010). The amount of credibility matters for the ability to maintain professional autonomy (Leisyte 2007). Some studies show, for example, that academic elites are able to combine strong disciplinary identity with interdisciplinary collaboration (Marton 2005).

So to grasp the above developments it is thus paramount to understand the extent and the character of change in the institutional environments of academics and the extent to which these shifts have made a difference on the work roles and identities. How much of the guild like academic behavior and ascribed academic identities still can be found in today's universities on both sides of the Atlantic?

4.4 Changing Academic Identities in Europe

Historical studies have shown that teaching and research have been the main roles of academics at universities in Europe although with notable differences between countries which follow the Humboldtian or the Napoleonic tradition (Leisyte et al. 2009). Recent studies have shown that the current developments in academic systems point to the separation of the teaching from research leading to differentiation in academic roles in the systems where these roles were closely intertwined as found in the Humboldtian model (Leisyte and Dee 2012). At the same time, in systems where such differentiation has been systematically engrained, for example, in France, the blurring boundary between organizations and as noted by de Weert (2009), cross-fertilization, a movement toward closer collaboration between universities and separate research institutes can be observed. New structures, called "mixed research units" have been formed, and include both university faculty and researchers from the institutes (Musselin 2005). This fosters the multiplication of the work roles of these scholars. Furthermore, in some European countries such as Germany, the Netherlands, Scandinavia, and France, the model of academics allocating a fixed percentage of time for teaching and research has been replaced by

staffing models that allow for more freedom in the division of teaching and research per academic staff member. For example, as observed by de Weert (2009), in the Netherlands, a more diversified career pattern can be found in the new job ranking system. Individual faculty members can apply for specific roles on the basis of an assessment of their qualifications to be involved either in teaching or research. Thus, through a system of functional role differentiation research performance does not become the only factor in establishing a career path. However, the combination of competencies in teaching and research is assigned a higher value by universities than competencies in either research or teaching alone (de Weert 2009: 148).

Studies suggest that academic identities are renegotiated and reasserted as academics encounter new expectations and pressures in their work environments. In this regard, the integration of academics into their organizational context has been one important development in the European context (Musselin 2008). The importance of an institutional affiliation and the sense of belonging to a specific university with its particular profile and mission are becoming more of an expectation at European universities. Thus, adhering to an institutional identity is becoming important (Henkel 2000; Morris and Rip 2006). The institutionalized support systems that universities establish for mentoring junior faculty, in areas such as how to write grant proposals, how to teach and the expectation of fitting specific thematic institutional priorities indicate that the organization is increasingly involved in shaping academic work and academic identities (Leisyte 2007).

Further, the academic identities in the European contexts have been challenged by the fragmentation of the academic profession (Enders and de Weert 2009). This has meant increasing disposability of academic staff with the increase in short-term employment contracts compared to the tenured positions as well as monitoring pressures experienced by the academics such as time-writing, filing yearly publication production as well as accounting to their managers for their overall activities. In terms of academic roles thus specialization in the marginalized roles, such as teaching-only positions has become apparent while the traditional 'tenured' academic staff would face ever widening set of roles.

For example, a study of the teaching-research nexus in medieval history and life sciences departments in Dutch and UK universities (Leisyte et al. 2009) has indicated that the teaching-research nexus is being reshaped by factors in the institutional environment, including budgetary pressures, growing student numbers, and the expectations of external sponsors of research. Interviewed academics are involved both in teaching and research, although the amount of teaching varies per career level and discipline. Both roles are central in forming their academic identities. However, in the case of postdocs they mainly see themselves as researchers rather than teachers. The disciplinary identities were strong in studied departments in both countries.

Academics in this study experienced time pressure (Ibid.). Especially this was witnessed by respondents in the UK setting, where the promotion criteria required a certain number of publications within a limited timeframe. If academics could not meet the demands for research publications, they would not be allowed to participate in the research evaluation exercise. This may marginalize them into teaching-only

roles and thus may imply academics being ascribed a new identity. Institutional policies that create teaching-only positions are disliked by studied academics. It is possible, that 'teacher' identity is not a preferred identity for these academics as it does not contribute much towards promotion and recognition (Leisyte 2007).

Musselin (2009) argues that the study of disciplinary divisions in academic work has been addressed in the literature, while the division of work among peers has not been sufficiently studied, since the assumption holds that peers are involved in similar activities. However, divisions among faculty peers have been made visible and more pronounced due to external evaluations where faculty are categorized as "research active" or not. These new divisions of work can inadvertently influence the self-concepts of various types of academics. For example, in the UK case studies (Lucas 2006), faculty struggled in biology, English, and sociology departments over academic and research identities. In particular, they were concerned about the classification of faculty for external research evaluations, which distinguish between research-active and non-active academic staff. As noted by Lucas, not being research active does not mean exclusion from the department, but the designation has serious implications for the type of work an academic is engaged in, the valuing of that work, and individual identity.

Some authors, however, have argued that despite the changing management practices and working conditions at universities, academics have not embraced the values stemming from organizational management. Studies indicate that traditional academic identities are strong, and academics continue to see their roles of teaching and research as primary endeavors in the UK, Germany, Austria, the Netherlands, and Finland to name a few examples (Kehm and Leisyte 2010; Ylijoki 2003). Given strong adherence to traditional academic identities it is argued that the claims of de-professionalization of the faculty are somewhat overstated (Leisyte and Dee 2012). Trowler (1998) argues that changes in the institutional environment do not determine how they will be interpreted by academics or what self-understandings of academics will emerge as a result.

Kolsaker (2008) has shown that academics are positive and pragmatic about managerial control. They accept managerialism as an external technology of control, as well as a facilitator of enhanced performance, professionalism, and status. Kolsaker concludes that this is a more positive view compared to the prevailing literature on the demoralization of academic identities. Her findings suggest that her respondents regard their exposure to managerialism as potentially important in maintaining autonomy and in strengthening society's trust in academics, which may in turn help to maintain the professional status of academics in society.

Further, others argue that other structures and values besides disciplinary cultures are beginning to shape faculty members' sense of self (Leisyte and Dee 2012). Rather than viewing faculty identity as closely aligned with a discipline or department, academics may begin to derive their sense of self from broader entrepreneurial networks that provide access to resources, prestige, and status. If academics begin to assume entrepreneurial identities, then they may no longer maintain the values of openness and disinterestedness in carrying out their work. Research findings, for example, may be held secret in order to exploit the commercial potential of discoveries, rather

than published widely to advance the construction of knowledge within the academic community. Gaining social capital in policy and business networks to ensure the sustainability and diversification of funding flows has broadened the circle of audiences beyond the discipline where 'credibility' has to be built (Leisyte 2007).

All in all, despite the broadening of the concept of being an academic to include a variety of roles, and indeed, the institutional imperatives increasingly shaping academic identities, the traditional self-concept of a teaching and researching academic is still found in the European universities.

4.5 Changing Academic Identities in the U.S.

As universities have developed new structures and strategies in response to the changing institutional environment, the work roles of academics have been reshaped (Leisyte and Dee 2012). The managerial demands in universities have increased the expectations for performance in a variety of roles for academics on the one hand, while at the same time, structural differentiation has led to a structural differentiation of teaching and research positions. The pursuit of revenue and prestige has generated incentives for academics to allocate more of their time to research (Melguizo and Strober 2007). Public pressures for accountability regarding the quality of undergraduate education, in contrast, have resulted in increasing the amount of effort that academics need to devote to teaching (Fairweather and Beach 2002). Academic roles have expanded to increasingly include entrepreneurial roles in their work portfolios (Leisyte and Dee 2012).

Building prestige in the disciplinary community has increasingly coincided with what the universities reward with higher pay – research performance. Although academics argued in 1980s that research informs and enriches their teaching, external observers were more likely to suggest that faculty neglect undergraduate students so that they can focus on research and graduate education (Ibid.). In the 1990s it is argued that academics increased their teaching activities and were combining both roles as a response to the criticism of neglect of undergraduate education (Schuster and Finkelstein 2006). However, this meant working more hours and spending more time for committee work (Leisyte and Dee 2012).

Further, the entrepreneurial role of academics has been investigated in relation to the main roles of teaching and research. Evidence suggests that entrepreneurial academics involved in university-industry partnerships and acquiring grant funding are less committed to teaching although this was not the case when these activities included consultancy (Campbell and Slaughter 1999; Lee and Rhoads 2004).

Structural changes in the universities, such as creation of research institutes and centers, or the creation of teaching or research-only positions have significantly reshaped the roles of academics at universities. The affiliation to research centers among senior academics influenced the time devoted to teaching (Bunton and Mallon 2007). This means that entrepreneurial activity may "crowd out" other forms of academic work and roles (Leisyte and Dee 2012).

Thus we find a greater use of teaching-only and research-only appointments. The "unbundling" of the faculty role has further separated academic roles into prestigious usually tenured academics involved in research and graduate education, while non-tenure academics are largely engaged in less prestigious and more numerous undergraduate teaching (Ibid.). Academics who work in new academic programs developed by entrepreneurial units are likely to hold teaching-only positions. Similarly, research centers and institutes may employ research-only staff (Eckel and Morphew 2009). These appointments, which tend to be non-tenure appointments, permit the university greater flexibility in the development of new programs. However, they also separate the two roles of teaching and research and are involved in entrepreneurial activity. The question remains what happens to the academic identities of the academics employed on the temporary contract and in entrepreneurial units (Leisyte and Dee 2012).

Research findings suggest that entrepreneurial academics seek to maintain an academic identity (Ibid.). Participation in technology transfer facilitated the development of a hybrid identity, which was characterized by a focal academic self and a secondary commercial persona (Jain et al. 2009). In order to maintain the primacy of their academic identities, these academics engaged in delegating and buffering. They did so by delegating commercial tasks to technology transfer officers or to graduate students interested in industrial careers. These academics also buffered themselves by reaffirming their dedication to academic values, including an emphasis on basic research. It seems that engagement in commercial activities can be in line with academic identities (Leisyte and Dee 2012). For entrepreneurial academics leveraging the invention so that it would have a larger societal benefit was in line with what academic work is about (Jain et al. 2009). The formation of academic identities also embraces this as graduate students who were involved in corporate-funded research maintained the traditional academic norms, such as academic freedom (Roach and Sauermann 2010). Preferences for publishing over patenting, basic research over applied, and long-term research agendas over short-term project work are visible among the entrepreneurial academics (Slaughter et al. 2004; Leisyte and Dee 2012).

Despite the evidence of a seemingly good combination of different academic and entrepreneurial identities whereby the academic values are still strongly upheld, a number of authors have pointed to the disruptive processes of academic identities under the new conditions of work.

It has been argued that entrepreneurialism and increased managerialism may dismantle a sense of collective academic identity (Ibid.). There is a concern that a gap may appear between the entrepreneurial and non-entrepreneurial academics. This may happen if under the new managerial regime entrepreneurial activity gains greater rewards and status (Ibid.). The academic elites tend to become closely aligned with the senior management's priorities and the other way around, the rest of academics who are largely engaged in education further unite with non-tenured academic staff (Gumport 1993). Thus, two different collective identities emerge under these conditions, the 'faculty identity become splintered' (Leisyte and Dee 2012). Moreover, academics become another interest group in the struggle for

university resources, whereby their authority in the governance of universities has declined with very limited influence in the selection of managers and setting budgetary priorities in institutions (Schuster and Finkelstein 2006).

Academic identity is being reshaped in ways that position the faculty member as an active agent in markets and politics. This emerging ascribed identity differs significantly from the Mertonian conceptualization of a disinterested academic and the moral framework of the academic guild (Slaughter and Rhoades 2004) although its formation continues to take place in the graduate schools and in early career steps (Mendoza 2007).

4.6 Discussion and Conclusion

Three major developments threaten the holistic academic identity. First, the New Public Management inspired reforms geared towards efficiency and effectiveness in public sectors have affected universities as they have become more 'corporate' organizations with stronger organizational management and performance monitoring. Additionally, as a by-product of managerial reforms, universities increasingly profile themselves to retain competitive advantage which may impact the profiles of academic staff being hired and promoted. Second, the blurring of organizational boundaries has taken place which may require academics to work in a collaborative mode. Third, academic capitalism has increasingly permeated universities with the requirements for entrepreneurial roles of academics.

These changes have increasingly shaped the work roles of academics towards functional, structural and social differentiation away from the holistic 'integrated scholar' model. Firstly, functional differentiation, the 'splintering' of the academic role (Schuster and Finkelstein 2006) towards teaching-only and research-only positions is noted both in the U.S. and in the European higher education systems. At the same time, the entrepreneurial role is encouraged and adopted by some academics as complementing both teaching and research, or substituting one of them. Second, structural differentiation can also be observed as universities create new entrepreneurial units. Academics employed in the units adopt specific teaching-only or research-only roles based on the specific mission of that particular unit. Third, there is a clear trend towards differentiation of tenured and non-tenured academic staff which may lead to 'haves and have not's' and increased social differentiation. Although the marginalization seems to be more pronounced in the U.S. (partly due to high salary differentials between different universities for contingent and tenured faculty), this trend of the 'temporary working class' of academics can be identified in the European context as well.

However, have organizational managerialism and academic capitalism replaced disciplines as the source of identity for academics? Discipline as a source of identity seems to retain its dominance despite the changing management practices and working conditions of universities. It seems that academics do not completely embrace the values stemming from organizational management and the demoralization of

academic identity may be slightly overstated. At the same time, the evidence on academic entrepreneurship and academic symbolic compliance (Leisyte 2011; Leisyte et al. 2010) show that buffering and other strategies are successfully employed by academics, and thus, one can imagine four different scenarios (types) of changes in the sources of academic identities. In the first type, the values of disciplines can be retained without allowing other values to influence, thus, resist change. At the same time a scenario of losing core disciplinary values without replacing them to organizational values could be envisioned in the second type. This could mean giving up academic identity while still in search of another identity. The formed identities in both of these types would maintain the high occupation and organization duality. The other two types (III and IV) of identity formation would in fact lower the duality between the occupation and organization. The pro-active opportunistic behavior of academic entrepreneurs does suggest another dynamics – the values of academic capitalism and organizational management may replace the core values of an academic (I call it type IV identity formation). The change from communalism towards individualism, from open science publishing towards proprietary research or replacing disciplinary values with organizational values could be observed, academics can become professional managers (e.g. Ziman 2000; Deem et al. 2007). Finally, the third (III) scenario could be the enrichment of the core academic identity by incorporating other identities stemming from organization or entrepreneurial networks as academics become active agents shaping their self-concepts. In this III type hybrid identities of a pro-active academic entrepreneur or an academic manager are formed. The academics who work in collaborative and entrepreneurial modes in Mode 2 type of disciplines (Gibbons et al. 1994) may be the suspects to fit this latter category.

Coming back to the main question of this paper the duality of occupations and organizations in the case of the academic profession and universities can be bridged when professionals, in this case academics, follow the Type III or Type IV change dynamics. Seemingly the enriching Type III identity formation is a preferable scenario to bridge the duality of academic and organizational manager as in such case a hybrid identity is formed. Then organizational, entrepreneurial and disciplinary values are embraced at the same time, although perhaps to different degrees. Further research is however needed to test these four types so as to exactly unpack the processes and conditions of breaching the dualism between occupations and organizations.

References

Ackroyd, S., Kirkpatrick, I., & Walker, R. M. (2007). Public management reform in the UK and its consequences for professional organization: A comparative analysis. *Public Administration, 85*(1), 9–26.

Alpert, D. (1985). Performance and paralysis: The organizational context of the American research university. *Journal of Higher Education, 56*(3), 241–281.

Amaral, A., Meek, V. L., & Larsen, I. M. (Eds.). (2003). *The higher education managerial revolution?* Dordrecht: Kluwer Academic Publishers.

Amaral, A., Bleiklie, I., & Musselin, C. (Eds.). (2008). *From governance to identity*. Dordrecht: Springer.

Becher, T. (1989). *Academic tribes and territories: Intellectual enquiry and the cultures of disciplines*. Buckingham: Open University Press/SRHE.

Becher, T., & Trowler, P. (2001). *Academic tribes and territories* (2nd ed.). Buckingham: Open University Press/SRHE.

Bentley, P., & Kyvik, S. (2012). Academic work from a comparative perspective: A survey of faculty working time across 13 countries. *Higher Education, 63*(4), 529–547.

Braun, D., & Merrien, F.-X. (1999). *Governance of universities and modernisation of the state: Analytical aspects. Towards a new model of governance for universities? A comparative view*. London: Jessica Kingsley Publishers.

Bunton, S., & Mallon, W. (2007). The impact of centers and institutes on faculty life: Findings from a study of life sciences faculty at research-intensive universities' medical schools. *Innovative Higher Education, 32*, 93–103.

Campbell, T., & Slaughter, S. (1999). Faculty and administrators' attitudes toward potential conflicts of interest, commitment, and equity in university-industry relations. *Journal of Higher Education, 70*(3), 309–352.

Clark, B. R. (1963). Faculty culture. In T. F. Lunsford (Ed.), *The study of campus cultures*. Boulder: Western Interstate Commission for Higher Education.

Clark, B. (1983). *The higher education system: Academic organization in cross-national perspective*. Berkeley: University of California Press.

Clark, B. (1998). *Creating entrepreneurial universities: Organizational pathways of transformation*. New York: Pergamon.

de Boer, H., Enders, J., & Leisyte, L. (2007). On striking the right notes: Shifts in governance and the organizational transformation of universities. *Public Administration, 85*(1), 27–46.

De Bruijn, J. A. (2010). *Managing professionals*. London: Routledge.

de Weert, E. (2009). The organised contradictions of teaching and research: Reshaping the profession. In J. Enders & E. de Weert (Eds.), *The changing face of academic life* (pp. 134–154). Basingstoke: Palgrave MacMillan.

Deem, R., Hillyard, S., Reed, M., & Reed, M. (2007). *Knowledge, higher education, and the new managerialism: The changing management of UK universities*. Oxford: Oxford University Press.

Douglass, M. (1970). *Natural symbols: Explorations in cosmology*. London: Barrie & Rockliff.

Eckel, P., & Morphew, C. (2009). The organizational dynamics of privatization in public research universities. In C. Morphew & P. Eckel (Eds.), *Privatizing the public university: Perspectives from across the academy* (pp. 88–108). Baltimore: Johns Hopkins University Press.

Enders, J., & de Weert, E. (2009). *The changing face of academic life: Analytical and comparative perspectives*. Basingstoke: Palgrave MacMillan.

Fairweather, J., & Beach, A. (2002). Variations in faculty work at research universities: Implications for state and institutional policy. *Review of Higher Education, 26*(1), 97–115.

Freidson, E. (2001). *Professionalism: The third logic*. Cambridge: Polity.

Geiger, R. (2004). *Knowledge and money: Research universities and the paradox of the marketplace*. Stanford: Stanford University Press.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge*. London: Sage.

Gumport, P. (1993). The contested terrain of academic program reduction. *Journal of Higher Education, 64*(3), 283–311.

Hakala, J. (2009). The future of the academic calling? Junior researchers in the entrepreneurial university. *Higher Education, 57*(2), 173–190.

Henkel, M. (2000). *Academic identities and policy change in higher education* (Vol. 46). London: Jessica Kingsley Publishers.

Henkel, M. (2005). Academic identity and autonomy revisited. In I. Bleiklie & M. Henkel (Eds.), *Governing knowledge: A study of continuity and change in higher education. A festschrift in honor of Maurice Kogan* (pp. 145–165). Dordrecht: Springer.

Huisman, J. (2009). *International perspectives on the governance of higher education. Alternative frameworks for coordination*. London: Routledge.
Jain, S., George, G., & Maltarich, M. (2009). Academics or entrepreneurs? Investigating role identity modification of university scientists involved in commercialization activity. *Research Policy, 38*, 922–935.
Kehm, B., & Leisyte, L. (2010). Effects of new governance on research in the humanities: The example of medieval history. In D. Jansen (Ed.), *Governance and performance in the German public research sector*. Dordrecht: Springer.
Kolsaker, A. (2008). Academic professionalism in the managerialist era: A study of English universities. *Studies in Higher Education, 33*(5), 513–526.
Krücken, G., & Meier, F. (2006). Turning the university into an organizational actor. In G. Drori, J. Meyer, & H. Hwang (Eds.), *Globalization and organization: World society and organizational change* (pp. 241–257). Oxford: Oxford University Press.
Lee, J., & Rhoads, R. (2004). Faculty entrepreneurialism and the challenge to undergraduate education at research universities. *Research in Higher Education, 45*(7), 739–760.
Leisyte, L. (2007). *University governance and academic research: Case studies of research units in Dutch and English universities*. Ph.D. thesis. Enschede: University of Twente, CHEPS.
Leisyte, L. (2011). Research commercialization policies and their implementation in the Netherlands and in the US. *Science and Public Policy, 38*(6), 437–448.
Leisyte, L., & Dee, J. (2012). Changing academic practices and identities in Europe and the US. Critical perspectives. In J. C. Smart & M. B. Paulsen (Eds.), *Higher education: Handbook of theory and research* (pp. 123–206). Dordrecht: Springer.
Leisyte, L., Enders, J., & de Boer, H. (2008). The freedom to set research agendas – illusion and reality of the research units in the Dutch universities. *Higher Education Policy, 21*, 377–391.
Leisyte, L., Enders, J., & de Boer, H. (2009). The balance between teaching and research in Dutch and English universities in the context of university governance reforms. *Higher Education, 58*(5), 619–635.
Leisyte, L., Enders, J., & de Boer, H. (2010). Mediating problem choice: Academic researchers' responses to changes in their institutional environment. In R. Whitley, J. Gläser, & L. Engwall (Eds.), *Reconfiguring knowledge production: Changing authority relationships in the sciences and their consequences for intellectual innovation* (pp. 291–324). Oxford: Oxford University Press.
Loomis, C. P., & McKinney, J. C. (2002). *Community and society by Ferdinand Tönnies*. Devon: David and Charles.
Lucas, L. (2006). *The research game in academic life*. Maidenhead: Open University Press/ McGraw-Hill.
Maassen, P. (1996). *Governmental steering and the academic culture*. Enschede: CHEPS.
Mallon, W. (2006). Centers, institutes, and academic decision making: Addressing "suburban sprawl" through strategies for "smart growth.". In P. Eckel (Ed.), *The shifting frontiers of academic decision making: Responding to new priorities, following new pathways* (pp. 55–74). Westport: ACE/Praeger.
Marton, S. (2005). Academics and the mode-2 society: Shifts in knowledge production in the humanities and social sciences. In I. Bleiklie & M. Henkel (Eds.), *Governing knowledge: A study of continuity and change in higher education. A Festschrift in honour of Maurice Kogan* (pp. 169–188). Dordrecht: Springer.
McCune, V., & Hounsell, D. (2005). The development of students' ways of thinking and practising in three final-year biology courses. *Higher Education, 49*, 255–289.
Melguizo, T., & Strober, M. (2007). Faculty salaries and the maximization of prestige. *Research in Higher Education, 48*(6), 633–668.
Mendoza, P. (2007). Academic capitalism and doctoral student socialization: A case study. *Journal of Higher Education, 78*(1), 71–96.
Morrell, K. (2006). Policy narrative: New labour's reform of the national health service. *Public Administration, 84*(2), 367–385.

Morris, N., & Rip, A. (2006). Scientists' coping strategies in an evolving research system: The case of life scientists in the UK. *Science and Public Policy, 33*(4), 253–263.

Musselin, C. (2005). *Le Marché des universitaires. France, Allemagne, États-Unis*. Paris: Science Po.

Musselin, C. (2008). Towards the sociology of academic work. In A. Amaral, I. Bleiklie, & C. Musselin (Eds.), *From governance to identity* (pp. 47–56). Dordrecht: Springer.

Musselin, C. (2009). Profession, market, and organization: How is academia regulated? In J. Enders & E. de Weert (Eds.), *The changing face of academic life: Analytical and comparative perspectives* (pp. 117–133). Basingstoke: Palgrave Macmillan.

Noordegraaf, M. (2011). Risky business: How professionals and professional fields (must) deal with organizational issues. *Organization Studies, 32*(10), 1349–1371.

Noordegraaf, M., & Schinkel, W. (2010). Professional capital contested: A Bourdieusian analysis of conflicts between professionals and managers. *Comparative Sociology, 10*(1), 1–29.

Perkins, D. (2006). Constructivism and troublesome knowledge. In J. H. F. Meyer & R. Land (Eds.), *Overcoming barriers to student learning: Threshold concepts and troublesome knowledge* (pp. 33–47). London: Routledge.

Pollitt, C. (1993). *Managerialism and the public services: Cuts or cultural change in the 1990s?* Oxford: Blackwell.

Pollitt, C., & Bouckaert, G. (2000). *Public management reform. A comparative analysis*. Oxford: Oxford University Press.

Rip, A. (2011). Protected spaces of science: Their emergence and future evolution in a changing world. In M. Carrier & A. Nordmann (Eds.), *Science in the context of application* (pp. 197–220). Springer: Boston Studies in Philosophy of Science.

Roach, M., & Sauermann, H. (2010). A taste for science? Ph. D. scientists' academic orientation and self-selection into research careers in industry. *Research Policy, 39*, 422–434.

Schimank, U., & Winnes, M. (2000). Beyond Humboldt? The relationship between teaching and research in European university systems. *Science and Public Policy, 27*(6), 397–408.

Schuster, J., & Finkelstein, M. (2006). *The American faculty: The restructuring of academic work and careers*. Baltimore: Johns Hopkins University Press.

Scott, W. R. (2008). Lords of the dance: Professionals as institutional agents. *Organization Studies, 29*(2), 219–238.

Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state, and higher education*. Baltimore: Johns Hopkins University Press.

Slaughter, S., Archerd, C., & Campbell, T. (2004). Boundaries and quandaries: How professors negotiate market relations. *Review of Higher Education, 28*(1), 129–165.

Suddaby, R., Cooper, C. J., & Greenwood, R. (2007). Transnational regulation of professional services: Governance dynamics of field level organizational change. *Accounting, Organizations and Society, 32*(4–5), 333–362.

Thompson, M., Ellis, R., & Wildawsky, A. (1990). *Cultural theory*. Boulder: Westview Press.

Trowler, P. (1998). *Academics responding to change: New higher education frameworks and academic cultures*. Buckingham: SRHE and Open University Press.

Whitley, R., Gläser, J., & Engwall, L. (Eds.). (2010). *Reconfiguring knowledge production: Changing authority relationships in the sciences and their consequences for intellectual innovation*. Oxford: Oxford University Press.

Ylijoki, O.-H. (2003). Entangled in academic capitalism? A case study on changing ideals and practices of university research. *Higher Education, 45*(3), 307–335.

Ziman, J. (2000). *Real science. What it is, and what it means*. Cambridge: Cambridge University Press.

Chapter 5
Teaching and Research in Binary Systems of Higher Education: Convergent or Distinctive Profiles?

Egbert de Weert

5.1 Introduction

One of the central themes over the years in the sociology of higher education has been the structural differentiation of academic systems and the development in various national contexts. The name of Burton Clark is inextricably associated with this theme who in an early working paper set the agenda for a host of crucial matters and laid the basis for a longstanding research tradition ever since (Clark 1978).

Distinguishing various forms and combinations of differentiation, Clark considered the binary or multi-type structure as the major form of sector differentiation. In this structure several types—the university, the teacher-training college, the technological school—constitute parts of a single system under the same public purse for purposes of early classification and comparison. One of the central questions he raised was about the development of institutional types: their persistence over long periods of time, the transference of types, the structural responses to growth, and the legitimation of different institutional roles. The focus of research is on the conditions under which the institutional forms of higher education diverge or converge.

Until the present day the distinction between universities and the other types of higher education has been conserved as a key characteristic of national systems. The international comparative project 'the Changing Academic Profession' (CAP) distinguishes universities and 'other higher education institutions', the latter referring to a residual category of various forms and types of institutions not belonging to the university sector.

However, these other institutions have developed strongly and occupy an important place in national higher education systems. Particularly countries with a highly

E. de Weert (✉)
CHEPS, University of Twente, Enschede, Netherlands
e-mail: egb.deweert@ziggo.nl

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_5

developed model of the binary system separate universities from institutions for vocational higher education with a distinctive identity and mission. In several countries these institutions are allowed to label themselves first as 'universities of professional education', and at present as 'universities of applied sciences', albeit for international audiences only. This change of name relates to the fact that these institutions have been assigned a research role alongside their teaching obligations. In several European countries the sector sees it as their mission to link their role of educating students for employment by carrying out applied research.

Given this extended research function the question is whether the major distinction in binary systems between research universities (academic) and teaching institutions (vocational) still holds or whether this heralds the end of the binary structure. In particular we ask:

– What encompasses the kind of research at the other institutions, can this be delineated from university research and if so, is this a sufficient legitimation for a binary divide to be supported and regulated by public policy?
– What are the perceptions of the academic staff of these other institutions about the extended research function of their institution and the changes this involves for their professional work role?

This paper uses data of the CAP project and concentrates on those European countries with a clear binary structure, i.e. Finland, Germany, the Netherlands, Norway, and Portugal. In most of these countries the other institutions are called 'Universities of Applied Sciences' (UAS), a term we will use throughout this paper. Also data from Australia and the U.S. will be included. Although these two countries have no strict binary divide as in the European countries, but rather a multi-type structure, there is some comparability.

5.2 Converging Trends

Efforts to develop suitable categories for classifying the configuration of the higher education institutions played an important role in the discourse on the diversity of higher education systems (for an overview Teichler 1988, 2007). For binary systems three major dimensions have prevailed in distinguishing institutional types: (1) the vertical degree level dimension (e.g. sub-degree programs, bachelor, master and doctoral programs), (2) the academic versus vocational dimension, and (3) the distinction between research and teaching focused institutions. On all these dimensions clear convergent trends have occurred.

In Europe convergent trends of institutional types have increasingly been observed in the context of the Bologna Process aiming towards a convergent (tiered) structure leading to the establishment of a European Higher Education Area (EHEA). As Van Damme (2009: 42) states, the creation of national 'higher education areas' as the building blocks of this area has fuelled an inclusive approach as institutions with differing profiles and activities were integrated into a common

framework and a common legislation. This is evident in the new degree structure which is applicable to all types of institutions. Although the length of programs may vary, programs qualify for the bachelor or master degree with standard titles independent of the institution where this title has been acquired. Increasingly UAS are entitled to award master's degrees in addition to the bachelor degree, sometimes labeled as professional masters. The UAS sector is seeking degree awarding powers on the doctoral level (PhD) as well, to date still reserved for universities, but this seems to be a matter of time.

This development usually described in terms of the 'academic drift' of institutional aspirations to ape the programmatic offerings of the most prestigious universities continues also to occur within the U.S. higher education system. State higher education boards continuously point to instances of duplicative degree programs, and colleges and universities are said to be "brazen in their attempts to climb the prestige ladder by becoming more comprehensive in their program offerings" (Morphew 2009: 245).

It would be a too one-sided view to see this process towards degree level work as merely a symptom of a drift upward in the academic pecking order. Certainly in the European context it also is an opening up of new opportunities to students who hitherto would have little possibility to study at degree level.

On the other hand universities have been active in the domain of UAS by developing programs with a clear vocational orientation often covered with some academic 'sauce', without a clear scientific foundation. This 'vocational drift' has been encouraged by employers, professional bodies, and pressure from governments to make their programs more relevant to the labour market—a process reinforced by the Bologna Process which aims to strengthen graduate 'employability'. There are parallels within the U.S. as suggested by the notion of 'Academically Adrift' (Arum and Roksa 2012) which refers to a lack of academic rigor: students during their first 2 years of college do not improve significantly in a range of skills—including critical thinking, complex reasoning, and writing—typically the learning goals normally associated with university education.

On both of these dimensions the distinctions are blurring between institutional types. According to institutional theorists higher education institutions are extremely susceptible to isomorphic forces. They are becoming more alike in a competitive cycle whereby institutions incorporate or copy the structures and behaviors of more prestigious institutions (DiMaggio and Powell 1983).

The third dimension of the dualism of research universities versus teaching institutions as competing ideologies is shifting because of the extended research activities of UAS in Europe. The rise of fuzzy boundaries makes it more difficult to justify research as a criterion for sector differentiation and in the absence of regulative mechanisms may encourage institutional strategies to move beyond boundaries towards what Guy Neave once called the blessed state of integration (Neave 1983).

In many countries governments have decreased the level of regulation in favor of more autonomy and a larger playing field for single institutions to develop their own missions and profiling. Consequently functions tend to overlap leading to a diversification across the binary divide. A brief reference to some countries may illuminate

how regulative policies or reversely weakened control systems encourage institutions to pursue the strategy to move beyond the binary boundary and towards incorporation in the university sector.

Norway is a clear case where the binary divide has been under pressure for quite some time. The college sector shifted the name of 'state colleges' to 'university colleges' in 2000, albeit they were not entitled to use the university label in the Norwegian context. In 2004 the government decided that colleges that meet certain minimum standards could apply for accreditation to university status. Standards are the provision of a number of masters and doctoral programmes in a number of scientific disciplines (Kyvik and Skodvin 2003). Up to the present, only a few colleges were successful in acquiring the university status.

In addition it was decided that all types of institutions are entitled to provide doctoral programs and to award doctoral degrees. Some university colleges have been eager to get the *ius promovendi*, and for example Akershus University College successfully applied for a PhD program in behaviour analysis. Assessment criteria are the research capacity, the development of a distinctive profile that is not competitive with that of universities, and the academic level of the professoriate.

In the Netherlands a similar policy turn occurred, when a draft higher education law enabled UAS institutions to obtain the university title with degree awarding powers on all levels including the doctoral level. This law included a public argument in favour of the 'de-institutionalisation' of higher education provision: programs had to be qualified as 'academic' or 'professional' regardless of the institution which would provide them. However, this draft law was withdrawn thereby preserving the binary divide between institutional types, but the tone has been set.

Regarding the criteria for the award of the 'university' title in Norway and the Netherlands, it is interesting to add that in the UK the 2004 Higher Education Act removed the requirement for the definition of a university to include research degree awarding powers (Brennan et al. 2007). So where European countries strictly define degree-awarding powers of universities by law, the UK has abandoned this criterion.

In Finland, Germany, Portugal the binary system is also on the move and research is playing an increasingly important part of the mission of the UAS. In these countries the emphasis is on collaboration with the university sector and creating joint endeavours across institutional borders. Policy is focused on the preservation of the functional differentiation of the higher education landscape.

Australia and the USA, though having no strict binary systems, experience a blurring of institutional boundaries as well. Australian higher education consists of five higher education provider types that are all allowed to use the label 'university'. The idea that there has been a single immutable idea of a university is rejected, other than to ensure that the true functions are not subsumed into economic functions. Increase in government intervention, however, starts from a clear expectation by government that the higher education sector is more closely tied to the national economy—both in terms of meeting national labour market needs and also through the commercialization of its research and teaching activities (Rochford 2006).

In California the much celebrated Master Plan in the early 1950s brought all the public colleges and universities in the state together in a cooperative compact

defining their roles and functions, and their varying relations to state government. Several comprehensive reviews of this system, however, revealed concern about the primary missions of the different institutions and described 'a system dominated by segmental rivalries and poor planning and coordination' (Taylor 2010). According to the Legislative Analyst's Office, the differentiation of the higher education system as a whole has deteriorated. Because of limited steering and weak coordinating mechanisms, institutions were able to act unilaterally and set their own priorities. In other cases, they secured approval from the government, even though their actions seemed to breach the core of the original Master Plan principle. The effect was a 'mission creep' in the range of programs offered. The report argues for strengthening coordination mechanisms, and for policy leadership and active government steering in the harmonization of institutional priorities and programs (ibid).

5.3 Changing Professional Work Roles and Qualifications

Given the development of the UAS and their evolving research function, the characteristics of academic careers and research qualifications of faculty in the UAS sector has become an important policy issue. While most of their staff have been employed on teaching-only contracts, research qualifications have not been emphasized in selecting staff. In most countries criteria for academic positions include a minimum educational degree, minimum years of practical working experience as a professional in the field, and often also pedagogical training.

For the future development of the research function it is required to employ staff as academics in new roles and with new skills and to rethink the career ladder of the academic profession in the sector. Several European countries have initiated efforts in this respect such as enabling staff to be actively involved in research, enhancing research skills, selecting new staff on the basis of research qualifications, developing new career trajectories and creating financial reward systems for research performance (De Weert and Soo 2009). In Germany for example the research tasks have explicitly been recognized by legislation replacing the word 'teaching staff' by 'teaching and research staff'. Other countries have followed a similar conception.

The low educational level of the UAS staff has become an important policy issue and there is a general awareness that the educational level should be increased. Comparing the percentage of faculty with doctoral degrees, countries differ especially regarding the UAS sector (Fig. 5.1).

The US shows the largest percentages of staff with doctorates (75 %), followed by Germany, Australia and Norway. The differences between both types of institutions having a doctorate are very small in these countries. For Germany this is as expected since to be eligible for a tenured position a doctorate is required. Also in Norway gradually traditional university criteria have become the principal basis for recruitment following the government decree that the qualification criteria for recruiting teachers at the regional colleges should be comparable to those of universities (Kyvik and Skodvin 2003).

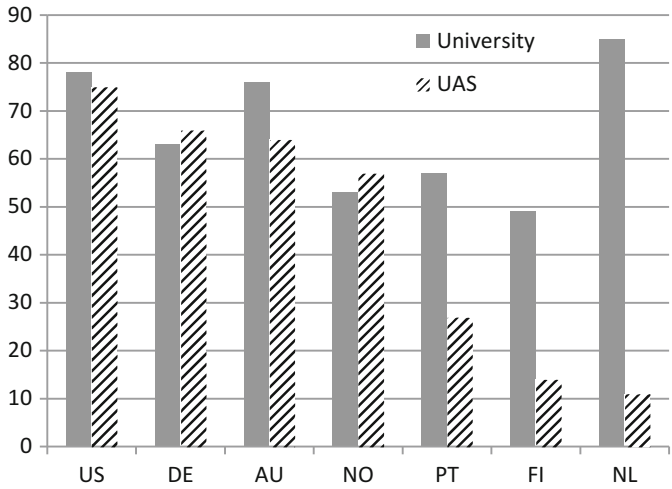

Fig. 5.1 Doctoral degrees of faculty by institutional type (per cent) (*Source*: CAP survey)

For Portugal, Finland and the Netherlands the gap is wide, in particular for the Netherlands where the percentage of doctorates at universities is the highest of all countries and at UAS the lowest (11 %). It is not surprising that in these countries targets have been set for every institution, and sometimes even used as performance indicators in the context of quality assurance mechanisms. In Finland in the coming period 80 % of principal lecturers must have a PhD or licentiate and 25 % of full-time R&D work should be conducted by full-time teachers. In the Netherlands the policy by government and institutions is focused on increasing the number of PhD holders and raising the number of staff with doctoral degrees at UAS. The Dutch Ministry launched a special voucher program which enables UAS staff to pursue a PhD degree in collaboration with a university. Institutions themselves are proactive in achieving targets of the proportions of staff qualified at the doctoral level for example by adding their own funds to the government vouchers and by attracting young researchers who have just finished their PhD at a university.

Increasing the numbers of PhD holders may well be understood as an effect of 'academic drift' in the sense that UAS tend to regard their staff as needing the same academic qualifications as university staff. It is taken for granted that their research experience would contribute to a research profile that is tailored to conditions in the UAS. PhD holders who have done their research in the university that awards the degree under the general responsibility of a university professor and is assessed according to appraisal schemes common in university environments have developed particular professional identities and shared norms and values (Musselin 2009). The profiling of research in UAS is directly connected with the profile of UAS researchers. However, as normative forces influence organizational behaviour, it is expected that the higher the qualifications of the faculty members, the more likely the institution will adopt the practices and programs of similar organizations (DiMaggio and

Powell 1983; Morphew 2002). These professionals tend to look outside their own units for professional trends and to external reference groups for what is considered normative, that is not to deviate from 'normal' criteria of research or scholarly productivity in scholarly journals, and achieving high scores on the H-index.

In some countries, professional experience in industry is required before being appointed as a researcher at the UAS. There are also disciplinary differences. As Lepori (2008) points out, non-technical fields tend to attach less value to the practical experience of their staff and mostly recruit university graduates. Especially in fields where no strong professional identities exist and links with the professional field are weak it is difficult to identify a specific research profile for UAS in these sectors. Lessons from history show that there was a steady increase in the percentage of the former polytechnic staff with a PhD in Britain while professional expertise was at least as important as academic qualifications (Pratt 1997: 327).

This whole issue boils down to the extent to which research at UAS can be delineated from university research. Is there a distinctive profile that would legitimize the maintenance of the binary distinction in institutional types and, if so, how do the faculty of these institutions perceive their professional role? Before discussing this issue, some CAP findings on the teaching/research orientation and research time of faculty from universities and UAS will be compared.

5.4 Research Preference and Research Time

The CAP data allow for a comparison of staff regarding their orientation to research or teaching and the time they spend on research and on teaching.

Figure 5.2 shows the difference between university and UAS faculty regarding their interests in research. Not surprisingly, the university faculty in all countries have a stronger research orientation than their counterparts in the UAS. However, particularly in Norway there is hardly any difference and to some extent in Australia and Portugal. The differences are clearer in the other four countries with 25 % or less of UAS staff that have a preference for research, while the interests of the majority lie primarily in teaching or in both, but leaning towards teaching.

The research orientation of faculty does not necessarily correspond to the actual activity, thus a faculty member at the UAS who does not do much research still may be leaning to research rather than to teaching. The assignment of teaching loads can be so heavy that it prevents them to do the research work they want to do.

Figure 5.3 compares the relative time spent on research of the higher and lower academic ranks at universities and UAS. Academics in higher ranks at universities spent a similar proportion of time on research in the countries analysed. Those in lower ranks (up to assistant professor) in Norway, Germany and Finland spend more time on research than those in higher ranks, whereas such a difference does not exist in the other countries.

The picture is more varied in the UAS sector. In Norway and Portugal both the higher and lower ranks are nearing their university counterparts in their time spent

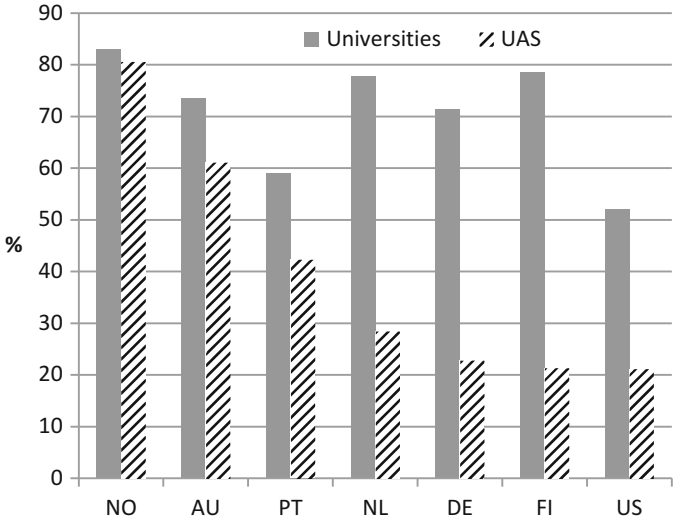

Fig. 5.2 Faculty preference primarily in research and leaning to research, by institutional type (per cent) (*Source*: CAP survey)

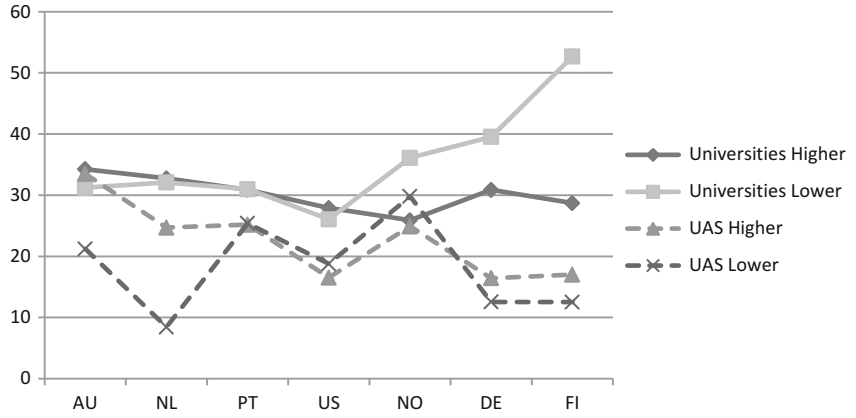

Fig. 5.3 Relative research time* of higher and lower ranks per institutional type (*Source*: CAP survey). *Calculated as total teaching + research A + B = 200 % (max) – 20 % or less research excluded

on research, for Australia the higher ranks. In Norway the UAS lower ranks spend more time on research than the higher ranks, presumably because of the research ambitions of the younger staff recruited as mentioned before increasingly on the basis of their research qualifications. For the Netherlands this is the reverse: the higher ranks spend more research time than the lower ranks. In Germany the time spent on research is low for both the higher and lower ranks.

The figures reflect a stronger research role of the universities than of UAS. However, the difference by institutions vary substantially between the countries surveyed and between the staff categories in these countries.

5.5 Towards a Distinctive Research Profile

The term 'research' can take many forms and is clearly not restricted to the classic model which represents the discovery of knowledge as being conducted through the Republic of Science (Polanyi 1962). Research is as well determined by external factors and framework conditions determined by central government, the bodies created to allocate research funds and the consumers. In this sense the wording 'applied' for 'Universities of Applied Sciences' is suggestive as if this sector would claim this type of research as being the distinctive characteristic with university research.

This is apparent when the academics in universities and UAS characterize the emphasis of their primary research. The CAP survey shows that many academics name their research as both basic and applied. A stronger emphasis on applied/ practically-oriented research is visible in the UAS sector, but many academics at UAS in Norway and Portugal qualify their research as being basic or theoretical in nature, as well.

For the UAS sector the emphasis is on applied/ practically-oriented research, but particularly in Norway and to a lesser extent Portugal the proportion of academics that define their research as basic or fundamental exceeds those who consider this as applied research. This reflects the ambition of Norwegian institutions to attain university status as indicated before. In the other countries there is at least about a third of all staff that qualifies their research as being basic or theoretical in nature.

It may well be that respondents have difficulty in defining their research along the basic/applied dimension. From an historical perspective university research in various disciplinary areas always had a strong applied focus and knowledge utilization has always played a role in appraisal schemes. Apart from this it may well be stated that in many countries much university research has been increasingly under pressure from funding bodies to link research to demands for societal and economic relevance.

The competition for research funds has increased over the years and the designation of high priority areas such as in the Netherlands 'top sector policy' which seeks to create focus and mass in research and force universities to collaborate with industry and to engage in public-private partnerships. For the European countries this development has been fueled by the EU knowledge transfer policy since the publication of the policy paper to stimulate 'putting knowledge into practice' (European Commission 2006) and to frame policy discussions on innovation at national and European levels. Initiatives have been taken to challenge universities to contribute to innovation in knowledge production, to promote its transmission and valorization of research results, as well as developing a more entrepreneurial mindset in universities.

		Considerations of use?	
		No	Yes
Quest for fundamental understanding?	Yes	Pure basic research (Bohr)	Use-inspired basic research (Pasteur)
	No	--	Pure applied research (Edison)

Fig. 5.4 Quadrant model of scientific research (*Source*: Stokes 1997: 73)

Since the difference between fundamental and applied research is not absolutely clear, other models have been suggested. A much cited distinction is between Mode 1 and Mode 2 type of knowledge production (Gibbons et al. 1994). In contrast to Mode 1, which refers to disciplinary research that emphasizes the preservation and extension of academic knowledge 'for its own sake', the Mode 2 type focuses on transdisciplinarity and knowledge production in the context of application. The UAS sector embraces the Mode 2 type as the particular niche because of the emphasis on the applied character of its research. However, university research is not confined solely to Mode 1. Knowledge has always mattered for states and to economic elites and always had features of the Mode 2 type (Pestre 2003).

Lundvall (1992) suggests another typology by distinguishing two forms of innovation: knowledge-driven (STI: science, technology, innovation) and practice-driven innovation (DUI: doing, using, interacting). Where STI deals with 'know what and why', DUI starts with practical knowledge (skills, competencies) and know how (internal and external networks and the skills to make use of them). This is often tacit knowledge and most often has a specific and local character. UAS research activities correspond more closely to the second type of innovation.

Donald Stokes' classification of types of research is probably the most advanced model (Stokes 1997). He argues that the conventional labeling of research as either fundamental or basic or applied research is inaccurate and pernicious. They are not the opposite ends of a continuum which moves in a linear way from theory to its application, but can appear simultaneously. Research can be undertaken both as a quest for basic understanding (rigour) and with considerations of use (relevance). In his view, research can be evaluated according to two dimensions: (1) the degree to which a quest for basic understanding motivates it and (2) the extent to which it is an attempt to solve a practical problem or is practice-oriented. Superimposing these yields four types of research known as the 'Pasteur's quadrant' (see Fig. 5.4).

The work of the theoretical physicist Niels Bohr typifies the upper-left hand quadrant: pure, basic research carried out with no practical aim, even though there happen to be several potential applications. On the lower right hand side is the quadrant of pure applied research, carried out to develop applied uses. This is exemplified by the work of Thomas Edison who, as Stokes observes, restrained his employees from investigating the deeper scientific implications of their findings in their pursuit of commercially profitable products. Stokes cites the impressive work

of Louis Pasteur in the field of microbiology as a perfect synthesis of the aims of 'understanding' and 'use'.[1]

This model has been an inspiration for the UAS sector in European countries to classify their research; although the question remains in what quadrant this research should be placed. Some place this in the Edison's quadrant as this research is not focused on fundamental understanding but on application and ensures a clear profiling in the national research system. Such a labeling seems to be motivated primarily by the political desire to make UAS research not competitive with university research. However, it may also be argued that this would be too narrow a view of UAS research and that it would be more appropriate to place this research in Pasteur's quadrant, involving a combination of fundamental understanding and application. Rigour and relevance are not by definition mutually exclusive.

In the USA a similar debate is taking place when the mission of professional schools is reviewed. Tushman and O'Reilly argue that placing them in Edison's quadrant would be inaccurate. Professional schools that either desire to pursue knowledge without consideration of use (Bohr) or pursue use without knowledge generation (Edison) would probably not deserve that name. Professional schools are about both and therefore operate in Pasteur's quadrant. This would distinguish these schools from disciplinary departments (Bohr) and from consulting firms which they place in Edison's quadrant (Tushman and O'Reilly 2007).

It is obvious that these classifications do not represent the full range of research activities and have been met with much skepticism from various scholars because of the lack of an empirical base. Just as UAS research is difficult to put in a particular box, much university research cannot be cramped in a particular box. Based on our research on the UAS in Europe (De Weert and Soo 2009) the following characteristics of research at these institutions stand out:

- Practice-based and practitioner research oriented towards utilization and transformation of knowledge into operation; research questions emanate from practical problems
- It is situated close to the market and focuses on transformation of research results into innovation, mainly on the regional level
- It is customer driven, responding to requests from enterprises (mainly SME's) and other social organizations with product and customer-oriented research for the short and medium term
- It should be relevant for the quality of education, for curriculum development and the professionalization of the faculty members.

[1] The fourth quadrant is not empty, but contains research that explores particular phenomena without having either general explanatory objectives or any applied use against which to assess the results. Stokes refers to Peterson's Guide to the Birds of North America, which systematically describes the features and distribution of bird species.

5.6 The Institutional Specificity

In order to explore the views about the research profile at UAS, the Dutch CAP questionnaire included an additional section for UAS staff with a number of statements about applied or practice-oriented research, its place in the organization and what the perceptions are about the relevance of research for their institution and for their own professional (teaching) role.

Generally the extended research role for UAS has hardly been questioned in the Netherlands. Respondents agree or agree very strongly with the following statements (percentages refer to the responses respectively from higher and lower ranks).[2]

- Research contributes to the professionalization of the teaching staff (90–70 %).
- Research contributes to curricular innovation (81–74 %).
- Research contributes to innovation of professional practice (80–77 %).

Respondents do not see research as a goal in itself, but as beneficial to quality of teaching and education, in particular professional education. Research is also seen as instrumental to strengthening the ties with the working field and business as suggested in the following statements:

- Research reinforces the dialogue with business and the professional field (72–64 %).
- Students who during their studies are actively involved in research are better prepared for their future professional practice (78–51 %).
- The type of research at UAS is clearly distinguished from university research (67–62 %).

Another set of statements concerned the embedding of applied research in the internal organization of the institution and the desirability of extending this research:

- The research function of the UAS is currently too limited and needs to be extended (budgetary, personal capacity) (81–50 %).
- Research activities by individual faculty need to be rewarded in terms of career perspectives and remuneration (60–47 %).
- It is desirable to create specific research functions with distinctive job descriptions and corresponding qualifications (57–37 %).
- Research belongs to the normal tasks of all staff whereby the volume of the teaching task has to be adapted (60–40 %).

The higher ranks generally display a more positive view of the research and extension thereof in the organisation than those in the lower ranks. Higher ranks express their research ambitions by advocating the extension of the research function, to be rewarded for research and the desirability of creating separate research functions. Altogether, the majority of respondents do not fear that extending

[2] Lower ranks are lecturers who have mainly a teaching task (N = 221), higher ranks are lecturers/researchers as well as lectors (N = 112).

Table 5.1 Views of Dutch UAS staff on applied research by whether they wish an extension of their research task or not

Extension research task?	Research contributes to professionalization of teaching			Research reinforces dialogue with business and professional field		
	Agree	Indifferent	Disagree	Agree	Indifferent	Disagree
Yes	74 %	24 %	20 %	72 %	56 %	26 %
No	26 %	76 %	80 %	28 %	44 %	74 %

Significant $p < 0.01$ (Chi-Square)

research activities would be at the expense of the attention to education under the condition that research and teaching are closely intertwined.

Finally, respondents were asked whether a PhD is needed in order to undertake practice-oriented research in the UAS. Quite surprisingly, altogether 67 % responded that the PhD degree is not necessary to undertake this type of research. There were no lectors who believed that this degree is needed, 20 % of the lecturers /researchers and 11 % of the lower ranks. This finding may well be interpreted in the sense that UAS staff see their research as principally different from university research and that other types of qualifications and experiences are needed than just a formal academic degree.

Staff in higher ranks at Dutch UAS consistently responded more favorably about the research function than those in lower ranks. It may well be that there is a match between these perceptions and the actual involvement in research and that those who are unable to do research in their circumstances given their teaching loads are less positive about these statements. In order to explore this, respondents were also asked whether they would like an extension of their research task and if yes or no under what conditions. Table 5.1 shows how the wish to be more strongly involved in research is related to the views regarding the value of research.

Obviously, those who would like an extension of their research task are significantly more positive on both statements than those who don't want an extension of their research task. The reasons for the latter can be either that they don't want to reduce their teaching task or are not interested in doing research. Those who favor more research value research in terms of contributing to the professionalisation of the teaching staff and reinforcing the dialogue with business and the professional field. These aspects belong to the core distinctive profile of research as conceived by the UAS sector. A similar pattern appears with regard to the other statements mentioned above, such as the contribution of research to curricular innovation, innovation of professional practice, and the preparation of students for their future professional practice.

These findings support the assumption that there is a fit between perceptions on research and the research activity itself. Based on data from an earlier Carnegie Survey conducted in 1969, Fulton and Trow (1974) suggest that in contrast to universities where is no marked subordination of one function to another, there is in the weaker universities and in the better colleges a division of labor within the faculty, between those who do research and those who do not. Their guess is that the former

set the norms and values for all, and thus influence the climate of teaching and research throughout those institutions.

The findings from the Dutch CAP study support this view. It may well be that those who indicate that they are not interested in research say so because they are unable given their circumstances to do research. They also believe that research at UAS is at the expense of teaching, a view that they share with those who say that they don't want to reduce their teaching task. Those who would like to have an expansion of their research task are much more positive about the link between education and research.

5.7 Looking Forward

Given the extended research role of the UAS, the classical functional division between 'research universities' and 'teaching institutions' has increasingly lost its meaning and can hardly be seen as the distinguishing characteristic of the binary system. The sustainability of this system is dependent on the extent to which the sector is able to develop the distinct research profile that is anchored in practical issues, seeks strong ties with companies and is oriented towards the improvement of professional practice. The place of research within the institution and its contribution to the development of teaching and learning is supported by a larger part of the faculty members. They are challenged to explore didactical approaches to the teaching-research nexus (research-led or inquiry-based learning processes). A major challenge for the sector is to develop their own career structures as well as communities that jointly value the quest for fundamental understanding and considerations of use, as illustrated in the Pasteur's quadrant. Seen from this perspective, the research function of UAS will not erode, but rather strengthen the basis of the binary system.

The question arises whether the current emphasis on university rankings, elite universities, and new classification schemes is leading to new hierarchies and a more stratified system cutting across the binary divide. Within the university sector governments in various countries are explicitly concerned with ensuring that a handful of institutions could remain or become 'world class' universities and which also attempts to re-stratify the rest of the rubric of supporting a diversity of mission-based institutions within a nationally oriented framework. This is clearly visible in the German Excellence Initiative aiming to create world-class excellence, particularly in research and research training by selecting a cluster of universities eligible for additional funding. Other universities that do not meet the standards are excluded (as are the German UAS), thereby creating new hierarchies within the university sector. Another example is the 'top sector policy' by the Dutch government which aims to create more focus and mass by allocating research funding towards targeted, cutting-edge research, rather than distributing research funds equally across universities. This trend to support top research universities creates more divisions within the university sector and a new ordering of the higher education landscape.

35 years ago Burton Clark had a foresight when he wrote that

> European scientists find it problematic whether scientific research can remain within all their universities, as the teaching and participation duties of faculty in mass education come to dominate available time, encouraging them to attempt to separate a few research-centered universities from the rest. (Clark 1978)

It is interesting to add that the German Science Council in his comment on the Excellence Initiative indicated that the emphasis should not merely be focused on research excellence, but towards diversification of the German higher system as a whole, with new types of institutional profiles that do not fall in the binary typology of universities and UAS (Wissenschaftsrat 2012).

A possible option to re-label UAS that have developed a strong research component as universities and conversely research-weak universities to label as UAS would be catastrophic for a binary system. Not only because this would incite the 'other institutions' to academic drift actions that make them more like the prestigious universities, but this would principally deny the distinctive profile the UAS sector has developed in the last decade.

Clearly some UAS may develop greater research capacities than others, some will be unable to attain proper standards for their research activities, whereas others will move ahead. The more advanced institutions will be able to develop research centers in which they can accentuate their specific strengths in key areas. Since they will serve different customers it is likely that the differentiation within the sector will increase.

A binary structure does not obstruct further diversification within each of the sectors building on the profiling of individual institutions. A vibrant binary structure can only be fostered by appropriate regulative mechanisms of public policy. Governments should increase rather than decrease the level of regulation. This may include approaches to quality assurance and accreditation which take into account research that is focused on its practical use, and (targeting) funding structures that best support this diversity. Also the development of funding models of institutional profiles as currently initiated in some countries which have the objective of creating a high level of institutional diversity may fit well into a dynamic binary system.

References

Arum, R., & Roksa, J. (2012). *Academically adrift: Limited learning on college campuses*. Chicago: University of Chicago Press.

Brennan, J., Locke, W., & Naidoo, R. (2007). United Kingdom: An increasingly differentiated profession. In W. Locke & U. Teichler (Eds.), *The changing conditions for academic work and careers in selected countries* (pp. 163–177). Kassel: INCHER–Kassel.

Clark, B. R. (1978). Academic differentiation in national systems of higher education. *Comparative Education Review, 22*(2), 242–258.

De Weert, E., & Soo, M. (2009). *Research at universities of applied sciences in Europe: Conditions, achievements and perspectives*. On the initiative of the European network for universities of applied sciences. (PDF available at www.uasnet.eu)

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*, 147–160.
European Commission. (2006). *Putting knowledge into practice: A broad–based innovation strategy for the EU*. Brussels: European Commission (COM(2006) 502 final).
Fulton, O., & Trow, M. (1974). Research activity in American higher education. *Sociology of Education, 74*(47), 29–73.
Gibbons, M., Limoges, C., Nowotny, H., Scott, P., Schwartzman, S., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. London: Sage.
Kyvik, S., & Skodvin, O. (2003). Research in the non–university higher education sector – Tensions and dilemmas. *Higher Education, 45*, 203–222.
Lepori, B. (2008). Research in non–university higher education institutions: The case of the Swiss universities of applied sciences. *Higher Education, 56*, 45–58.
Lundvall, B. A. (1992). *National systems of innovation*. London: Pinter.
Morphew, C. C. (2002). A rose by any other name: Which colleges became universities. *The Review of Higher Education, 25*(2), 207–223.
Morphew, C. C. (2009). Conceptualizing change in the institutional diversity of U.S. colleges and universities. *Journal of Higher Education, 80*(3), 243–269.
Musselin, C. (2009). Profession, market and organisation: How is academia regulated? In J. Enders & E. de Weert (Eds.), *The changing face of academic life. Analytical and comparative perspectives* (pp. 117–134). New York: Palgrave Macmillan.
Neave, G. (1983). The dynamics of integration in non-integrated systems of higher education in Western Europe. In H. Hermanns, U. Teichler, & H. Wasser (Eds.), *The compleat university: Break from tradition in Germany, Sweden and the U.S.A.* (pp. 263–277). Cambridge, MA: Schenkman Publishing.
Pestre, D. (2003). Regimes of knowledge production in society: Towards a more political and social reading. *Minerva, 41*, 245–261.
Polanyi, M. (1962). The republic of science: Its political and economic theory. *Minerva, 1*(1), 1–25.
Pratt, J. (1997). *The Polytechnic experiment 1965–1992*. Buckingham: SRHE & Open University Press.
Rochford, F. (2006). Is there any clear idea of a university? *Journal of Higher Education Policy and Management, 28*(2), 147–158.
Stokes, D. E. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Washington, DC: Brookings Institution Press.
Taylor, M. (2010). *The master plan at 50: Greater than the sum of its parts – Coordinating higher education in California*. Los Angeles: Legislative Analyst' Office (LAO).
Teichler, U. (1988). *Changing patterns of the higher education system. The experience of three decades*. London: Jessica Kingsley.
Teichler, U. (2007). *Higher education systems: Conceptual frameworks, comparative perspectives, empirical findings*. Rotterdam: Sense Publishers.
Tushman, M., & O'Reilly, C. (2007). Research and relevance: Implications of Pasteur's quadrant for doctoral programs and faculty development. *Academy of Management Journal, 50*(4), 769–774.
Van Damme, D. (2009). The search for transparency: Convergence and diversity in the Bologna process. In F. A. Van Vught (Ed.), *Mapping the higher education landscape* (pp. 39–57). Dordrecht: Springer.
Wissenschaftsrat. (2012). *Recommendations on the differentiation of higher education institutions*. Köln: Wissenschaftsrat.

Chapter 6
The Teaching and Research Nexus from an International Perspective

Akira Arimoto

6.1 Introduction

The academic profession and its host institution, the university, are continuously changing: The shift from the middle age university to the modern university and to the future university (the post-modern university) is a response to the broader social changes associated with the shift from the agricultural society through the industrial society to the knowledge society.

Figure 6.1, designed by the author of this article, shows the framework for the university's change from a community of knowledge to an enterprise of knowledge over the time span of past-present-future. In accordance with this trend, the academic profession is also changing from A to B, to C, to D. We have analyzed the current situations of B in the Carnegie 1992 survey (Altbach 1996; Arimoto and Ehara 1996), and that of C in the CAP 2007 survey (Arimoto 2008a, b, 2009a; Kogan and Teichler 2007; RIHE 2008, 2009).

Figure 6.2, also designed by the author of this article, indicates the pressures flowing from the knowledge society for the integration of research, teaching and learning, while there are counter pressures for the differentiation of these functions flowing from the changing environment of the university. Specifically the effects of globalization and marketization in a knowledge-based economy are apt to exert great pressure for the university's transformation from a community of knowledge to an enterprise of knowledge. Higher education policy also adds pressure on the university with the call for rationalization and efficiency, introducing new mechanisms of selection and concentration.

A. Arimoto (✉)
Research Institute for Higher Education, Kurashiki Sakuyo University, Okayama, Japan
e-mail: arimotoakira@gmail.com

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_6

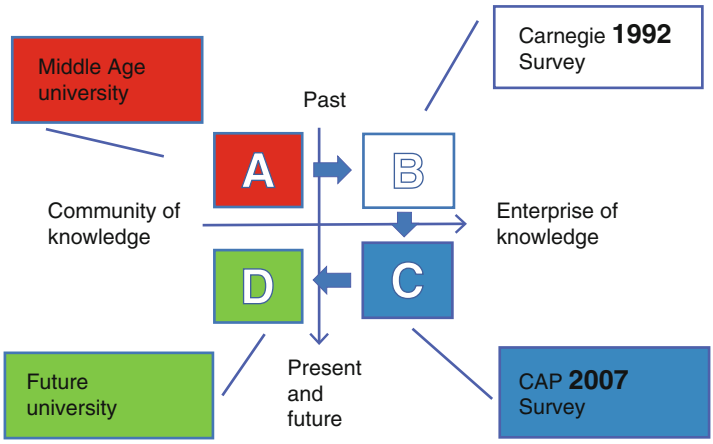

Fig. 6.1 Changing university and academic profession

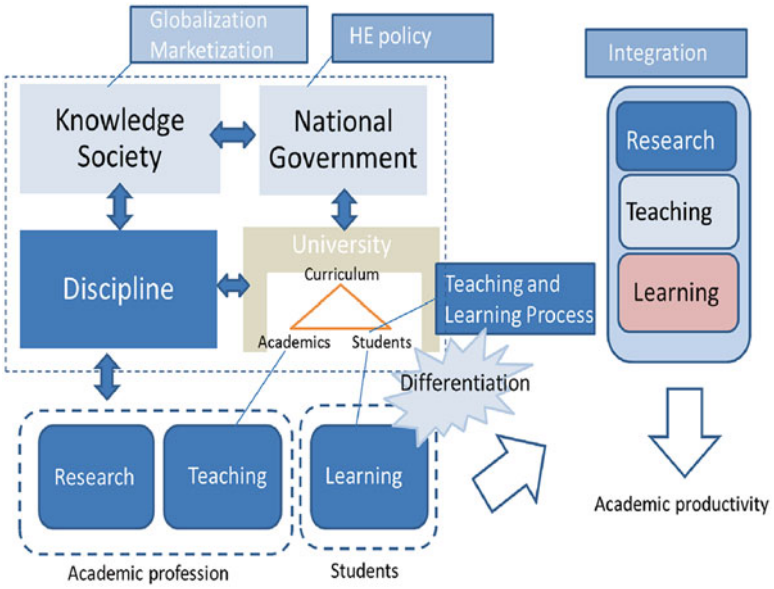

Fig. 6.2 R-T-L differentiation and integration in the knowledge society

These pressures may lead to the differentiation, separation, and fragmentation of research and teaching, especially as the academic profession divides into two groups: those with a research orientation and those with a teaching orientation. This pressure works not only on academics conducting research and teaching but also on the students engaged in learning (or study). The teaching and learning processes taking place in the classrooms have difficulty in sustaining quality assurance due to the increasing tension between teaching and learning.

Based on these frameworks, this report will discuss four issues: the necessity of the integration of research and teaching; the processes of manifest and latent differentiation; the conflicts between differentiation and integration as evidenced in the Carnegie and CAP surveys; and the inevitability of integration.

6.2 Research and Teaching Nexus in the Third Wave Age

The shift from the middle age university to the modern university and to the future university responds to the social change from the agricultural stage through the industrial stage to the knowledge stage. In other words, each stage reflects simple, creative, and super-creative reproduction, respectively. The third wave age intrinsic to the knowledge society with super-creative reproduction is characterized by the uncertainty of society as contrasted with the greater predictability of social trends in the previous eras.

Academics in the first and second waves could teach the students from the homogeneous elite social class about their future, because they could fairly accurately predict the near future. However, academics can no longer teach students about their future in the third wave age. Students themselves are apt to be super–diversified compared to those in the previous wave ages. Predicting the student's future will be increasingly difficult, since the individual super-diversified student has his/her own differentiated life course rather than a unified life cycle.

In the stage of the third wave age, uncertainty increases both in society and in the prospects for students. It is an age of educational paradox in which academics need to teach students but at the same time they are not clear concerning what they should teach. Accordingly, the pressure for strengthening the teaching and research nexus is introduced into the classrooms for the first time in the history of higher education.

The legacy of the middle ages and the pre-modern university with its teaching orientation was recognized well into the nineteenth century when the modern university was established. For example, Harvard University did not introduce research into teaching until the introduction of the elective system in the late nineteenth century. The academic staff were not researchers specialized in specific disciplines but rather were directors of teaching in the classroom, responsible for managing the students' recitation of textbooks. However, gradually the American universities began to recruit graduates from German universities for their academic staff that emphasized research as well as teaching. In 1876 Johns Hopkins University was established as a graduate school for the first time in the history of higher education.

In the twentieth century, the university was compelled to transform from the elite stage to the massification stage by the pressure of quantity caused by the increasing numbers of students. The universities and colleges of the world plunged into the massification stage of higher education from the elite stage since the 1960s, while they have shifted from the massification stage to the universalization stage since 2000. With each of these stages, the social characteristics and academic goals of students have become more diversified. Therefore, teacher-centered teaching has had to change to student-centered teaching, paying greater attention to the students' initiatives in the quest for learning.

Accordingly, education to enhance individual student learning is strengthened in terms of the life course perspective rather than the life cycle perspective. The third wave age, in which the knowledge society proceeds as a core social trend, stresses the discovery of knowledge and so research is apt to increase to the extent that teaching as well as learning (or study) is necessary. In this context, the perspective of pursuing the R-T-S nexus (Research-Teaching-Study nexus) is indispensable in the twenty-first century.

6.3 The Necessity of the Integration of Teaching and Research

6.3.1 Transformation from Knowledge Society 1 to Knowledge Society 2

The knowledge society (or a knowledge-based society) is formed on the basis of knowledge. Its impact on the university is indicated by the compatibility of its value both to the university and to society. As shown in Fig. 6.3, designed by the author of this article as well, the university provided the original knowledge society through its functions of discovery, dissemination, and service based on knowledge before the society at large shifted from the information-based society to the 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). The continuity of the two societies today is clearly shown by the compatible co-existence of the functions of research (discovery of knowledge), teaching (dissemination of knowledge), and learning (understanding of knowledge). Gibbons and others discussed knowledge in terms of Mode 1, or pure knowledge, and Mode 2 of applied and developmental knowledge. They discussed how knowledge itself was transformed from Mode 1, which was useful only

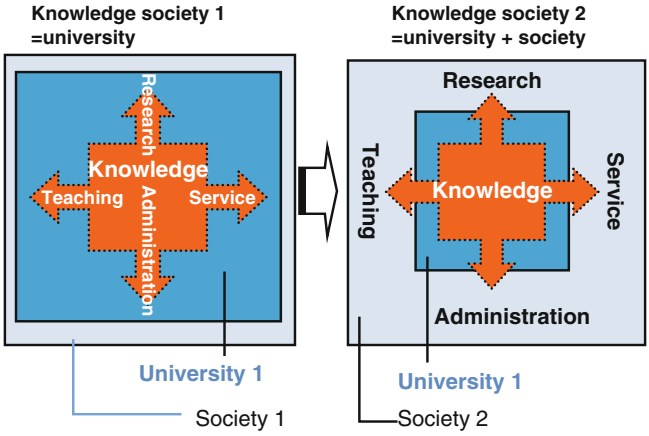

Fig. 6.3 Development from knowledge society 1 to knowledge Society 2

to the university, to Mode 2, which was useful also to the society as well as to the university (Gibbons et al. 1994). In the emerging knowledge society, both the university and the society at large cannot survive when they ignore research, teaching, and learning because all of these have acquired increased social significance.

6.3.2 *Logic of Academic Discipline*

The university is an organization developed for various kinds of academic activities on the basis of knowledge as material or stuff (Clark 1983). An academic discipline is based on knowledge, especially advanced knowledge. The academic staff who specialize in their own disciplines form groups such as a chair, department, or faculty in order to pursue research, teaching and service, and to develop knowledge related to these disciplines (Becher and Parry 2007). In fact, the attachment of academics to their own academic disciplines is fairly high as shown in the results of the CAP survey that compares the extent to which each of the following affiliations is "very important": academic discipline (60.4 %); department (34.2 %); institution (33.1 %).

The functions of knowledge such as understanding, discovery, dissemination, and application correspond to the academic work of learning, research, teaching, and service, respectively. In this context, the university is an institution that deals with knowledge as stuff and conducts academic work integrating the functions of knowledge.

In terms of the emphasis among the different kinds of academic work, research developed rapidly after the introduction of graduate schools in the university system, and the research university has developed to the extent that it encourages academics to exhibit a strong research orientation. The concept of academic productivity was derived from that of scientific productivity as described originally by Robert K. Merton (Merton and Storer 1973), and thus a main goal of the contemporary university is to raise academic productivity (Shinbori 1973; Arimoto 1981, 1987, 2007, 2009b).

Priority competition for high academic productivity among the universities today implies high academic productivity including both research and teaching productivity. Since research and teaching should be connected to each other, a research-teaching nexus (R-T nexus) is inevitable. In addition, as teaching is related to both the teaching and learning process and so learning is necessarily integral to an increase in academic productivity. As a result, a research-teaching-learning nexus (R-T-S nexus) is necessary and also quality assurance of its attainment is necessary (Clark 1997; Nicholls 2005; Arimoto 2006).

6.3.3 *Mechanism of Academic Work*

An academic is thought to be a researcher and teacher at the same time in the modern university. However, even in the nineteenth century, it was not true as shown in the fact that the academic's work lay in requiring his/her students to show ability in

the recitation of a textbook in the classroom, not in teaching the findings of research activities (Ushiogi 1986, 2008). After research was accepted into the university, providing students with expertise discovered by a series of research activities became a part of the teaching and learning process. In this sense, an attempt to integrate research and teaching as mutually reinforcing tasks of the academy has become fundamentally necessary in the modern university.

6.3.4 Integration of Teaching and Learning

The academic staff are not thought to be school teachers but learned scholars, scientists, researchers. The university teacher basically teaches the students in the classrooms on the basis of research conducted in particular places of enquiry such as a laboratory, library, or office. Teaching through research is expected in accordance with the original meaning of the Humboldtian model of the integration between research and teaching (Ushiogi 2008). Of course, academic staff differ from teachers in the elementary and secondary schools who do not conduct research officially. "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 1970, p. 249).

It is undeniable that the ideal of the integration of research and teaching may be undermined by the introduction of a policy pushing academics to become more involved in teaching. For example, the Ministry of Education in Japan has since 1991 urged academics to make a greater commitment to teaching instead of to research. However, this policy has essentially failed. After a two decades interval the Central Council for Education released a report in 2012 emphasizing the importance of the academics' research involvement together with teaching (CCE 2012). Teachers who teach university students without involvement in research may not be substantially regarded as university teachers, although they may well be proficient as school teachers. Similarly, as far as university students are concerned, they differ from school students, because they need to learn on the basis of the teacher's teaching through research.

6.4 Concept of R-T-S Nexus

6.4.1 Logic of R-T-S Nexus

In the third wave age, the influence of students increases more and more because of their unprecedented expansion in enrollment in the universities and colleges. In due course it becomes necessary to enhance the stress on the teaching and learning process. The integration of teaching and learning is increasingly necessary. Considering the

university, we can understand that teaching prevailed in the first wave age, research prevailed in the second wave age, and learning is going to prevail in the third wave age.

In the twenty-first century, although the integration of research and teaching is encouraged, it seems to have been fairly difficult to do so due to the persistence of the old research paradigm. Because the research paradigm was prevalent in the second wave age, the trend of the research paradigm expelling teaching appeared even in the teaching-oriented Anglo Saxon universities. In other words, the dominant paradigm focused on the scholarship of discovery. This is likely to be adaptable not only in the universities and colleges in the advanced countries but also in those of the emerging countries. Considering this kind of climate at the level of the R-T nexus, the integration of research, teaching, and learning may be even more difficult to realize.

Some scholars have already discussed the problem of the reconsideration of scholarship as well as the R-T-S nexus. The earliest advocate of the R-T-S nexus is Wilhelm Humboldt who proposed the concept in 1910. Burton R. Clark discussed the concept for the first time from the field of sociology (Clark 1997; Boyer 1990; Nicholls 2005). Ernest Boyer gave another boost to the concept when he published Scholarship Reconsidered in 1990. According to him scholarship consists of the four components of research, application, integration, and teaching; and among these factors teaching is located at the highest position above research.

6.4.2 R-T-S Nexus as the Mission of the Academic Profession

As has been discussed, among the three basic elements of teacher, student, and curriculum in the teaching and learning process in the university, the teacher mutually interacts with the students by way of the curriculum. In general, students study the educational tasks that the teacher prescribes as part of the teaching and learning process, exercising their own initiative to enhance their learning.

Given this situation, it seems necessary to seek a harmonious relationship of the teacher's intention for teaching and the student's intention for learning so as to obtain a fruitful outcome of the teaching and learning process. In other words, the most effective outcome will be realized by integrating the teacher's intention of teaching through research with the expectation of student's study through research.

As Fig. 6.4 (designed by the author of this article) shows, four categories can conceptually be created from the combination of teacher's and student's intentions: Type A (teacher+, student+); Type B (Teacher+, student−); Type C (teacher−, student+); Type D (teacher−, student−). Type A seems to be decreasing today, though it represents the ideal type of the teaching and learning process. On the other hand, types B, C, and D seem to be increasing today though they are deviant types. Among these four types, the types of A and B which have the teacher's positive intention (+) belong properly inside academia, while types C and D which have the teacher's negative intentions (−) do not belong in academia. Type D while it can be described conceptually is rarely witnessed in practice.

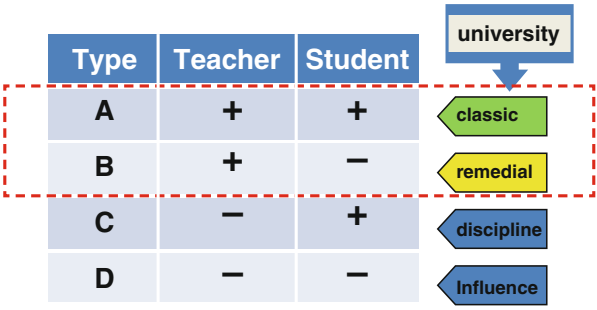

Fig. 6.4 Typology of relationship between teacher and student

Type B is remarkable in particular, because it is likely to become more popular in the emerging universal stage of higher education that 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 to these students are thought to be appropriate to change their needs. In fact, there are many innovative devices from large to small concepts: remedial education; first-year education; active learning; learning outcomes; GPA; teaching and learning portfolio. The R-T-S nexus becomes more and more important for academics so as to improve these students' academic achievements by transforming their intentions from negative to positive.

6.5 Conflicts Between Ideal and Reality of the R-T-S Nexus

6.5.1 The Findings of the Carnegie Survey in 1992

An analysis of academics' orientation to research and teaching based on the Carnegie survey identified three types: a research orientation; a research and teaching orientation; and a teaching orientation (Arimoto and Ehara 1996). The first type, designated the 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 the Anglo-Saxon model, stresses research and teaching evenly, and occurs in countries such as the UK, the U.S., Australia, and Hong Kong. The third type, designated the 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 approach the Humboldtian ideal most closely 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 students and less on research and the academic staff.

In the case of Japanese academics, they conformed to the German model in 1992 and 2007. The result seems to reflect the national policy of supporting a research orientation in the former period, but in the latter period there is a contrast between what professors actually do and what the national policy advocates (CCE 2012).

6.5.2 *The Findings of the Cap Survey in 2007*

Three types were transformed mainly to research orientation according to the results of the CAP survey conducted in 2007–2008. The numbers of countries following the Anglo Saxon type decreased and on the other hand those representing the German type increased. It is surprising to discover that the results differ significantly from the expectation that the Humboldtian ideal model would have been realized to a greater degree during the past 15 years.

Table 6.1 reveals that the German model has extended to a number of countries, while conformity to the Latin American model has declined. The Anglo-Saxon model, which was thought to approximate the ideal, has also declined to a considerable extent. Actually, the research orientation in countries of the German type in 1992 decreased from 71 % to 63 %. The research orientation for all of the countries of the German type countries was already notable in 1992 and in most cases remained high in 2007; the Netherlands is an exception with a decrease from 75 % to 56 %. The aggregate score for the countries of the Anglo Saxon type increased

Table 6.1 Increase and decrease of research orientation by type, country and year (%)

Type	Country	1992	2007	Increase & decrease
Latin	Mexico	35	43	+8
	Brazil	38	48	+10
	(Average)	36.5	45.5	+9
Anglo Saxon	US	51	44	−7
	Australia	52	69	+17
	HK	54	63	+9
	Korea	56	68	+12
	UK	56	67	+11
	(Average)	53.8	82.2	+8.4
German	Germany	85	63	−3
	Japan	33	31	−2
	Netherlands	35	56	−19
	(Average)	31.3	83.3	−8
	Total Average	66.6	69.3	+36

Source: Survey "The Changing Academic Profession"
Question B 2: Regarding your own preferences, do your interests lie primarily in teaching or in research?
Research: Responses to "Primarily in research" and "In both, but leaning towards research"

from 54 % to 62 %, though the U.S. decreased from 51 % to 44 %. The aggregate score for the countries of the Latin America type increased from 37 % to 46 %.

Altogether, the academic profession worldwide has strengthened its research orientation during the 15 years since 1992. William Cummings (2009 p. 41) 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." The increased stress on research runs contrary to the attainment of the Humboldtian ideal of the integration of research and teaching.

6.5.3 *Research Orientation by the University Sector and the Non-university Sector*

Figure 6.5 shows the percentage of academics in the university sector favoring a research orientation compared to those in the non-university sector, broken down by three country groups: core-country (68 %, 45 %), semi-core-country (72 %, 51 %), and periphery

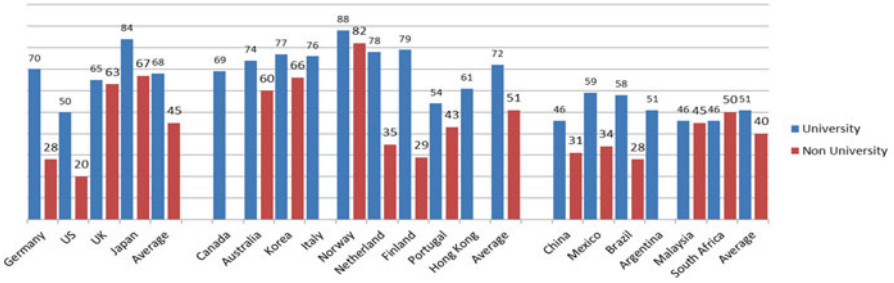

Fig. 6.5 Research orientation by university and non-university (%)
Question B 2: Regarding your own preferences, do your interests lie primarily in teaching or in research?
Research: Responses to "Primarily in research" and "In both, but leaning towards research"
(*Source*: Survey "The Changing Academic Profession")

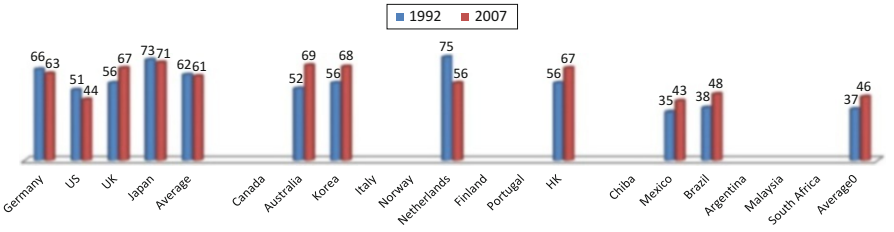

Fig. 6.6 Research orientation by country in 1992 and 2007
Question B 2: Regarding your own preferences, do your interests lie primarily in teaching or in research?
Research: Responses to "Primarily in research" and "In both, but leaning towards research"
(*Source*: Survey "The Changing Academic Profession")

country (51 %, 40 %). The proportion of academics in the university sector favoring research is larger than that in the non-university sector in each of these groups.

Concerning the patterns of change between 1992 and 2007 at universities and other institutions, there are some differences among the three groups. On average, the core-countries have not changed in the past 15 years (from 62 % to 61 %), while the semi-core countries have increased a little bit (from 60 % to 65 %). The periphery countries have increased the most (from 37 % to 46 %) (Fig. 6.6). Among the core-countries, it is interesting that the U.S. decreased, while the UK increased. Among the semi-core-countries and the periphery countries, all countries except the Netherlands increased. In sum, it appears that all countries except the U.S. and the Netherlands have increased their research orientation over the past 15 years.

6.5.4 Reasons of Increasing Differentiation Between Research and Teaching

Increased differentiation between research and teaching can be attributed to factors such as the institutionalization of the graduate school; establishment of academic associations; identification of centers of learning; assessment of productivity and citations of papers; the status of the research university; the reward system; and the institutionalization of ranking.

First as already pointed out, the establishment of graduate schools in the U.S. can be viewed as an element of this trend (Oleson and Voss 1979). They separated teaching and research by placing teaching in the first tier for liberal arts education and research in the second tier for research and professional education (Clark 1983).

Second, the identification of centers of learning also started at the same time as the construction of graduate schools. It is natural that the academics belonging to these centers of learning are apt to have a strong research orientation and high research productivity (Ben-David 1977; Arimoto 1996).

Third, the assessment of productivity and the citation of papers are related to the priority competition among academics as researchers. The new discovery in the field of the specific discipline is usually assessed by the gate keepers in the form of peer review in the journals of the respective academic associations such as mathematics, physics, chemistry, biology, medicine, engineering, economics, sociology, psychology, etc. High research productivity is assessed qualitatively by using the tool of the scientific citation index (SCI). In this kind of process, pressure is inclined to favor a research orientation over a teaching orientation.

Fourth, the status of the research university is recognized among academics who perceive a ranking order of higher educational institutions from the top level to the bottom level with the research university at the top. This mechanism is related to the reward system for academics. As far as ranking is concerned, the research universities are likely to be nominated at the top of the ranking order in the world university ranking such as the London Times, the U.S. News and World Report, and the Shanghai Jiao Tong University (Shin et al. 2011).

6.6 Perspective of the Academic Profession in the Twenty First Century

6.6.1 Uncertainty as Well as Unpredictable Future

In the twenty-first century, the trends towards the knowledge society, globalization, and marketization will be strengthened more and more so that people will be increasingly confronted with uncertainty and an unpredictable future. At the same time, the universalization stage of higher education development will necessarily bring about the super-diversification of students when compared to the homogeneous students of the elite stage and the diversified students of the massification stage. Under this circumstance, the life-course of individual students is expected to form creatively for the lifelong span not only from the entrance to university to graduation but also from graduation to retirement.

6.6.2 Characteristics of the Academic Organization

As was discussed previously, the integration of research and teaching has been facing increasing difficulty of realization owing to the effects of the dominant research paradigm. However, considering that among many institutions in the whole society only the university has the functions of research and teaching as its two indispensable vehicles, how to achieve this integration presents itself as an inevitable challenge.

First, as described above, the core work of the academic system is research and teaching as its two vehicles. No educational institution other than the university has two systemic and organizational functions.

Second, in the knowledge society, research-based teaching is necessary at all levels of education from the primary to the tertiary level of education. Furthermore, for a system of lifelong learning from birth to retirement, research-based teaching is necessary in order to develop human education in terms of independent and autonomous thinking.

Third, from the perspective of the academic profession, academics are expected to pursue teaching through research instead of instruction which was popular for academics in the first wave age. It is valuable for academics to recognize the abilities of students for problem-solving as well as creativity through tacit knowledge embedded in academics as researchers. The students as learners have higher possibilities of achievement from study as well as from learning if the academics they work with have research ability.

6.6.3 *Reconsideration of Scholarship as the Mission of the Academic Profession*

Academics who have been committed to a research orientation experience difficulty in changing their consciousness to conform to the new scholarship concept. For example, according to the Carnegie survey in 1992, the Japanese academics indicated that the proportion of the age cohort's enrollment to the universities and colleges should be less than 40 % against the actual enrollment rate of 45 % at that time (Arimoto and Ehara 1996, pp. 39–50). This discrepancy between academics' consciousness and the real enrollment rate persisted for 15 years until 2007 when the CAP survey indicated that the preferred enrollment remained at less than 40 % despite the actual rate of 55 % – corresponding to the attainment of universal higher education (Ogata 2008, pp. 111–114). The survey responses indicate that the existing student enrollment rates were far beyond the academics' expectations, reflecting their research orientation and in addition their perspective of the university as still in the elite stage of higher education.

However, as discussed previously, the greater importance of learning in addition to that of teaching has increased so as to meet the needs of the universal stage of higher education development. Accordingly, realization of the R-T-S nexus will be extremely difficult in the environment that has yet to accept the R-T nexus. Academics, who are focused exclusively on the research orientation such as the Japanese academics, need to face this difficult problem at all costs.

6.6.4 *Division of Labor Between the University Sector and the Non-university Sector*

As already pointed out above the research orientation is higher in the university than in the non-university. This holds true in both the advanced countries (71 % and 49 % on average) and the emerging countries (51 % and 40 % on average).

It can be assumed that the university sector which is given the research university function will strengthen its research orientation in the future. On the other hand, the higher education institution sector (or the non-university sector) will put more weight on the teaching function relative to the research function and thus continue the tradition of tertiary education.

6.7 Concluding Remarks

First, over the last 15 years various social changes have exerted pressure to transform academia from a community of knowledge to a knowledge enterprise. In the emerging knowledge society, which coexists both in society overall and in academia, the knowledge functions of discovery, dissemination, and application are increasingly important. Considering these factors, the integration of research and

teaching, and, even more, the integration of research, teaching and learning (an R-T-L nexus) is essential.

Second, in reality, however, such integration is rarely achieved due to the increasing tendency for the differentiation of research and teaching. The concept of the Humboldtian model was acceptable a century ago at the time of the institutionalization of the modern university, but this model is hardly adaptable to the universal stage of higher education today. Conversely there is a trend of encouraging teaching without research that necessarily drives academic staff either towards research or towards teaching. Conflicts between research and teaching are evident in many countries in the light of the fact that the research orientation has been strengthened around the world.

Third, concerning the conflict between the differentiation and integration of teaching and research, the Carnegie survey identified three types: a research orientation; a research and teaching half and half orientation; and a teaching orientation. By the time of the CAP survey, the distribution between these types had changed. Conformity to the teaching orientation and to the research and teaching orientation had decreased, while conformity to the research orientation had increased. Particularly, the type of research and teaching orientation closest to the Humboldtian ideal had declined in all countries except the U.S.

Fourth, increased differentiation between research and teaching can be readily attributed to factors such as the institutionalization of the graduate school; establishment of academic associations; identification of centers of learning; assessment of productivity and citations of papers; the status of the research university; the reward system; and the institutionalization of rankings. Considering the way in which the process of differentiation has spread globally, we are forced to recognize the difficulty of integrating teaching and research.

Nevertheless, integration is necessary in the twenty-first century when unprecedented universalization will be steadily promoted. Furthermore, integration is necessary, not only to establish the R-T nexus but also to extend it to the R-T-S nexus, if the increasing demands of students' study are to be met. As discussed in this paper, consideration of the present situation, in which creating even the R-T nexus is difficult, will necessarily impose greater difficulty to realize the R-T-L nexus. In this context, the academic profession worldwide is confronted with the challenge of finding the means to achieve this essential development.

References

Altbach, P. G. (Ed.). (1996). *The international academic profession: Portraits of fourteen countries*. Princeton: Carnegie Foundation for the Advancement of Teaching.

Arimoto, A. (1981). *Sociology of academics*. Cambridge: Gakubunsha Publishing (in Japanese).

Arimoto, A. (1987). *Study of Merton's sociology of science: Formation and development of its paradigm*. Tokyo: Fukumura Publishing Co. (in Japanese).

Arimoto, A. (Ed.). (1996). *Study of center of learning*. Tokyo: Toshindo Publishing Co. (in Japanese).

Arimoto, A. (2006). Institutionalization of faculty development with a focus on Japan. In *Reports of changing academic profession project workshop on quality, relevance, and governance in the changing academia: International perspectives* (pp. 3–20) (COE Publication Series, No. 20). Hiroshima: Research Institute for Higher Education, Hiroshima University.

Arimoto, A. (2007). National research policy and higher education reforms with focus on Japanese case. In S. Sorlin & H. Vessuri (Eds.), *Knowledge society vs. knowledge economy: Knowledge, power, and politics* (pp. 175–197). New York: Palgrave Macmillan.

Arimoto, A. (2008a). International implications of the changing academic profession in Japan. In *The changing academic profession in international comparative perspective* (pp. 1–31) (RIHE International Seminar Reports, No. 12). Hiroshima: Research Institute for Higher Education, Hiroshima University.

Arimoto, A. (Ed.). (2008b). *The changing academic profession in Japan*. Tokyo: Tamagawa University Press (in Japanese) (CAPJ).

Arimoto, A. (2009a). Changing academic profession in the world from 1992 to 2007. In *The changing academic profession over 1992–2007. International, comparative, and quantitative perspectives* (pp. 1–37) (RIHE International Seminar Reports, No.13). Hiroshima: Research Institute for Higher Education, Hiroshima University.

Arimoto, A. (2009b). The competitive environment of academic productivity and the academic research enterprise in the case of Japan. *Asia Pacific Education Review, 10*(1), 29–46.

Arimoto, A., & Ehara, T. (Eds.). (1996). *International comparison of the academic profession*. Tokyo: Tamagawa University Press (in Japanese).

Becher, T., & Parry, S. (2007). The endurance of the disciplines. In I. Bleiklie & M. Henkel (Eds.), *Governing knowledge: A study of continuity and change in higher education–A Festschrift in honour of Maurice Kogan* (pp. 133–144). Dordrecht: Springer.

Ben-David, J. (1977). *Centers of learning: Britain, France, Germany, United States: An essay*. New York: McGraw-Hill.

Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. Princeton: Carnegie Foundation for the Advancement of Teaching.

Central Council for Education (CCE). (2012). Toward qualitative transformation of university education to construct new future (in Japanese) (Proposal), COE.

Clark, B. R. (1983). *Higher education system: Academic organization in cross-national perspective*. Berkeley: University of California Press.

Clark, B. R. (1997). The modern integration of research activities with teaching and learning. *Journal of Higher Education, 68*(3), 241–255.

Cummings, W. K. (2009). Teaching versus research in the contemporary academy. In *The changing academic profession over 1992–2007. International, comparative, and quantitative perspectives* (pp. 33–55) (RIHE International Seminar Reports, No.13). Hiroshima: Research Institute for Higher Education, Hiroshima University.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. London: SAGE Publications.

Kogan, M., & Teichler, U. (Eds.) (2007). *Key challenges to the academic profession* (Werkstattberichte, Vol. 65). Kassel: International Centre for Higher Education Research Kassel (INCHER-Kassel).

Merton, R. K., & Storer, N. W. (Eds.). (1973). *The sociology of science: Theoretical and empirical investigations*. Chicago: University of Chicago Press.

Nicholls, G. (2005). *The challenge to scholarship: Rethinking learning, teaching, and research, key issues in higher education*. London: Routledge.

Ogata, N. (2008). Academics' views about students. In A. Arimoto (Ed.), *Changing academic profession in Japan* (pp. 111–112). Tokyo: Tamagawa University Press (in Japanese).

Oleson, A., & Voss, J. (Eds.). (1979). *The organization of knowledge in modern America, 1860–1920*. Baltimore: Johns Hopkins University Press.

RIHE. (2008). *The changing academic profession in international, comparative and quantitative perspectives* (Report of the International Conference on the Changing Academic Profession Project, 2008). Hiroshima: RIHE, Hiroshima University.

RIHE. (2009). *The changing academic profession over 1992–2007: International, comparative, and quantitative perspective* (RIHE International Seminar Reports, No. 13). RIHE, Hiroshima University.

Shin, J. C., Toutkoushian, R. K., & Teichler, U. (Eds.). (2011). *University rankings: Theoretical basis, methodology and impacts on global higher education*. Dordrecht: Springer.

Shinbori, M. (1973). Research of academic productivity. *Daigaku Ronshu, 1*, 11–19 (in Japanese).

Ushiogi, M. (1986). *A report on campus ecology*. Tokyo: Chuokoron Publishing Co. (in Japanese).

Ushiogi, M. (2008). *It's the end of Humboldtian ideal?: New dimension of modern university*. Tokyo: Toshindo Publishing Co. (in Japanese).

von Humboldt, W. (1970). On the spirit and the organizational framework of intellectual institutions in Berlin (Edward Shils, Trans.) *Minerva, 8*, 242–250.

Chapter 7
Congeniality and Research Productivity in State-Professional-Market Driven Systems of Mass Higher Education

Gerard A. Postiglione and Jisun Jung

7.1 Introduction

With the increasing interest in research productivity, many studies have examined the main factors that determine productivity among academics. Most of the literature has grouped influential factors into two broad categories: individual-level characteristics and institutional features. Regarding the individual characteristics, demographic factors (e.g., age, experience, and gender, which have served as control variables in many studies) and job attitudes or emotions (e.g., motivation, satisfaction, and stress) are known to be significant factors that influence research productivity. For instance, high satisfaction is positively related to research productivity (Mamiseishvili and Rosser 2011), while high job stress is negatively associated with it (Blackburn and Bentley 1993). Institutional features are a second category of factors, and studies have reported that academic freedom, shared governance, and a supportive research environment are all positively related to research productivity (Bland and Ruffin 1992; Fox 1983).

This study combines the favorable conditions that enhance research productivity, both at the individual and institutional levels, as described above. In doing so, we conceptualize congeniality as situations that are suitable to one's professional inclinations and circumstances that are beneficial to the academic profession. Furthermore, we have hypothesized that the relationship between congeniality and research productivity varies across higher education systems. In particular, academic scholarship and productivity become affected by how it aligns with the state-professional-market-oriented higher education typology (Clark 1983; Shin and Harman 2009). For instance, academics in strong market-oriented systems are

G.A. Postiglione (✉) • J. Jung
Faculty of Education, The University of Hong Kong, Hong Kong SAR, China
e-mail: postiglione@hku.hk; jisun@hku.hk

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_7

confronted by a more competitive environment of performance-based evaluation. This contrasts with those in traditional professional-oriented systems that have a greater focus on academic autonomy (Harley 2002; Shin and Kehm 2012). Therefore, this study aims to compare congeniality and research productivity across higher education systems and examine the impact of congeniality on research productivity in each system.

7.2 Literature Review

7.2.1 Does Congeniality Affect Research Productivity Among Academics?

Congeniality is not a familiar concept in higher education research; however, it has been examined and analyzed in sociological and organizational studies comparing congenial and non-congenial groups. For instance, Exline (1960), in one of the traditional organizational studies, compared a congenial group and a non-congenial group in terms of productivity. He described the congenial group as one that enables members to accept a particular task more positively. Furthermore, congeniality leads to the acceptance of a group task as a personal goal that benefits all group members. On the other hand, a non-congenial group discourages task acceptance, resulting in more self-centered goals and less individual acceptance of group goals (Exline 1960).

Although the exact term "congeniality" hardly appears in higher education research, a number of studies have emphasized a favorable institutional environment as an important variable to sustain and enhance research productivity among academics. Bland and Ruffin (1992) extracted 12 environmental factors to improve research productivity among academics: clear goals that serve a coordinating function, research emphasis, distinctive culture, positive group climate, assertive participate governance, decentralized organization, frequent communication, accessible resources, sufficient size of research group, age, diversity of the research group, appropriate rewards, concentration on recruitment and selection, leadership with research expertise and skill in both initiating appropriate organizational structure and using participatory management practices.

This chapter has particularly focused on communication between colleagues, academic freedom, and a supportive environment for research activities. First, open and frequent communication in universities enhances research productivity as it promotes the exchange of ideas, intellectual stimulation, and academic challenge; good communication can also prevent errors from being made; and promote competition and reward (Bland and Ruffin 1992; Creswell 1985; Pelz and Andrews 1967; Rey-Rocha et al. 2002). Smeby and Try (2005: 595) have described an effective research unit as one that has "openness and good collegial communication", while a poor research unit is one characterized by "isolation and personal conflicts." Second, highly productive research groups have a greater degree of academic freedom (Levy 1992;

Volkwein and Parmley 2000). Several studies have found that higher levels of freedom lead to effective academic activity since academic productivity increases when faculty members encounter flexibility and openness towards their ideas (Fox 1983). Third, productive research environments have administrators who are highly committed to research and are able to effectively allocate sufficient resources.

On the other hand, individual job attitudes and emotions are also associated with research productivity. Although institutional congeniality is high, if individual academics are not satisfied with their environment, their academic activity may become less productive. This issue is particularly important in contemporary higher education since pressures related to productivity have increased and considerably affected faculty members' job attitudes (Mamiseishvili and Rosser 2011). Some academics claim that the pressure to publish for promotional purposes increases their job stress (Wood 1990). In addition, dissatisfaction and turnover among academics may represent potentially serious institutional problems such as a loss of talent and a negative organizational climate (Zhou and Volkwein 2004). Bland et al. (2005) suggest that the interaction between individual satisfaction and equitable support or rewards for research performance provided by the institution results in a more productive faculty.

7.2.2 Typology of Mass Higher Education Systems

Congeniality and research productivity vary across higher education systems. Each higher education system has different developmental stages in terms of student enrollment levels. Moreover, each has its own history of academic professionalism, and levels of state or market control differ within similar developmental stages as well. Thus, several issues need to be considered when classifying higher education systems.

First, massification is the most important issue to consider. For instance, many higher education systems have reached the massification level slowly while others have reached it quite rapidly with a focus on quantitative expansion (Cummings et al. 2013). Some systems have expanded across academic disciplines, while others have expanded within particular fields. Certain systems have relied on in-country training of faculty, and others have relied more on the international job market. Many have primarily relied on public resources, and others have relied largely on private resources and the market. In this study, we selected a few examples and employ Cummings' et al. (2013) introductory indicators of massification across higher education systems. As Table 7.1 indicates, the growth of enrollment in tertiary education is a worldwide phenomenon; however, a number of systems have already reached more than 80 % of tertiary education enrollment (e.g. United States, Norway), while others show less than 30 % of enrollment (e.g. China, Mexico). Gibbons (1998) pointed out that massification has led to all types of changes at universities in terms of student demographics, curricula, governance, finances, relationships with society, and the academic profession.

Second, Clark (1983) offered his perspective on higher education systems based on their coordination structure. He observed that each higher education system has unique features according to who has control (e.g., state, academic professional, market) and described the triangle of coordination based on a comparative study (Fig. 7.1).

Table 7.1 Introductory indicators of massification

Country/year	Tertiary GER 1980	Tertiary GER 2005	2005 GER-1980 GER	% of Faculty with PhD	Per capita Output of S&E Articles 2000
United States	56	83	27	77	722.2
Hong Kong China	10	31	21	79	nd
Norway	26	80	54	53	720
Mexico	14	24	10	29	31.8
Japan	31	55	24	74	445.6
China	2	20	18	25	14.8

Source: Cummings et al. (2013)

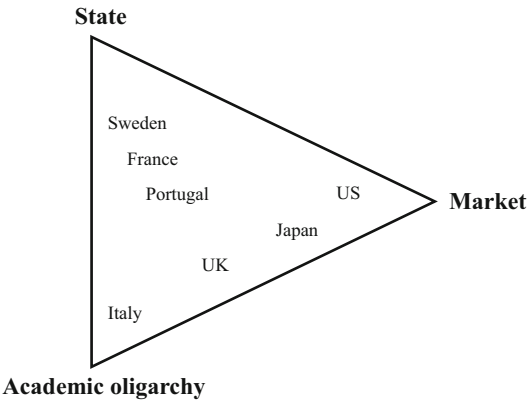

Fig. 7.1 Triangle of coordination (*Source*: Clark 1983: 143)

Recently, Shin and Harman (2009) pointed out how the governance of higher education institutions has been changed by market forces, and re-applied Clark's classification. They categorized higher education systems according to three types of management styles using the survey data from 'The Changing Academic Profession'. According to the authors, these three management styles (market, academic profession, and state models) can be classified based on top-down management, collegiality in decision making, and performance-based management. The market model includes the United States, the United Kingdom, Australia, and Hong Kong; the academic profession model includes Germany, Italy, Finland, Norway, Argentina, and Mexico; and the state model includes Korea, Japan, China, and Malaysia.

In this study, we applied a typology of higher education systems with two indicators based on the level of massification and Clark's (1983) coordination model of higher education. We have selected one higher education system from each of the three types. Specifically, in the market model, we have included the U.S. as a mass higher education system and Hong Kong as a non-mass higher education system. In the academic profession model, we have included Finland as a mass higher education system and Mexico as a non-mass higher education system. In the state model, we have included Japan as a mass higher education system and China as a non-mass higher education system.

7.3 Method

7.3.1 Data Collection

This study used data from the international survey of the Changing Academic Profession (CAP) in 2008. A total of 19 higher education systems completed the survey, and the questionnaire is composed of academics' demographic profile, career prospects, perceptions of their scholarship, workloads and work environments, and governance and management-related questions. Each country team obtained a nationally representative sample of its academic profession (for details, see Teichler et al. 2013). Among the 19 higher education systems, we selected six cases (systems) based on our research framework.

7.3.2 Dependent Variable

This study has focused on research productivity among academics. Research productivity is generally defined by one or more of the following variables such as books, articles, citations to works, grants, patents, internal reports on original research, prototypes, and computer programs. In particular, research productivity is most commonly measured in terms of quality or quantity of articles or by an index combining articles and books (Shin and Cummings 2010; Wanner et al. 1981). In this study, the number of articles and books (authored or edited) are separately presented in the descriptive analysis section. Moreover, in the second OLS regression section, research productivity is measured by a sum of journal articles, book chapters, (co) -authored books, and (co) -edited books during the last 3 years. In addition, in order to normalize the skewed distribution of individual productivity, the log transformation of variables as proposed by Fox (1992) and Smyby and Try (2005) was used.

7.3.3 Research Variables

We conceptualized congeniality in terms of individual and institutional levels, and we extracted the following survey items from the CAP survey to describe congeniality. At the individual level, items that show academics' level of satisfaction or job-related stress have been listed. Furthermore, the academics' positive feelings toward their institution were mainly used, including communication, collegiality, information exchange, and institutional support. Actually, four items of individual congeniality were employed:

- If I had it to do over again, I would not become an academic
- This is a poor time for a young person to begin an academic career
- My job is a source of considerable personal strain
- How would you rate your overall satisfaction with your current job?

Similarly, four items were chosen to characterize institutional congeniality:

- There is collegiality in the decision-making processes
- I am kept informed about what is going on at this institution.
- Administrative staff in my institution support academic freedom
- There is a supportive attitude toward staff research activities

7.3.4 Control Variables

Research productivity is influenced by a number of factors including personal characteristics, workload, research preference, research collaboration, academic discipline, and the type of institution. This study includes these as independent variables to control for the effect of research productivity.

First, we controlled demographic variables, in particular, gender and experience. It is known that the academic activities of male and female academics differ (Bain and Cummings 2000), and years of experience is known to determine research interests, publication preferences, and performance among academics (Shin and Cummings 2010).

Second, we included the research style of academics as a control variable. For instance, research preference is a key explanatory variable (Wanner and Lewis 1981; Shin and Cummings 2010) in productivity. In addition, the importance of research collaboration, in particular international collaboration, has a positive impact on the number of published articles, while domestic collaboration has no significant impact (Smeby and Try 2005).

Third, academic discipline and institutional type are included as control variables. There is considerable variation across disciplines in explaining research productivity among academics. In particular, this study follows Biglan's research (1973) in which he proposed three dimensions of academic disciplines: hard vs. soft, pure vs. applied, and life science vs. non-life sciences. The hard and soft dimensions are most frequently applied in academic research to classify disciplines among the three typologies. The hard disciplines are the natural sciences, engineering, and medical sciences; the soft disciplines are arts, humanities, and social sciences. In addition, institutional type should be controlled, as academics from research intensive universities and other types of higher education institutions have differences in terms of their research environments and performance.

7.4 Findings and Discussion

7.4.1 Congeniality Across Higher Education Systems

We examined congeniality at the individual and institutional level across higher education systems, and the results are illustrated in Table 7.2. First, regarding congeniality at the individual level, we included satisfaction and job-stress related

Table 7.2 Congeniality across higher education system

	Market model		Professional model		State model	
	Mass	Non-mass	Mass	Non-mass	Mass	Non-mass
	USA	Hong Kong	Norway	Mexico	Japan	China
Individual						
Satisfaction	63.1	64.1	68.6	86.8	68.5	57.8
Stress	35.3	41.4	35.3	22.6	57.4	54.9
Poor time for young people	20.2	37.2	23.8	13.2	8.3	39.1
Re-choose of academic job	9.9	15.8	16.1	9.8	12.5	21.1
Institutional						
Communication	29.8	25.3	34.4	39.2	24.1	34.4
Collegiality	32.2	23.4	25.5	41.2	45.8	35.7
Well-informed	42.4	35.8	39.5	34.8	30.4	44.1
Academic freedom	59.9	53.8	31.0	75.9	56.1	53.3
Supportive environment	48.2	39.3	35.0	34.8	35.4	47.6

Source: CAP survey
Percentage (%) of 'strongly agree' and 'agree' in five Likert scale

variables among academics, as noted previously. To describe the extent of congeniality, we measured the percentage of "strongly agree" and "agree" on a 5 point Likert scale in each survey item (1="strongly disagree" and 5="strongly agree"). Job satisfaction among academics was highest in systems with an academic profession model such as Mexico (87 %) and Norway (67 %). With the exception of Japan, job satisfaction of academics in state and market models is lower than in the academic professional models; in particular, job satisfaction among Chinese academics was the lowest (58 %). job satisfaction was almost 30 % higher among academics in Mexico than among those in China. However, the difference between mass and non-mass systems of higher education is not significant.

This pattern was similar with regard to job stress-relate variables. Academics in the state model, (e.g., Japan (57 %) and China (55 %)) showed the highest levels of stress compared to academics in market and professional models. In addition, a number of academics in market systems, such as the U.S. (35 %) and Hong Kong (41 %), also reported high levels of job stress. In contrast, academics in a professional model system reported lower levels of stress. For instance, only 23 % of academics in Mexico indicated job stress, which is 35 % lower than in Japan (57 %). Still, there was no particular pattern of difference between mass and non-mass higher education systems.

Academics were asked about their job prospects, measured by an item stating, "this is a poor time for a young person to begin an academic career." Academics in China (39 %), and Hong Kong (37 %) believed there were limited opportunities for academic jobs in their systems, and this was higher than in other systems such as the U.S. (20 %), Mexico (13 %), and Japan (8 %). However, this result was not consistent based on the typology.

We also asked the academics to respond to the following statement: "If I had it to do over again, I would not become an academic," to examine their job satisfaction. Compared to other satisfaction or job stress-related questions, the amount of agreement was relatively low. We can assume that most academics would not change their jobs, even though they agree that their jobs are demanding and stressful. No consistent differences were observed according to the typology; however, we noted differences among higher education systems. For instance, 21 % of academics in China admitted that they would not choose an academic job again, if they had the chance. A lower proportion of academics in Hong Kong (16 %), Norway (16 %), and Japan (13 %) agreed with this statement and an even lower proportion (less than 10 %) in the U.S. and Mexico.

Next, regarding congeniality at the institutional level, we find similar patterns across higher education systems. Yet, perceptions about institutional collegiality vary across systems. In the professional model, more academics reported that "there is good communication between management and academics in their institution": For instance, 39 % of academics in Mexico and 34 % of academics in Norway agreed with this statement. Interestingly, among state models, 34 % of academics in China felt that communication within their institution was supportive, in contrast to Japan (24 %). Fewer academics in Japan and Hong Kong agreed that their institutional communication is smooth. Moreover, 46 % of academics in Japan and 41 % of those in Mexico indicated collegiality in decision-making processes in their institutions, in contrast to only 23 % of Hong Kong academics and 26 % of Norwegian academics. The case of Japan is interesting since their responses about communication and collegiality seem inconsistent. Academics in the other higher education systems had a similar perspective on communication and collegiality.

Academic freedom is central to understanding congeniality, and academics have different perspectives about academic freedom. We assumed that academics in the professional model systems had higher levels of academic freedom. Actually 76 % of Mexican academics indicated that their administration supports academic freedom, but only 26 % in Norway. In market systems and in state model systems a similar proportion of academics agreed that their administration supports academic freedom. When we asked whether administrative staff have a supportive attitude towards research activities, academics in market and state models tended to agree more than those in the professional model.

7.4.2 Research Productivity Across Higher Education Systems

To indicate research productivity, we used books and journal articles. Academics in Hong Kong (i.e., market model) had the highest productivity (averaging ten articles in the last 3 years) followed by academics in state systems such as Japan and Mainland China. Academics in the U.S. reported an average of four articles in the last 3 years, lower than other higher education systems, with the exception of Mexico. In terms of the reported number of book publications in the previous 3 years, academics in Japan lead the other systems. Overall, academics in market

Table 7.3 Research productivity across higher education system

		Market model		Professional model		State Model	
		Mass	Non-mass	Mass	Non-mass	Mass	Non-mass
		USA	Hong Kong	Norway	Mexico	Japan	China
Article	Mean	3.70	7.52	5.08	2.88	6.90	7.27
	S.D.	4.72	6.83	5.43	4.07	7.24	6.84
(Co) authored/ edited book	Mean	0.42	0.85	0.67	0.63	1.41	1.18
	S.D.	0.84	1.24	1.16	1.22	1.64	1.50

Source: CAP survey

and state models reported having published more books and journal articles than those in the professional model (see Table 7.3). This finding is interesting in that our measure of congeniality was higher in the professional model which had lower research productivity than in state and market models.

7.4.3 Congeniality and Research Productivity

To conduct a more detailed examination of the influence of congeniality on research productivity we employed an OLS regression analysis for each higher education system. Before the regression analysis, we reduced the number of independent variables through factor analysis to prevent multicollinearity between variables. For instance, three items related to job stress (i.e., "A poor time for a young person to begin an academic career," "My job is a source of considerable personal strain," and "If I had it to do over again, I would not become an academic.") were highly correlated. Therefore, we reduced these three items to one using the mean score of all three. In addition, regarding institutional congeniality, three items ("Good communication between management and academics," "There is a collegiality in decision-making processes," and "I am kept informed about what is going on at this institution") were defined as one item: involvement with decision making.

Statistical tests for the differences in the regression slopes across countries are presented in Table 7.4. This table shows the standardized and metric regression coefficients for research productivity based on individual background, research style, academic discipline, and congeniality. Despite the size and heterogeneity of the sample, the full form regression equations in Table 7.4 account for considerable variance in productivity among countries – from 20 to 25 %, which is relevant in terms of model fit. As expected, the pattern of values for the regression coefficient varies across countries.

Actually, several demographical variables, such as gender and experience, are associated with research productivity in most of the models. In particular, gender and experience were both positively associated with research productivity in Hong Kong, Norway, and China. Research preference and international research collaboration were common factors that determined research productivity in all of

Table 7.4 Congeniality and research productivity across higher education system

	Market model		Professional model		State model	
	Mass	Non-mass	Mass	Non-mass	Mass	Non-mass
	USA	Hong Kong	Norway	Mexico	Japan	China
Gender (Female=0, Male=1)	0.035	0.127**	0.068	0.071*	0.032	0.042
Experience	0.025	0.181***	0.266***	0.075*	0.003	0.189***
Preference (Teaching=0, Research=1)	0.225***	0.142***	0.184***	0.193***	0.143***	0.214***
International research collaboration (No=0, Yes=1)	0.218***	0.234***	0.274***	0.263***	0.293***	0.096***
Discipline (Soft=0, Hard=1)	0.046	0.187***	0.036	0.079**	0.186***	0.048
Institutional type (Other HEI=0, University=1)	0.166***	–	0.025	0.145***	0.127***	0.027
Satisfaction	−0.055	0.202***	0.101*	0.154***	0.032	−0.001
Stress	−0.069	0.121**	0.117**	0.064*	0.056	−0.024
Involvement with decision making	−0.086	−0.080	−0.003	−0.102**	0.088**	−0.029
Academic freedom	0.063	0.018	−0.062	0.067*	−0.004	0.049
Research support	0.041	0.040	−0.064	−0.007	−0.009	−0.026
F	17.196***	18.510***	18.806***	23.136***	26.527***	14.521***
R-square	0.218	0.258	0.231	0.226	0.230	0.119

Source: CAP survey

Notes:

(1) *p<0.05; **p<0.01; ***p<0.001

(2) Regression coefficient is standardized coefficient

the higher education systems examined in this study. Hard discipline and research-oriented universities were factors that had a positive influence on research productivity in most higher education systems. These results are consistent with previous studies about research productivity.

Next, we review the main findings regarding congeniality and research productivity. In terms of individual congeniality, job satisfaction was positively associated with research productivity in Hong Kong, Mexico, and Japan. On the other hand, job stress was negatively associated with research productivity in Norway, Japan, and China. Interestingly, the more academics in Hong Kong and Norway thought that this was a poor time to be an academic in their higher education system, the higher their research productivity; thus, when these academics have negative perceptions about their field, they try harder to publish.

Institutional congeniality influenced research productivity in some of the higher education systems; however, this effect was not strong. Involvement with decision making was significant in Mexico (negatively) and in Japan (positively), and academic freedom was only associated with research productivity in the U.S. However, other factors related with institutional congeniality were not related to research productivity.

7.5 Discussion and Conclusion

In this study, we compared individual and institutional congeniality across higher education systems and examined the impact of congeniality on research productivity. In particular, we used a typology for six higher education systems based on massification and Clark's (1983) coordination model. Academics in some higher education systems reported high levels of individual or institutional congeniality with high research productivity, whereas those in other systems reported low levels of congeniality with low research productivity. Does congeniality affect academic productivity across higher education systems? If so, which is more important: individual or institutional congeniality? What can universities do to ensure that academics engage in high profile research activities? The preliminary findings identified a number of issues that are of potential relevance to university leaders and policy makers.

First, we found that there are significant differences in congeniality across higher education systems. In particular, congeniality varies according to the market, state, and professional models. For instance, job satisfaction among academics is highest in professional model systems such as Mexico and Norway, while academics in state models such as Japan and China have the highest stress levels. In addition, more academics felt that they have not only good communication between management and academics but also a high level of academic freedom in professional model. Only one item shows different results for institutional congeniality: academics in market systems indicate that they perceive a supportive environment for research. When comparing research productivity among academics, we find that

those in market and state model systems have published more books and articles than those in the professional model. For instance, in terms of journal articles, academics in Hong Kong's market model institutions have had the highest levels of productivity (ten articles in the last 3 years) and academics in state systems such as Japan and China follow close behind Hong Kong. It is interesting that congeniality is highest in the professional model, but research productivity is lowest. On the other hand, in market systems, research productivity is high, but congeniality is low. We can assume that the stronger the performance-focused competition and regulation in market and state models, the higher their productivity becomes; however, congeniality in such institutions is low.

Second, we found that research productivity is influenced by both individual and institutional congeniality; however, academics tend to be more influenced by individual congeniality (e.g., satisfaction and stress) rather than institutional congeniality. This is consistent with McAlpine and Akerlind's (2010) finding that academics are influenced by their job attitude and emotions, and those who perceive themselves more as professionals have high self-esteem, and are self-motivated.

Third, although institutional congeniality is not a sufficient condition to explain academics' research productivity, it is very important for explaining their attitudes and behaviors. This is especially the case in light of the current concern among academics that academic freedom is becoming over-shadowed by performance-based management. This also signals a need to pay closer attention to institutional congeniality. Even though strong competition is believed to enhance productivity, academics tend to view their freedom as being diminished, and their dissatisfaction can lead to reduced productivity in the long-term. Moreover, institutional congeniality remains a critical component of academic life because it is more amenable to change than individual congeniality. Research has shown that management patterns can be changed more easily than individual interests and attitudes (Dundar and Lewis 1998; Ramsden 1994; Teodorescu 2000). This aligned with the classical research of Pelz and Andrews (1967) who assert that productivity can be improved when institutions provide scientists with flexibility and freedom of ideas.

Fourth, communication and collegiality have no effect, or, at times, an even negative effect, on research productivity in some higher education systems (e.g. Mexico). This is in contrast to previous studies by Fox (1983) stating that collegiality is particularly important for academics because it stimulates arguments and discussions among academics on topics related to their work and research. We can assume that communication and collegiality are only significant if they involve academic matters discussed among colleagues rather than administrative issues related to the university. To understand these relationships in more detail, the culture or climate of each country and institution need to be considered.

Fifth, the influence of congeniality on research productivity was found to be strong in the professional model; however, the influence was not significant in the state model. In other words, the research productivity was significantly influenced by the positive and favorable atmosphere in the professional model; however, these effects were weak in state systems.

Previous studies focused on one aspect regarding individual or institutional favorableness such as job satisfaction or stress at the individual level, or leadership or shared governance at the institutional level. This study has extracted an overarching concept from these positive perceptions at individual and institutional levels and conceptualized congeniality. In particular, we compared the impact of congeniality on research productivity across higher education systems based on massification and the coordination model. Despite the assumption that each country's context is important, there are still common predictors that explain faculty research productivity and we concluded that both individual and institutional congeniality are important to understand academics' research productivity.

However, this study had a few limitations. First, we measured research productivity by self-report. Self-reported data could be limited to ascertain the relative quality of work since we asked only for simple counts of articles and books. Second, we did not include specific national context or main higher education policy which can also influence academics' scholarship. We suggest follow-up studies including more diverse variables affecting research productivity and comparing national context.

References

Bain, O., & Cummings, W. (2000). Academe's glass ceiling: Societal, profession/organizational, and institutional barriers to the career advancement of academic women. *Comparative Education Review, 44*(4), 493–514.

Biglan, A. (1973). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology, 57*(3), 204–213.

Blackburn, R. T., & Bentley, R. J. (1993). Faculty research productivity: Some moderators of associated stressors. *Research in Higher Education, 34*(6), 725–745.

Bland, C. J., & Ruffin, M. T. (1992). Characteristics of a productive research environment: Literature review. *Academic Medicine, 67*(6), 385–397.

Bland, C. J., Center, B. A., Finstad, D. A., Risbey, K. R., & Staples, J. G. (2005). A theoretical, practical, predictive model of faculty and department research productivity. *Academic Medicine, 80*, 225–237.

Clark, B. R. (1983). *The higher education system: Academic organization in cross-national perspectives*. Berkeley: University of California Press.

Cresswell, J. W. (1985). *Faculty research performances: Lessons from the science and social sciences* (ASHE-ERIC Higher education Report No. 4). Washington, DC: Association for the Study of Higher Education.

Cummings, W. K., Bain, O., Postiglione, G., & Jung, J. (2013). Internationalization of the academy: Rhetoric, recent trends, and prospects. In M. Finkelstein, F. Huang, & M. Rostan (Eds.), *The internationalization of the academy: Changes, realities and prospects* (pp. 55–77). Dordrecht: Springer.

Dundar, H., & Lewis, D. (1998). Determinants of research productivity in higher education. *Research in Higher Education, 39*(6), 607–631.

Exline, R. V. (1960). Interrelations among 2 dimensions of sociometric status, group congeniality and accuracy of social perception. *Sociometry, 23*(1), 85–101.

Fox, M. F. (1983). Publication productivity among scientists: A critical review. *Social Studies of Science, 13*(2), 285–305.

Fox, M. F. (1992). Research, teaching, and publication productivity: Mutuality versus competition in academia. *Sociology of Education, 65*(4), 293–305.

Gibbons, M. (1998). *Higher education relevance in the 21st century*. Washington: The World Bank.

Harley, S. (2002). The impact of research selectivity on academic work and identity in UK universities. *Studies in Higher Education, 27*(2), 187–205.

Levy, D. (1992). Private institutions of higher education. In B. R. Clark & G. R. Neave (Eds.), *The encyclopedia of higher education* (pp. 1183–1195). Oxford: Pergamon Press.

Mamiseishvili, K., & Rosser, V. J. (2011). Examining the relationship between faculty productivity and job satisfaction. *The Journal of the Professoriate, 5*(2), 100–132.

McAlpine, L., & Akerlind, G. S. (2010). Academic practice in a changing international landscape. In L. McAlpine & G. S. Akerlind (Eds.), *Becoming an academic: International perspectives* (pp. 1–17). Basingstoke: Palgrave Macmillan.

Pelz, D. C., & Andrews, F. M. (1967). *Scientists in organizations: Productive climates for research and development*. New York: Wiley.

Ramsden, P. (1994). Describing and explaining research productivity. *Higher Education, 28*(2), 207–226.

Rey-Rocha, J., Martin-Sempere, M. J., & Garzon, B. (2002). Research productivity of scientists in consolidated vs. non-consolidated teams: The case of Spanish university geologists. *Scientometrics, 55*(1), 137–156.

Shin, J. C., & Cummings, W. K. (2010). Multi-level analysis of academic publishing across discipline: Research performance, collaboration, and time on research. *Scientometrics, 85*(2), 582–594.

Shin, J. C., & Harman, G. (2009). New challenges for higher education: Global and Asia-Pacific perspectives. *Asia Pacific Educational Review, 10*, 1–13.

Shin, J. C., & Kehm, B. M. (Eds.). (2012). *Institutionalization of World-Class University in Global Competition*. Dordrecht: Springer.

Smeby, J. C., & Try, S. (2005). Departmental contexts and faculty research activity in Norway. *Research in Higher Education, 46*(6), 593–619.

Teichler, U., Arimoto, A., & Cummings, W. K. (2013). *The changing academic profession in international comparative perspective: Major findings of a comparative survey* (pp. 25–35). Dordrecht: Springer.

Teodorescu, D. (2000). Correlates of faculty publication productivity: A cross-national analysis. *Higher Education, 39*(2), 201–222.

Volkwein, J. F., & Parmley, K. (2000). Comparing administrative satisfaction in public and private universities. *Research in Higher Education, 41*(1), 95–116.

Wanner, R. A., Lewis, L. S., & Gregorio, D. I. (1981). Research productivity in academic: A comparative study of the sciences, social sciences and humanities. *Sociology of Education, 54*(4), 238–253.

Wood, F. (1990). Factors influencing research performance of university academic staff. *Higher Education, 19*(1), 81–100.

Zhou, Y., & Volkwein, J. F. (2004). Examining the influence on faculty departure intentions: A comparison of tenured versus non-tenured faculty at research universities using NSOPF-99. *Research in Higher Education, 45*(2), 139–176.

Chapter 8
Growth Behavior of Research Collaboration with Heterogeneous Colleagues and Research Commercial Activities in Korean Academics

Soo Jeung Lee

8.1 Introduction

The university's function has changed in the current knowledge based society and has expanded far beyond the original educational objective. Universities now heavily focus on research activities and have been asked to play an important role in economic and social development. The role of faculty members has become more complicated as the third mission of universities to contribute to economic social development has been emphasized. In the institutional context of faculty evaluation based on research performance and performance-based funding, faculty members have been stressed about their research performance and participation in various research projects such as the government's policy project. Recently, faculty members have been asked to consult, and conduct the application of patents, which are beyond their traditional duties such as teaching, journal publication and participation in conferences. According to the perspectives of individual faculty members, their core function of a faculty member is considered as teaching and research, or is newly portrayed as an academic entrepreneur (Teichler and Yagci 2009).

This emphasis on the third mission of universities' research and various roles of faculty members is based on new ideas on the relationship between pure and applied research (Dill and van Vught 2010). Mertonian norms about scientific knowledge and the Bush model stating that basic science, necessarily performed in universities, strongly affected the research culture in universities, but the dichotomy between pure and applied research has been challenged since the 1980s (Shin et al. 2012; Slaughter and Rhoades 2004). The interaction between scientific and applied research and interdisciplinary knowledge production has

S.J. Lee (✉)
Seoul National University, Seoul, South Korea
e-mail: soojeunglee95@gmail.com

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_8

been emphasized as scientific knowledge is more complicated, disciplines are divided into specific disciplines, and the mode to produce knowledge is dynamic. Also, collaborative knowledge production based on the relationship among university-industry-government beyond the ivory tower has been more important (Etzkowitz and Leydesdorff 1997; Gibbons et al. 1994), because it is more crucial to produce the knowledge useful in society and to understand the context of capitalization of knowledge (Lee and Ngo 2011).

Universities, out of all other sectors, play a key role in cultivating knowledge-based innovation. A universities' role in today's society focuses not only on training students, but on conducting research and transferring the knowledge based on their research outcome in a more capitalized way. The emphasis on capitalization of knowledge attempts to identify the features of universities' research and to pay attention to research commercialization as well as the new dynamic relationships among universities, industries, and governments. Now, the contemporary research universities are expected to act as a vehicle for knowledge transfer for the community, local society and even for the global society as a whole. Knowledge production is no longer a minor work run by a small elite group (Etzkowitz et al. 2000). It has shifted towards the emphasis on the dynamics of research collaboration between heterogeneous actors such as universities, industry, and government.

This study focuses on the features of growth behavior of research collaboration among university-industry-government as well as research publishing and research commercial activities such as patents in the Korean context. It pays special attention to the determinants of research collaboration among university-industry-government, research publication, and research commercial activities.

8.2 Literature

The literature review is organized into two sections. First, this study summarizes research collaboration among the university-industry-government triad. Second, this study discusses the impact factor on faculty members' research performance.

8.2.1 Research Collaboration Among University-Industry-Government

Scientific knowledge production can be described as one of the important activities in current society and research collaboration among various researchers within or between sectors and countries is a common action to reflect and exert mutual intellectual and social influence.

After the second industrial revolution, the role of knowledge has increased its impact on economic development. Production of knowledge has also become more complex and the scope of the production has been enlarged since there is a stronger

emphasis on interactions between scientific and applied research, as well as an interdisciplinary area. Knowledge complexity and limited cognition is divided into sub-disciplines and leads to specializations of academics and various research collaborations among individuals and institutions (Viale 2010). Collaboration is the key mechanism to provide intellectual companionship, and to transfer knowledge and skills since there is tacit knowledge that is crucial to its reproduction (Katz and Martin 1997; Viale 2010).

Collaborative knowledge production depends more strongly on the interactions of various researchers, and the scope of these linkages has been enlarged to a dynamic network composed of university, industry and government. Research collaboration could often be created between researchers having common characteristics or attributes through individual features such as age, race and gender, friendship, the intimate relations between master and pupil, same discipline or affiliation, geographical closeness and so on. Heterogeneous researchers could have disadvantages to creating a relationship as system norms or values can be different. However, Rogers (1995) explained that communication among researchers is based on heterogeneous nature and heterophily is a necessary condition for obtaining complementary knowledge. Granovetter (1973) has suggested that 'weak ties' are important in innovation. Weak ties can create a bridge between networks and facilitate the flow of information in social systems.

University-industry-government collaboration is a distinguishing feature of the new mode of knowledge production, Mode 2, characterized by the interdisciplinary and network-based knowledge (Gibbons et al. 1994). It makes use of broader criteria in the social community, and academic research is judged not only by peers but also by governments, which provide research funds. Firms also play an important role in research productivity and provide a significant amount of funds since they value knowledge as a key factor for commercial success (Slaughter and Rhoades 2004). Along the same lines, Etzkowitz and Leydesdorff (2000) suggested the triple-helix model, the dynamically collaborative system for knowledge production among university-industry-government. It puts emphasis on the interactive characteristics of pure and applied research based on the collaborative knowledge production process among university, industry, and government (Shin et al. 2012). Research collaboration between sectors in the university-industry-government system is redrawing the knowledge production system related to the interaction between scientific and applied research and knowledge utility in the social community (Etzkowitz and Leydesdorff 2000).

8.2.2 The Impact Factor on Faculty Members' Research Performance

Previous studies on faculty members' research performance addressed the determinants of research collaboration modes (D'Este and Patel 2007; Jeong et al. 2011; Wagner and Leydesdorff 2005; Vafeas 2010), examined the relationship between academic research

productivity and patenting (Agrawal and Henderson 2002; Breschi et al. 2008; Thursby et al. 2001), and analyzed the impact factor on faculty members' research performance (Bellas and Toutkoushian 1999; Dundar and Lewis 1998; Shin and Cummings 2010). In general, there are many analyses of the relationships among individual characteristics, academic background and research performance. Shin and Cummings (2010) undertook a multilevel analysis of academic publishing across disciplines and suggested that the research preference of faculty members, the collaboration with foreign colleagues and the time spent on research activities have a positive effect on research performance. Specifically, this study showed that individual characteristics have a stronger effect on research performance than institutional characteristics.

Jeong et al. (2011) showed that informal communication, cultural proximity, academic excellence, external fund inspiration, and technology development levels have an effect on the determinations of specific collaboration modes, such as domestic or international collaboration. D'Este and Patel (2007) studied the variety of channels through which knowledge transfer occurs and the factors underlying the interactions of academic researchers with industry. They found that previous experience in collaborative research, academic status, and age play a significant role in the probability of University-Industry (UI) research collaboration.

In a study on the impact factor on patenting, it was found that the career stage when conducting research activities, collaborative research with industry, and faculty rank have an effect on patent production (D'Este and Patel 2007; Morgan et al. 2001). D'Este and Patel (2007) also verified that the individual characteristics of faculty members were more important factors than the institutional features. The individual characteristics having an impact on research performance are usually considered as gender, age, career development, rank, discipline, etc. (Bellas and Toutkoushian 1999; Dundar and Lewis 1998; Shin and Cummings 2010). Work experiences while completing a postdoctoral program, in industry and at a research institute, are also important factors that impact research productivity and collaboration because knowledge transfer is accompanied by job mobility from one organization to another (Dietz and Bozeman 2005). It can be surmised that various work experiences will affect collaborative patterns and perspectives on research commercialization. However, there is little literature on how work experiences affect research performance. This study focused on the effect of work experiences on research collaboration patterns and research commercial activities.

8.3 Research Performance of Korean Academics

Types of academic research transfer are varied. They include publication in an academic journal, participation in a conference, collaborative research, consulting activities, involvement in a personal exchange program, and teaching activities (Crespi et al. 2011; D'Este and Patel 2007). In this study, publication in an academic journal, collaborative research patterns, and intellectual property rights such as patents are reviewed based on research performance.

Research productivity has increased rapidly in Korean academics since the mid-1990s. It grew from less than 5,000 in 1995 to almost 35,000 in 2010. This growth was initiated by the government's efforts to invest in research being conducted in universities and to foster world-class universities.

This study explored research collaboration based on Science citation index (SCI) articles in 46 major Korean universities. As shown in Fig. 8.1, the proportion of publications with coauthors within the same university was 39.65 % in 2000, but it decreased to 34.22 % in 2009. In contrast, the proportion of publications with coauthors from other universities had increased from 40.43 % to 44.67 %, and that with coauthors from the industry sector or the government had increased from 15.15 % to 17.67 % during the same period. Obviously, research collaboration with various actors has been invigorated. However, the proportion of publications with coauthors within universities is almost 80 %; the research collaboration of academic researchers is still largely based on relationships within universities than with various institutions.

Patents provide a reliable indicator of technology development and commercial exploitation of new technology (Grupp 1996; Guan and He 2007). The rate of application for patents by agents in Korea is shown in Table 8.1. The rate of patents applied for by universities was 0.63 % compared to 48.51 % by the industry sector and 2.54 % by public institutes in 2000. In the subsequent years, the number of patents that universities applied for grew and surpassed the rate of patents applied for by public institutes.

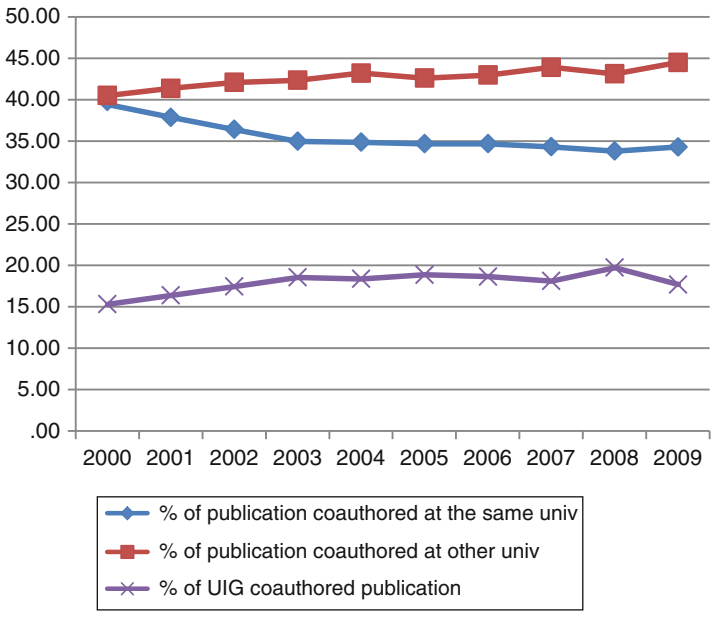

Fig. 8.1 Coauthored publication patterns in Korean 46 universities 2000–2009 (*Source*: Web of Science)

Table 8.1 Number and rate of application for patents by agents in Korea 2000–2009

	Industry		Public institute		University		Others		
Year	No	%	No	%	No	%	No	%	Total
2000	49,483	48.51	2,596	2.54	638	0.63	49,293	48.32	102,010
2001	52,649	50.33	3,051	2.92	810	0.77	48,102	45.98	104,612
2002	55,603	52.39	3,754	3.54	1,050	0.99	45,729	43.09	106,136
2003	67,093	56.55	4,189	3.53	1,471	1.24	45,899	38.68	118,652
2004	80,900	57.74	4,444	3.17	2,199	1.57	52,572	37.52	140,115
2005	94,617	58.80	5,525	3.43	3,583	2.23	57,196	35.54	160,921
2006	92,843	55.87	6,910	4.16	5,585	3.36	60,851	36.62	166,189
2007	89,429	51.85	8,011	4.64	8,116	4.71	66,913	38.80	172,469
2008	85,771	50.27	8,244	4.83	9,920	5.81	66,697	39.09	170,632
2009	80,183	49.03	9,875	6.04	11,240	6.87	62,225	38.05	163,523

Sources: Korean Intellectual Property Office (2010)
Note: Others included individual and non-profit institutions

8.4 Method

8.4.1 Data

The data for this study are drawn from the Korean researcher information (KRI) data bank through the National Research Foundation. The population in this study is 23,390 full-time faculty members majoring in natural science, bio-medical science, and engineering science who are affiliated with 46 universities in South Korea. These 46 universities have awarded more than 20 PhD per year and published more than 100 articles annually during 2003–2005 (Shin 2009). Among the 46 Korean universities, two universities: Korea Advanced Institute of Science and Technology (KAIST) and Pohang University of Science and Technology (POSTEC), specialize in science and engineering education and research, while the other universities have the characteristics of comprehensive universities.

This study selected 632 faculty members through stratified sampling based on discipline: the natural science, bio-medical science and engineering science fields.

The data on the publications and patents of the 632 faculty members from 2008 to 2010 was drawn from Korean researcher information (KRI), Research information service system (RISS), ISI Web of Science (WoS) database and Korea Intellectual Property Rights Information Service (KIPRIS). The KRI, managed by the National Research Foundation, provides information about researchers' affiliations, education, career, publications, intellectual property rights (IPR) and so on. This information can be used only after the researcher has given permission for the release of the information. The RISS database provides information about the Korean journal citation index (KCI) research publications, including the authors, affiliations, year of publication, abstract and so on. And the WoS database provides

information about the Science citation index (SCI) research publications, including the authors, affiliations, year of publication, citation references, number of citations and so on. KIPRIS is an internet-based patent document search service and covers publications of Korean IPR applications, legal status information and trial information, etc.

8.4.2 Variables and Analytical Strategy

This study analyzed the determinants of research performance such as publication in academic journals, coauthored patterns, and patents, and paid special attention to the effect of work experience on research performance. The variables in this study are listed in Table 8.2. They were divided into faculty members' characteristics and university features. Variables for faculty members' characteristics were divided into individual characteristics, academic background and work experience. Individual characteristics are gender and career level in a university (years since full-time lecturer). Academic background is country of PhD training (PhD obtained at a foreign university or at a domestic university) and discipline (natural science, bio-medical science, engineering science). Work experiences before seeking appointment to full-time lecturer in a university were divided into post-doctoral experience, company experience, and government (or public research institute) experience. The characteristics of universities are type, location, and the number of full-time faculty members, ratio of graduate students, the number of staff in the Office of Research Affairs and the University-Industry Foundation, and research funds.

Research performance was divided into research productivity, research collaboration, and research commercialization. Research productivity was measured by the number of academic journal publications (KCI and SCI articles) from 2008 to 2010 because journal articles are the main channel for the documentation and distribution of research performance (Schmoch 1997; Wong and Goh 2010). Coauthored patterns were used as a proxy variable of research collaboration. The process of collaboration as such is too complex to measure, and many previous studies on research collaboration focus on coauthored patterns in academic journals although the assessment of collaboration using co-authorship could analyze a partial characteristic of research collaboration. Coauthored patterns were measured by considering whether the coauthors of an article publication were affiliated with university, industry, or government (public research institute) according to the model of the triple-helix. The coauthored types were divided into collaborative research between sectors across industry or government (public research institute). Research commercialization was examined by the number of applications for patents, because patents provide a reliable indicator of technology development and commercial exploitation of a new technology (Grupp 1996; Guan and He 2007).

Descriptive statistics and regression analysis were used to examine the effect of faculty members' characteristics and experiences on research performance such as

Table 8.2 Independent and dependent variables

Variables			Measurement
Independent variables			
The characteristics of faculty members	Individual characteristics	Gender	Male = 1, Female = 0
		Career in univ.	Years since full-time lecturer
		(Career in univ.)^2	(Years since full-time lecturer)^2
	Academic background	Country of PhD training	PhD granted at a foreign university = 1
			PhD granted at a domestic university = 0
		Discipline	Bio-medical science, engineering, natural science (criterion variable)
	Work experiences	Postdoctoral experience	Postdoctoral experience Yes = 1 or No = 0
		Company experience	Company experience Yes = 1 or No = 0
		Government experience	Government (or public research institute) experience Yes = 1 or No = 0
The characteristics of universities	Physical environment	Type of univ.	Private = 1, Public = 0
		Location of univ.	The capital and its environs = 1, others = 0
		No. of faculty	Number of full-time faculty members
		Ratio of graduate student	Number of graduate student/ Number of undergraduate student (log)
		No. of staff	Number of staff in a center for the university-industry collaboration
	Research fund	Government fund	Government research fund (log)
		Private capital	Private research fund (log)
		Intra fund	On-campus fund (log)
Dependent variables			
Research productivity	# of publication	Number of SCI·KCI articles (2008–2010)	
Research collaboration	% of UI coauthored publication	% of publication coauthored with industry (2008–2010) (log)	
	% of UG coauthored publication	% of publication coauthored with government & public research institute (2008–2010)	
Research Commercialization	# of application for patents	Number of application for patents (2008–2010)	

research productivity, coauthoring dynamics and research commercialization. To be more specific, negative binomial regression was used as the dependent variable of research productivity and patents as a count variable. Ordinary least square (OLS) was employed to analyze the determinants of research collaboration. STATA 11.0 tools were used to conduct these statistical analyses.

8.5 Findings and Discussions

8.5.1 Descriptive Statistics

Our analysis is based on a sample of 533 (84.4 %) male and 99 (15.7 %) female faculty members. As Table 8.3 shows, the mean of years of career experience in university is approximately 14.7 years since full-time lecturer. Three hundred and two individuals (47.8 %) had obtained a PhD degree at a foreign university, 37.3 % of the sample are in the bio-medical sciences, 33.5 % in the engineering sciences, and 29.1 % in the natural sciences. Regarding work experiences, 277 (43.8 %) had completed a postdoctoral program, 138 (21.8 %) had work experience at a corporate company, and 205 (32.4 %) had work experience at a government or public research institute.

The mean of the number of published KCI and SCI articles in the past 3 years (2008–2010) is 12.9, while the mean of the number of applications for patents is 2.33 in the same period. Considering research collaboration, 6.38 % of publications are coauthored with colleagues in the industry sector, while 18.61 % are University-Government (UG) coauthored publications. This shows that research collaboration within the same sector (university; same university or other university) has been more activated than collaboration between sectors across industry or government (public research institute).

8.5.2 The Effect of Faculty Members' Characteristics on Research Productivity

Negative binomial regression analysis was used to examine the effect of faculty members' characteristics on research productivity because the dependent variable of research productivity is the number of SCI and KCI articles, which is a count variable. Table 8.4 summarizes the results of the regression analysis.

Gender, career in university and country of PhD training among faculty members' characteristics were not statistically significantly associated with research productivity. Although the coefficient for career in a university is not statistically significant, research productivity followed a non-linear inverted U-shaped relationship with years of career experience in university.

Discipline and work experience had positive effects on research productivity. Faculty members in bio-medical science and engineering fields were more positively

Table 8.3 Descriptive statistics

Binary variables			
Variables			No (%)
Individual characteristics	Gender	Male	533 (84.4)
		Female	99 (15.7)
Academic background	Country of PhD training	PhD at a foreign university	302 (47.8)
		PhD at a domestic university	330 (52.2)
	Discipline	Bio-medical science	236 (37.3)
		Engineering	212 (33.5)
		Natural science	184 (29.1)
Work experiences	Postdoctoral experience	Yes	277 (43.8)
		No	355 (56.2)
	Company experience	Yes	138 (21.8)
		No	494 (78.2)
	Research institute experience	Yes	205 (32.4)
		No	427 (67.6)
Physical environment	Type of univ.	Private School	428 (67.7)
		Public School	204 (32.3)
	Location of univ.	The capital and its environs	308 (48.7)
		Others	324 (51.3)

Continuous variables					
Variables		Mean	Std. Dev	Min	Max
Individual characteristics	Career in univ.	14.72	8.11	3	36
Physical environment	No. of faculty	861.74	445.81	210	2,074
	Ratio of graduate student	0.51	0.40	0.01	1.97
	No. of staff	39.14	18.60	2	77
Research fund	Government fund US$	85,300,000	103,000,000	7,641,078	450,000,000
	Private capital US$	11,800,000	13,700,000	486,128	46,400,000
	Intra fund US$	5,468,658	4,518,656	277,000	16,200,000
Research productivity	No. of publication	12.90	12.93	0	119
Research collaboration	% of UI coauthored publication	6.38	13.05	0	100
	% of UG coauthored publication	18.61	23.13	0	100
Research commercialization	No. of application for patent	2.33	5.90	0	69

Table 8.4 Determinants of the research productivity (negative binomial regression estimation)

Variables			Coef.	Std. Err.	P>|z|
Characteristics of faculty members	Individual characteristics	Gender	0.18	0.10	0.070
		Career in univ.	0.02	0.02	0.384
		(Career in univ.)^2	−0.00	0.00	0.181
	Academic background	Country of PhD training	−0.14	0.08	0.067
		Bio-medical science	**0.39**	**0.09**	**0.000**
		Engineering	**0.33**	**0.10**	**0.001**
	Work experiences	**Postdoctoral experience**	**0.18**	**0.08**	**0.020**
		Company experience	−0.15	0.10	0.110
		Government experience	**0.28**	**0.08**	**0.000**
Characteristics of universities	Physical environment	Type of univ.	0.02	0.11	0.886
		Location of univ.	0.08	0.09	0.378
		No of faculty	0.00	0.00	0.690
		Ratio of graduate student	**0.25**	**0.12**	**0.036**
		No of staff	0.00	0.00	0.854
	Research fund	Government fund	0.06	0.11	0.600
		Private capital	−0.04	0.07	0.527
		Intra fund	0.02	0.06	0.701
Constants			1.36	1.88	0.470

Pseudo R2 = 0.0217/N = 632
LR chi2(16) = 98.58/Prob >chi2 = 0.0000
Likelihood-ratio test of alpha = 0: chibar2(01) = 3629.84 Prob > =chibar2 = 0.00

associated with research productivity than faculty members in natural science. Postdoctoral experience and government (public research institute) experience have significant effects on faculty research publication. These results suggest that research experience before seeking appointment to full-time lecturer in a university have positive effects on research performance.

The ratio of graduate students among the characteristics of universities was found to have significant effects on research productivity. This suggests that research universities have paid more attention to research productivity.

8.5.3 The Effect of Faculty Members' Characteristics on Research Collaboration

OLS regression analysis was employed to examine the effect of faculty members' characteristics on research collaboration. Research collaboration was divided into collaborative research between sectors across industry or government

Table 8.5 Determinants of the UI research collaboration (OLS estimation)

Variables			Coef.	Std. Err.	P>|t|
Characteristics of faculty members	Individual characteristics	Gender	0.09	0.14	0.530
		Career in univ.	0.00	0.03	0.958
		(Career in univ.)^2	0.00	0.00	0.777
	Academic background	Country of PhD training	0.12	0.11	0.266
		Bio-medical science	**0.36**	**0.13**	**0.005**
		Engineering	**0.77**	**0.14**	**0.000**
	Work experiences	Postdoctoral experience	–0.03	0.11	0.797
		Company experience	**0.38**	**0.14**	**0.006**
		Government experience	–0.01	0.11	0.940
Characteristics of universities	Physical environment	Type of univ	0.10	0.16	0.538
		Location of univ.	0.06	0.13	0.655
		No of faculty	0.00	0.00	0.705
		Ratio of graduate student	**0.35**	**0.17**	**0.037**
		No. of staff	0.00	0.00	0.425
	Research fund	Government fund	0.08	0.15	0.613
		Private capital	–0.12	0.10	0.236
		Intra fund	–0.06	0.09	0.524
Constants			1.72	2.69	0.522

R-squared = 0.0999/N = 632
F(16, 614) = 5.12/Prob > F = 0.0000

(public research institute), UI research collaboration and UG research collaboration. Table 8.5 summarizes the results of the regression analysis in terms of UI research collaboration. The dependent variable, UI research collaboration was log transformed to realise normality.

Faculty members in bio-medical science and engineering fields were more positively associated with the UI research collaboration than faculty members in the natural sciences. Specifically, faculty members in the engineering fields tend to collaborate in publishing articles with colleagues in a corporate company. Work experiences competing in industry are also important factors that impact UI research collaboration. It could be explained that faculty members made friends with colleagues in a company when they worked in a company, so they have a higher chance of UI research collaboration. The ratio of graduate students among the characteristics of universities was found to have significant effects on UI research collaboration, too.

Table 8.6 summarizes the results of the regression analysis in terms of UG research collaboration. Male faculty members tend to collaborate more with colleagues in government or research institutes than female faculty members. The bio-medical science discipline is higher in UG research collaboration. It is because there are

Table 8.6 Determinants of the UG research collaboration (OLS estimation)

Variables			Coef.	Std. Err.	P>|t|
Characteristics of faculty members	Individual characteristics	**Gender**	**6.54**	**2.48**	**0.009**
		Career in univ.	–0.38	0.47	0.424
		(Career in univ.)^2	0.01	0.01	0.418
	Academic background	Country of PhD training	1.79	1.86	0.337
		Bio-medical science	**8.76**	**2.27**	**0.000**
		Engineering	1.90	2.44	0.436
	Work experiences	Postdoctoral experience	2.14	1.91	0.262
		Company experience	**–4.90**	**2.39**	**0.040**
		Government experience	**9.00**	**1.98**	**0.000**
Characteristics of environment	Physical universities	**Type of univ.**	**–6.24**	**2.76**	**0.024**
		Location of univ.	3.98	2.30	0.083
		No. of faculty	–0.01	0.00	0.209
		Ratio of graduate student	–4.37	2.97	0.142
		No. of staff	0.05	0.06	0.406
	Research fund	Government fund	4.99	2.72	0.067
		Private capital	**–3.72**	**1.73**	**0.032**
		Intra fund	2.63	1.63	0.107
Constants			–61.33	47.27	0.190

R-squared = 0.1185/N = 632
F(17, 614) = 4.85/Prob > F = 0.0000

many kinds of research institutes and government-affiliated organizations in the bio-medical science field. Work experiences in government (public research institute) have positive effects on UG research collaboration, but work experiences in industry have negative effects.

The type of university was statistically significant in UG research collaboration. Public universities were more positively associated with UG research collaboration than private universities. It is surmised that public universities have the proximity of organizational culture to government-affiliated institutes.

8.5.4 The Effect of Faculty Members' Characteristics on Research Commercialization

Negative binomial regression analysis was used to examine the effect of faculty members' characteristics on research commercialization because the dependent variable (number of applications for patents) is a count variable. Table 8.7 summarizes the results.

Table 8.7 Determinants of the patents (negative binomial regression estimation)

Variables			Coef.	Std. Err.	P>|z|
Characteristics of faculty members	Individual characteristics	Gender	0.43	0.25	0.082
		Career in univ.	0.04	0.05	0.408
		(Career in univ.)^2	–0.00	0.00	0.197
	Academic background	Country of PhD training	–0.10	0.18	0.582
		Bio-medical science	**0.83**	**0.22**	**0**
		Engineering	**1.31**	**0.23**	**0**
	Work experiences	**Postdoctoral experience**	**0.42**	**0.19**	**0.023**
		Company experience	**0.76**	**0.23**	**0.001**
		Government experience	**0.41**	**0.19**	**0.03**
Characteristics of universities	Physical environment	**Type of univ**	**0.78**	**0.29**	**0.006**
		Location of univ.	**–0.56**	**0.24**	**0.018**
		No of faculty	0.00	0.00	0.133
		Ratio of graduate student	**1.15**	**0.29**	**0**
		No of staff	0.00	0.01	0.485
	Research fund	Government fund	–0.18	0.25	0.477
		Private capital	–0.01	0.17	0.951
		Intra fund	–0.24	0.14	0.098
Constants			5.93	4.44	0.182

Pseudo R2 = 0.0541/N = 634
LR chi2(16) = 118.25/Prob > chi2 = 0.0000
Likelihood-ratio test of alpha = 0: chibar2(01) = 1726.35 Prob > =chibar2 = 0.000

Discipline and work experience characteristics of faculty members had positive effects on research commercialization. Faculty members in bio-medical science and engineering fields were more positively associated with commercial activities such as application for patents than faculty members in natural sciences. Postdoctoral experience, company experience and research institute experience have significant effects. Specifically, company experiences have more positive effects on research commercial activities.

The type and location of the university and the ratio of graduate students as characteristics of universities were found to have significant effects on research commercialization. Private universities were positively associated, because the organizational culture of private universities is relatively similar to a corporate company compared to a public university. Universities in provinces tended to apply for patents owing to their closeness to an industrial areas.

8.6 Concluding Remarks

The emphasis on the third mission of universities' research has led to the development of new university-industry-government networks and to the enhancement of entrepreneurial activities such as application for intellectual property rights, technology transfer to industry and running spin-offs, etc. The government has paid attention to the contribution of universities' research to economic development, too. However, when the perspective of academic research in universities appears to be changing from public knowledge to academic capitalism, it is important to analyze the characteristics of research productivity, research collaboration and research commercialization, especially collaborative and transdisciplinary research, which has increased rapidly since the scientific-industrial revolution. Researchers work together to produce new academic knowledge, engage in intellectual interaction, and achieve social influence (Katz and Martin 1997; Stokes and Hartley 1989). Collaborative research with heterogeneous actors such as industry and government represents the new mode of knowledge production. Therefore it is crucial to examine the research collaboration with heterogeneous colleagues as well as research publication and commercialization.

Actually, the number of journal article publications by Korean academics has increased rapidly since the mid-1990s, and the proportion of publications coauthored by various researchers in university-industry-government networks has increased from 2000 to 2009. However, the proportion of publications coauthored within universities is almost 80 %, which indicates that the research collaboration of academic researchers is still largely based on relationships between researchers within universities rather than those between researchers from various institutions. Concerning their research commercialization, the rate of patents applied for by universities is still low, but the rate has increased rapidly among agents applying for patents.

This study showed the determinants of research performance such as publication in academic journals, coauthored papers, and patents, and it paid special attention to the effect of work experience on research performance. The discipline and various work experiences are critical factors affecting research performance. Faculty members in the bio-medical science and engineering fields were more positively associated with research productivity, UI research collaboration, and commercialization than faculty members in the natural sciences. In terms of UG research collaboration, the number of faculty members in bio-medical science is higher because there are many kinds of research institutes and government-affiliated organizations in this field.

Work experiences while completing a postdoctoral program, in industry and in government (public research institute) are also important factors that impact research productivity, collaboration and commercialization because knowledge transfer is accompanied by job mobility from one organization to another (Dietz and Bozeman 2005). Postdoctoral experience and government (public research institute) experience have significant effects on faculty members' research publication productivity. Work experiences in industry are also important factors that

impact UI research collaboration. In contrast, work experiences in industry have negative effects on UG research collaboration while work experiences in government have positive effects on UG research collaboration. If faculty members had work experiences in a corporate company or government, faculty members could have a chance to make friends with colleagues in the workplace and UI or UG research collaboration could be relatively easy to them. Postdoctoral experience, company experience and government experience have significant effects on faculty research commercialization, too. Specifically, company experiences have more positive effects on research commercialization.

The type and location of universities and the ratio of graduate students as characteristics of universities was found to have significant effects on research performance. The ratio of graduate students was found to have significant effects on research productivity, UI research collaboration and the number of applications for patents. Public universities tend to relate to research institutes or government-affiliated organizations in terms of UG research collaboration and private universities were positively associated with research commercialization. Therefore proximity of organizational culture has an effect on the determinations of collaboration modes and research commercial activities.

Although this study contributes to the understanding of the characteristics of research performance, an in-depth study should be conducted for further exploration of this topic. Particularly, the study should analyze the relationships among research productivity, coauthoring dynamics, and research commercialization.

References

Agrawal, A., & Henderson, R. (2002). Putting patents in context: Exploring knowledge transfer from MIT. *Management Science, 48*(1), 44–60.

Bellas, M. L., & Toutkoushian, R. K. (1999). Faculty time allocation and research productivity: Gender, race and family effects. *Review of Higher Education, 22*(4), 367–390.

Breschi, S., Lissoni, F., & Montobbio, F. (2008). University patenting and scientific productivity: A quantitative study of Italian academic inventors. *European Management Review, 5*, 91–109.

Crespi, G., D'Esteb, P., Fontana, R., & Geunad, A. (2011). The impact of academic patenting on university research and its transfer. *Research Policy, 40*, 55–68.

D'Este, P., & Patel, P. (2007). University-industry linkages in the UK: What are the factors underlying the variety of interactions with industry? *Research Policy, 36*, 1295–1313.

Dietz, J. S., & Bozeman, B. (2005). Academic careers, patents, and productivity: Industry experience as scientific and technical human capital. *Research Policy, 34*, 349–367.

Dill, D., & Van Vught, F. A. (2010). *National innovation and the academic research enterprise: Public policy in global perspective*. Baltimore: Johns Hopkins University Press.

Dundar, H., & Lewis, D. R. (1998). Determinants of research productivity in higher education. *Research in Higher Education, 39*(6), 607–631.

Etzkowitz, H., & Leydesdorff, L. (1997). *Universities and the global knowledge economy: A triple helix of university-industry-government relations*. London: Francis Pinter.

Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From national systems and "Mode 2" to a triple helix of university-industry-government relations. *Introduction to the Special "Triple Helix" Issue of Research Policy, 29*(2), 109–123.

Etzkowitz, H., Webster, A., Gebhardt, C., & Terra, B. (2000). The future of the university and the university of the future: Evolution of ivory tower to entrepreneurial paradigm. *Research Policy, 29*, 313–330.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. London: Sage.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology, 78*, 1360–1380.

Grupp, H. (1996). Spillover effects and the science-based innovation reconsidered: An empirical approach. *Journal of Evolutionary Economics, 6*, 175–197.

Guan, J., & He, Y. (2007). Patent-bibliometric analysis on the Chinese science-technology linkages. *Scientometrics, 72*(3), 403–425.

Jeong, S., Choi, J. Y., & Kim, J. (2011). The determinants of research collaboration modes: Exploring the effects of research and researcher characteristics on co-authorship. *Scientometrics, 89*, 967–983.

Katz, J. S., & Martin, B. R. (1997). What is research collaboration? *Research Policy, 26*(1), 1–18.

Korean Intellectual Property Office. (2010). *The patent trend in Korea*. Daejeon: Korean Intellectual Property Office.

Lee, S. J., & Ngo, T. H. (2011). Review of the book The capitalization of knowledge: A triple helix of university-industry-government. *Higher Education, 63*(1), 161–163.

Morgan, R. P., Kruytbosch, C., & Kannankutty, N. (2001). Patenting and invention activity of U.S. scientists and engineers in the academic sector: Comparisons with industry. *Journal of Technology Transfer, 26*(1–2), 173.

Rogers, E. M. (1995). *Diffusion of innovations*. New York: Free Press.

Schmoch, U. (1997). Indicators and the relations between science and technology. *Scientometrics, 26*(4), 325–336.

Shin, J. C. (2009). Classifying higher education institutions in Korea: A performance-based approach. *Higher Education, 57*, 247–266.

Shin, J. C., & Cummings, W. (2010). Multilevel analysis of academic publishing across disciplines: Research preference, collaboration, and time on research. *Scientometrics, 85*, 581–594.

Shin, J. C., Lee, S. J., & Kim, Y. (2012). Knowledge-based innovation and collaboration: A triple-helix approach in Saudi Arabia. *Scientometrics, 90*(1), 311–326.

Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy*. Baltimore: Johns Hopkins University Press.

Stokes, T. D., & Hartley, J. A. (1989). Coauthorship, social structure and influence within specialities. *Social Studies of Science, 19*(1), 101–125.

Teichler, U., & Yagci, Y. (2009). Changing challenges of academic work: Concepts and observations. In V. L. Meek, U. Teichler, & M. Kearney (Eds.), *Higher education, research and innovation: Changing dynamics*. Paris: UNESCO.

Thursby, J. G., Jensen, R. A., & Thursby, M. C. (2001). Objectives, characteristics and outcomes of university licensing: A survey of major U.S. universities. *Journal of Technology Transfer, 26*(1–2), 59–70.

Vafeas, N. (2010). Determinants of single authorship. *EuroMed journal of business, 5*, 332–344.

Viale, R. (2010). Knowledge-driven capitalization of knowledge. In R. Viale & H. Etzkowitz (Eds.), *The capitalization of knowledge*. Cheltenham: Edward Elgar.

Wagner, C. S., & Leydesdorff, L. (2005). Network structure, self-organization, and the growth of international collaboration in science. *Research Policy, 34*, 1608–1618.

Wong, C. H., & Goh, K. L. (2010). Growth behavior of publications and patents: A comparative study on selected Asian economies. *Journal of Informetrics, 4*, 460–474.

Chapter 9
Academics and Service to the Community: An International (European) Perspective

Bojana Ćulum

9.1 Introduction

The identity and working life of the academic has been conceived as a group of interrelated and equally important roles: the teacher, the researcher, and the public intellectual. Some call it the "holy trinity" (Checkoway 2001). Cummings (1998) claims the tripartite role of academics in teaching, research and service activities are a cornerstone of conventional assumptions about higher education. He sees service and engagement with the community as one of the historic 'ingredients' of the wider identity and purpose of the university. However, with teaching and research as the two core and honored activities, 'service' becomes a rather illusive and fuzzy concept. Regardless of the rising attention that has been given recently to the concept of service (in literature, national and international higher education policies, EU communications, declarations, numerous conferences around the field touching the theme in the past decade), attempts to define the concept of service and to determine related (service) activities indicate contextual and ideological conflicts. Not only is there no consensus on the terminology,[1] but the interpretation of service activities and functions varies considerably among scholars, countries and

[1] There is a variety of terms used in the literature-service, community service, service to the society, community engagement, engaged university, community engaged university, university third mission, university third stream, university third revolution, university civic mission, extension, outreach, knowledge transfer, knowledge application, knowledge transmission, knowledge diffusion, university third task, or university third leg – all different names (and concepts) actually pointing out the same – university reaching out to society at large through various kinds of social, economic and political linkages.

B. Ćulum (✉)
Department of Education, Faculty of Humanities and Social Sciences, University of Rijeka, Sveučilišna avenija 4, Rijeka RH-51000, Croatia
e-mail: bculum@ffri.hr

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_9

institutions as well.[2] There is little consensus in the academy on what 'service' actually stands for, how to perform, acknowledge and evaluate (various) service activities, with whom and for who and/or what should academics get engaged?

Different constituencies in the higher education context, as reflected in the scholarly literature, interpret differently the term and the concept of service. Various and sometimes completely different issues are discussed in the context of service, such as: (I) *Internal (institutional) services* (which overlap with management and administration, e.g., evaluation, quality assurance), (II) *Technology transfer/innovation/commercial activities* (which overlap with research and paid consulting activities), (III) *Civic activities* (which overlap with both teaching and research, e.g., service-learning and community-based action research, as well as community and civic engagement, free consulting services, and volunteering), and (IV) *Organized service functions of the university* (e.g. university hospitals, various projects with marginalised populations), all for the betterment of the community, and/or region in which the university 'lives'[3] (Ćulum et al. 2013). Macfarlane (2007) categorizes service into what he calls the "most common" distinctions, namely 'internal' (in university communities) and 'external' (non-university communities) service forms (Macfarlane 2007, p. 47). While some emphasize that only cooperation with the non-academic community constitutes the concept of service (Molas-Gallart et al. 2002; Ngoc Ca 2009; Thorn and Soo 2009), others pinpoint the importance of academic citizenship, contribution to university and academic community, as well to local community (Shils 1997; Kennedy 1997; Macfarlane 2007). The placement of service activities introduces more variety into service interpretations. A great number of authors interpret 'service to the society' as a practice-oriented engagement and cooperation with external communities where all activities must be performed outside the traditional box of teaching and research (Ngoc Ca 2009; Gregersen et al. 2009; Karlsson et al. 2007; Thorn and Soo 2009). Others argue "for a broader definition of research, a greater recognition of the role of service – and the integration of teaching, research and service as interconnected scholarly activities" (Greenbank 2006, p. 109).

[2] Much of the literature addressing the issue of service (third mission) is developed from countries such as the United States of America, the United Kingdom, Canada and Australia. As Correa Bernardo and her associates stand, in many of these developed countries, institutional networks have been established among universities, which are actively pursuing community engagement as an area of scholarship (Correa Bernardo et al. 2012).

[3] Universities and academics have been increasingly called upon to play a direct role in supporting regional and national economic development as well as to have a direct impact on society. In recent years the focus on service (third mission) activities has been intensified in the context of extending traditional university settings of teaching and research for the purpose of local, regional and national development. The concept itself is strongly connected with the emerging regional development agenda (Goddard and Chatterton 2003). An OECD report, The Response of Higher Education Institutions to Regional Needs (1999) identified a "new regionalism" as part of an emergent third role for higher education institutions. Laredo (2007) points out that service, or the third mission as he addresses it, should be taken differently, depending on the configuration of university activities, upon it's embedding in its geographical territory and upon the country institutional framework.

The variety of interpretation is evident among academics as well. Macfarlane's study (2005) amongst 21 academics from five geographic regions worldwide identifies five distinguishable interpretations of service within this distinction between internal and external service. The first equates service with *administration* (covering the 'maintenance' duties of courses and research, viewed mostly as an ever-increasing burden on academics). The second views service as *customer service*, servicing of students as clients, while the third views it as a *collegial virtue and support* provided to developing scholars in the form of mentoring. The forth is often referred to as 'public, community service or civic duty', and referred to in the same way as the obligation to colleagues, but as a service to the wider society in the form of voluntary work, charity work or outreach, for the benefit of the local community, though not necessarily related to scholarly activities or connected with scholarly expertise. The fifth interpretation sees service as *integrated learning* by integrating service into the curriculum through a variety of initiatives, like service-learning, community-based projects and internships (ibid., pp. 168–171). Some claim it is the institutional context that shapes the perceptions of academic staff on what service entails (Schnaubelt and Statham 2007).

The concept of service, or the third mission as addressed recently, is a complex phenomenon, not an easy one to pinpoint. It involves different stakeholders, a wide range of direct and indirect activities, and takes into account both direct and indirect effects on universities and their communities. A coexistence of broader and narrowly defined approaches can be observed in the present discourse, since service activities are perceived and implemented in different ways, depending on both internal and external factors influencing the university. Despite the growing attention it has received, service is still a vaguely defined concept – or scholarly discipline – still searching for a broader and a more intense scientific discourse.

Having in mind the rising relevance service has been given to in academia, as well as in various policy documents (e.g. various EU Communications), the aim of this chapter is to serve as a platform for contributing to the academic debate and for offering some reflections on the concept of 'service' in European higher education arena. The data were collected in recent years in 12 European countries through two major international collaborative projects: CAP – The Changing Academic Profession and EUROAC – The Academic Profession in Europe: Responses to Societal Challenges.

In Sects. 9.2, 9.3, 9.4, 9.5, and 9.6, survey data collected from academics in 12 European countries will be presented as various themes linked to 'service' are addressed: academic workload in service activities, the nature of service activities, 'service character' in academic teaching and research, the interconnection of service and teaching, academics' views on the scholarship of service and academics' perception of institutional strategies encouraging service activities. Similarities and differences between countries, as well as between senior and junior academics are addressed. The common questionnaire used in the CAP survey did not comprise a major section on the service function. However, this paper explores various elements from the questionnaire, which might be subsumed under the notion of 'service' – services to clients and/or patients, unpaid consulting, academics' engagement in academic, public and voluntary services.

As the service function was approached in a broad sense of academics' contribution to their internal and external stakeholders, occasionally an umbrella term 'service' is used in ignorance of what the respondents actually mean when they respond. Therefore, some aspects of the EUROAC study went deeper with the aim to describe and analyze academics' public engagement in the community. In Sect. 9.7 the nature and the extent of academics' public engagement in the community/society, as well as the status of their public engagement in the frame of institutional commitment to value engagement, are being tackled. Primary data was obtained through 180 conversational interviews about key elements of academics' community engagement in 3, out of 12 European countries – Croatia, Germany and Ireland. In this part of the EUROAC study there were 60 participants included from each of the countries mentioned, junior and senior academics from various institutions and disciplines.[4] The constant comparative method was used which involves mining the data for categories and themes, in this case related to the academics' public/community engagement (Merriam 1998).

9.2 Workload in Academic Activities

Dynamic, changing and increasing demands academics are trying to respond to affect the distribution of their activities and basic tasks, while demanding their broadening engagement at the same time (Rice et al. 2000; Kogan and Teichler 2007). Decisions about how to approach various work roles are influenced by doctoral socialization, discipline, career stage, personal preferences, and the nature of the work (Tierney and Bensimon 1996). Choices are made also based upon how successful faculty believe they will be and on what they perceive as institutionally valued (Blackburn and Lawrence 1995).

Teaching and research are traditionally regarded as two academic pillars, which are considered most important in the system of academics' advancements. It is the mix of research and teaching that, as Burton Clark has pointed out, "comes close to determining everything else about academic life" (see de Weert 2009, p. 136). Time spent on administration usually suffers a 'bad reputation' – "it may be mandated, but it steals away from something more basic and is seen as more of a burden; time spent on administration, we may note, is widely viewed as wasted, often not even regarded as a legitimate demand" (Clark 1987, pp. 72–73). Recent studies suggest 'service' is not regarded as something that provides professional credit and is not career enhancing for the academics involved (Macfarlane 2005; Tyde'n 2005 in Karlsson 2007).

[4] Research results and discussion in this sub-chapter will take place at the level of comparing subjects from different countries from which they come, given that the analysis of the data revealed little differences between other characteristics of respondents (academic title and status, discipline, institution, age and sex).

The results of the previous two large international surveys on the academic profession (the Carnegie survey and CAP) showed that academics spent relatively little time on service, which was considered a marginal and less prestigious activity than research and teaching (Wolhuter et al. 2006, p. 69). A sizeable percentage of academics surveyed reported no hours at all spent on service; notable exceptions were Mexico and Brazil, where faculty spent more than 10 h a week on service activities (Altbach and Lewis 1996, p. 22).

In the CAP and the EUROAC study, academics have been asked to state the number of weekly hours each for the period when classes are in session and when classes are not in session. They have been asked to sub-divide the time according to teaching, research, service, administration and other academic activities.[5] Overall, academics in Europe estimate their weekly working time when classes are in session as comprising between 27 h (juniors in Norway) and 56 h (seniors in Germany). On average, senior academics work more hours than their junior colleagues. This difference ranges from almost 15 more hours in Norway and Germany to more or less the same time in Poland and Portugal. Only part of this difference is due to the fact that part-time employment is clearly more widespread among junior staff than among senior academics (Marek and Antonowicz 2013).

It is widely assumed that academics in Europe are expected to spend about 40 % of their time on teaching, 40 % on research and the remaining 20 % on service and administration (Marek and Antonowicz 2013). As shown in Fig. 9.1, in a typical working week, while classes are in session, senior academics at universities spend most of their time in teaching (17.3 work hours per week on average), a little less time in research (15.1 h), and only 3.4 h in performing various service activities. They usually spend double that time engaged in various administrative tasks (7.8 h).

In comparison to their senior colleagues, in a typical working week while they have classes in session, junior academics at universities allocate more time in their research work (16.7 work hours per week on average). This can be explained due to their status in the academic career as they are expected to develop their research projects and conduct a major research study. Little less time than in research they invest in their teaching (14.6 h), but the least time they allocate in service activities (2.6 h), even less than their senior colleagues. As is the case with senior academics, juniors are engaged in administration (4.4 h) more than in service activities (see Fig. 9.2).

Diversification of hours spent in academic activities occurs in the period without classes in session. The amount of time both senior and junior academics at

[5] Activities were described in more details as follows: teaching (preparation of instructional materials and lesson plans, classroom instruction, advising students, reading and evaluating student work); Research (reading literature, writing, conducting experiments, fieldwork); service (services to clients and/or patients, unpaid consulting, public or voluntary services); administration (committees, department meetings, paperwork); other academic activities (professional activities not clearly attributable to any of the categories above).

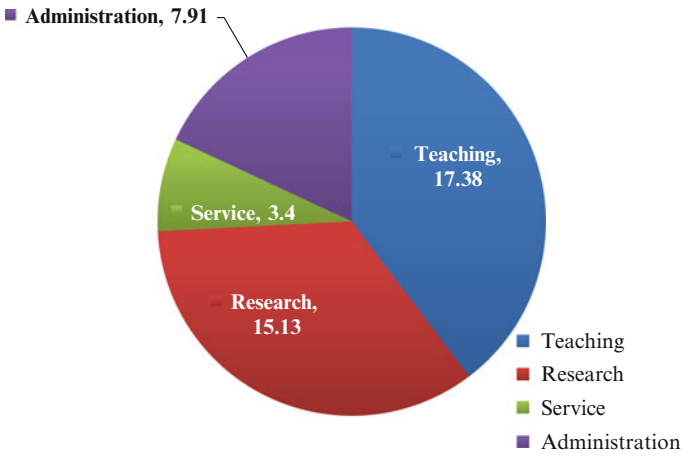

Fig. 9.1 Weekly hours spent by senior academics at universities on academic activities while classes in session in 12 European countries (arithmetic mean) (*Source*: CAP study and EUROAC study)

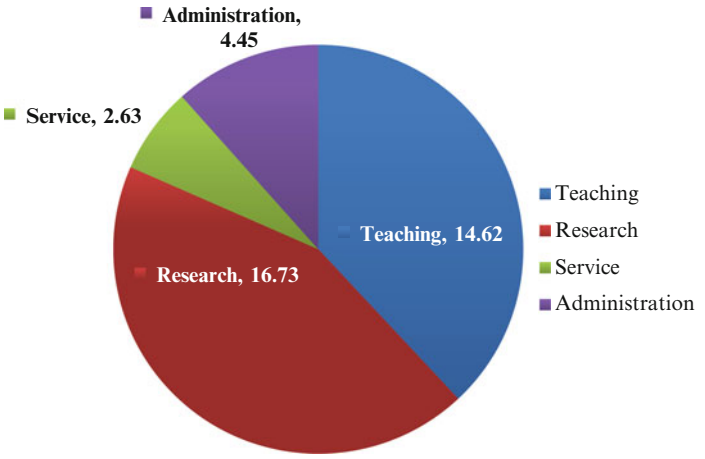

Fig. 9.2 Weekly hours spent by junior academics at universities in 12 European countries on academic activities while classes in session (arithmetic mean) (*Source*: CAP study and EUROAC study)

universities invest in teaching is of course decreasing, while time they invest in research and administration is increasing. While some shifts between the time allocated in teaching, research and administration occur during the period when classes are not in session, the time academics spent in service activities remains mostly the same (see Table 9.1).

Table 9.1 Weekly hours spent by academics at universities in 12 European countries on service activities (arithmetic mean)

	2010					2007/2008						
	AT	CH	HR	IE	PL	NL	DE	FI	IT	NO	PT	UK
a. When classes are in session												
Seniors	6.0	4.6	2.9	3.0	3.4	2.1	6.8	2.6	3.7	2.0	1.8	1.8
Juniors	5.2	3.2	1.5	2.0	3.0	1.6	6.0	1.8	3.7	0.7	1.8	1.1
Total work hours												
Seniors	49.3	51.8	47.5	50.6	45.8	44.5	55.8	47.2	46.3	42.1	40.9	46.9
Juniors	41.4	42.4	41.8	46.1	44.8	41.9	39.1	40.7	44.3	27.2	41.4	42.0
b. When classes are not in session												
Seniors	4.6	4.8	3.3	3.5	4.3	3.2	6.7	2.8	4.0	2.1	2.6	1.9
Juniors	3.3	3.5	1.8	2.4	4.0	1.5	6.6	1.8	3.7	1.0	2.1	1.1
Total work hours												
Seniors	45.6	49.4	45.6	48.1	40.5	43.3	51.3	44.7	45.8	46.0	40.9	46.1
Juniors	38.1	42.4	41.5	44.5	42.8	39.6	41.8	38.8	44.1	42.8	41.7	41.1

Source: CAP study and EUROAC study (EUROAC data set of June 2011)
Question B1: Considering all your professional work, how many hours do you spend in a typical week on each of the following activities? – Service (services to clients and/or patients, unpaid consulting, public or voluntary services)

In a typical week while they have classes in session, German senior academics at universities spent more time in service activities (6.8 h per week) in comparison with their colleagues from the other 11 countries included in the study. Their Austrian senior colleagues are a little behind, with six working hours per week, and then senior academics from Switzerland, with somewhat less than five working hours per week. Taking into account the total working hours reported per week, German and Austrian senior academics spend on (various) service activities around 12 % of their work time, and their Swiss senior colleagues around 9 %. In contrast, in their typical working week with classes in session, senior academics from the UK and Portugal allocate the least time of their total working hours in service activities – 1.8 h or around 4 % for both. Their senior colleagues from Norway and the Netherlands follow with about 2 h for (various) service activities. It is evident that junior academics spend somewhat less time on service activities (2.6 h on average of the 12 countries) than their senior colleagues (3.4 h on average of the 12 countries). Differences by country are similar among junior academics: Those from Germany are most active in this respect (6.0 h), followed by the Austrian juniors (5.2 h), while their junior colleagues from the UK (1.1 h) and Norway (0.7 h) allocate the least time in service activities, below 3 % of their total working hours per week.

When classes are not in session, during 1-week time senior academics spend on average 3.6 h on service activities (as compared to 3.4 h on average of the 12 countries while classes are in session), while their junior colleagues spend 2.7 h (as compared to 2.6 h when classes are in session). Again, many hours are reported

by both senior (6.7 h) and junior academics (6.6 h) from Germany and few by seniors and juniors from the UK (1.9 h for seniors and 1.1 h for juniors) and Norway (2.1 and 1.0 h).

The small proportion of the total weekly hours that academics surveyed devote to service activities obviously reflects the hierarchy of academic pillars rather than their interdependence. The engagement in various service activities clearly remains on the margins of the academic 'holy trinity' of teaching, research and service (Ćulum et al. 2013). An increasing number of studies indicate the interdependence of formal criteria for promotion and the workload related to academic activities, so these survey findings do not come as a surprise. Through the advancement system and set prerequisites for tenure election, traditional academic and scientific results still have the highest priority. If the results of various service activities (reports, evaluations, presentations, situation analysis, public policy analysis, new curricula, plans for personal and professional development, project proposals, etc.), are not properly awarded, academics will rarely (if at all) get engaged (Boyer 1990; Braxton et al. 2002; Cummings 2006; Lynton 1995; O'Meara 2002). As the connections to the various communities academics collaborate with through service activities cannot be mapped by standard indicators that dominate in measuring scientific excellence (such as peer-reviewed publications), there is a trend of avoiding 'distracting' activities (especially among young scientists), such as service activities appear to be (Krücken et al. 2009; Göransson et al. 2009; Ćulum and Ledić 2010).

The decision on whether (or not) academics will engage in various service activities, depends mostly on the academics' perception of the institutional and formal importance of a given activity in terms of their own academic advancement (Bloomgarden and O'Meara 2007; Ćulum and Ledić 2010). Studies indicate collaboration activities are neither rewarded nor career enhancing for the academics involved (Macfarlane 2005; Tyde'n 2005 in Karlsson 2007). Macfarlane's (2005) findings suggested 'service' is not regarded as something that provides professional credit – "*There was a keen awareness among academics that service work suffers both a lack of status, and further, won't get you tenure, promotion or a pay rise*" (Macfarlane 2005, p. 173). As long as new service assignments are simply being added to the existing load, and as long as they are not being properly rewarded (Cummings 2006), one cannot expect academics to invest more of their time in service activities.

9.3 The Nature of Academics' Service Engagement

The literature on service reveals distinction between *contributions to the institution* (various administrative tasks, peer review, engagement in committees) and *contributions to the non-academic community*, as public engagement, volunteering, consulting and providing expert witness. Similarly, Ward (2003) classified service as internal and external. Internal faculty service includes service to the university, to the discipline, and to students, which is similar to Macfarlane's (2007) findings on

the five communities academics serve (students, colleagues, their institution, their discipline or profession, and the public) and fundamental differences in the status of different service activities. External service is the way for higher education to put its expertise to use for various external stakeholders and can include extension, consulting, service-learning, community-based action research, civic engagement, community development projects, participation in cultural activities and civic service (Ward 2003).

Drawing from the recent analysis on faculty service based on CAP data (Shin 2010), and to some extent from Macfarlane's pyramid of five communities and associated service activities academics get engaged in (Macfarlane 2007), division into three areas has been made: (a) being a member of research committees, or engaging as a peer reviewer, editor or becoming a manager of an academic and professional association stands for *academic service*; (b) *community service* encompasses academics' engagement in community organizations as well as cooperation with social service agencies; (c) *political service* covers academics' involvement in politics (local, national and international).

Table 9.2 shows the proportion of academics surveyed being involved in various service activities within the most recent academic year. First insight into the results presented clearly shows that many academics are involved in service activities related with academic work, some in community service/engagement and very few in political services.

As regards the various types of academic service activities, the survey suggests noticeable differences by country. Peer reviewing is most common in almost countries (ranging for all respondents from 45 % in Portugal to 73 % in Austria and Ireland). In Switzerland, the highest proportion of academics is active in scientific committees and boards (65 %). Activities as journal and book editors and as leaders of academic associations – altogether less frequent than the two previously discussed ones – are reported most often by respondents from Austria (40 % and 39 % respectively). Community service/engagement varies substantially by country as well. Membership in community organisations and community-based projects ranges from 12 % of all academics in Austria to 44 % in Ireland. A similar range of academics worked with local, national or international service agencies: from only 6 % in Portugal and 7 % in Croatia to 33 % in Germany. Finally, academics allocate least time for political service activities. Between 3 % (UK) and 12 % (Switzerland) of all academics are engaged in local, national or international politics. An even smaller proportion of academics are engaged as elected officers and/or union leaders, with the noticeable exception of Finland (42 % of senior academics and 33 % of juniors).

The results show that senior academics by far more often get involved in academic service that provide them with power and status, such as engaging in research committees, peer reviewing, journal and book editing and the management of academic and professional organizations. However, junior academics at universities in the U. K. and the Netherlands are almost as much involved in peer reviewing as senior academics of these two countries. In contrast, senior academics are slightly less involved in political service and clearly less involved in community service/engagement than

Table 9.2 Involvement of academics at universities in 12 European countries in service activities in the current academic year (percent of respondents, multiple responses)

Service activity			2010					2007/2008						
			AT	CH	HR	IE	PL	NL	DE	FI	IT	NO	PT	UK
Academic service	Scientific committees /boards	Senior	67	90	41	77	40	64	48	57	66	66	67	47
		Junior	34	54	18	44	19	31	17	22	55	24	39	21
	Peer reviewer	Senior	92	95	86	95	81	83	72	84	71	80	84	88
		Junior	64	63	50	74	64	74	37	49	58	48	49	77
	Journal/book series editor	Senior	54	53	49	36	13	38	62	35	15	21	37	36
		Junior	31	15	22	18	7	17	23	14	5	9	16	15
	Leaders of academic associations	Senior	58	47	44	45	34	28	51	56	18	26	37	23
		Junior	32	12	23	30	20	16	28	29	6	11	26	10
Community service/ engagement	Membership in community organizations, community-based projects	Senior	12	14	19	36	16	16	0	27	15	27	22	23
		Junior	13	21	28	44	21	18	0	23	20	44	25	30
	Worked with local, national or international social service agencies	Senior	22	11	6	19	18	9	19	21	10	12	5	15
		Junior	20	12	8	21	20	8	35	16	13	14	6	14
Political service	Involved in local, national or international politics	Senior	3	13	9	10	9	6	3	5	4	9	13	5
		Junior	5	10	2	7	8	7	3	4	4	6	5	5
	Elected officer/union leader	Senior	2	5	7	3	1	2	1	42	1	8	1	5
		Junior	2	3	6	3	1	1	2	33	1	8	3	4

Source: CAP survey and EUROAC survey (EUROAC data set June 2011)
Question A13: During the current academic year, have you done any of the following?

their junior colleagues. Community activities are reported by more than half of the junior academics in Ireland and the U. K., while involvement in social service is most often reported by junior academics in Germany (58 %). A notable exception, as already named above, is the frequent involvement of both Finnish senior and junior academics in elected officer/union functions. Nevertheless, juniors at universities are twice, even three times more likely to get involved in academic, rather than community service activities.

9.4 Looking for Service in Teaching and Research

The scholarship of service to some extent represents a call for the integration of service activities into regular academic teaching and research activities and for their transformation rather than the creation of a new set of roles and activities that would result in an additional workload (Ćulum et al. 2013). The present overload with multiple academic duties wears academics out (Rice et al. 2000) contributing to a high level of stress, fear and frustration – mostly because of the excellent results expected in all academic areas of their profession (O'Meara and Braskamp 2005) – prompted the authors to advocate an integrative paradigm of academic roles. The role of various service engagements, as Bortagaray (2009) puts it, is in narrowing and blurring the boundaries between teaching and research. Greenbank (2006) argues for the integration of teaching, research and service as interconnected scholarly activities. Jongbloed et al. (2008) claim that service activities cannot be separated from traditional teaching and research. Some urge a relationship between teaching and research activities should be more closely based on the needs of the community (Boyer 1996; Berberet 1999; Bloomgarden and O'Meara 2007; Karlsson 2007). That kind of engagement is considered to be useful and enriching for students engaged, as well as for the academics' learning, professional growth and competences, their research and teaching development (Greenbank 2006; Karlsson and Booth 2006 in Karlsson et al. 2007). As for the research, it is expected to provide tangible and intangible benefits to the community and can constitute community service, especially in the area of health research (Arcury et al. 1999; Westfall et al. 2006). Scholarship of service, as put forward by Boyer (1990), exists as a result of academics' research-community interdependence.

Drawing from that perspective, the EUROAC survey aimed to analyze academics' views on teaching and service in connection with the 'service character' within it, the teaching-service nexus, as well as the orientation of their primary research. Actually, the proportion of academics that emphasize practically oriented knowledge and skills in their teaching vary enormously by country. In some countries less than half of the academics surveyed at universities integrate practically oriented knowledge and skills in their teaching: Finland (31 % of seniors and 48 % of juniors), the Netherlands (40 % ad 42 %) and Poland (44 % and 45 %). In contrast, academics from some countries emphasize practically oriented knowledge and skills in their teaching: Croatia (79 % of seniors and 82 % of juniors), Ireland (75 % and 80 %), Germany and Portugal (each 75 % of seniors and 77 % of juniors). In 11

Table 9.3 'Service character' in teaching as viewed by academics at universities in 12 European countries (percentage of respondents*)

	2010					2007/2008						
	AT	CH	HR	IE	PL	NL	DE	FI	IT	NO	PT	UK
Practical knowledge and skills												
Seniors at university	67	53	79	75	44	40	75	31	54	49	75	69
Juniors at university	7	58	82	80	45	42	77	48	54	51	77	67
Values and ethics												
Seniors at university	62	–	62	68	24	48	57	53	40	45	71	69
Juniors at university	58	–	55	74	20	44	36	41	34	36	71	70
Service reinforces teaching												
Seniors	48	32	42	66	30	45	37	44	52	69	6	35
Juniors	50	29	35	62	28	33	31	32	45	54	7	33

Source: CAP survey and EUROAC survey (EUROAC data set June 2011)
∗Responses 1 and 2 on a scale from *1*=Strongly agree to *5*=Strongly disagree
Question C4: Please indicate your views on the following: Practically oriented knowledge and skills are emphasized in your teaching; You incorporate discussions of values and ethics into your course content. Your service activities reinforce your teaching

countries (the UK is exception) a slightly higher proportion of junior than senior academics underscore practically oriented knowledge and skills. This might be due to modes of classes (seminars, exercises) in which juniors get engaged with students, where acquisition of practical knowledge and skills might be more accentuated than in senior academics' lectures (Table 9.3).

The proportion of academics that incorporate discussions of values and ethics into their course content varies by country as well: it ranges from 20 % of junior academics at Polish universities to 71 % of both senior and junior academics at Portuguese universities. While in most countries around half of the academics share positive views on introducing ethics into their teaching, the percentage of those who do so in Ireland, Portugal and the UK (both senior and junior) exceeds two thirds of them. Poland is an exception with less than one third of both senior and junior academics that share positive views on integration of values and ethic into teaching. In comparison to their junior colleagues, a higher percentage of seniors incorporates discussions of values and ethics into their course content.

Obviously, a quite high proportion of academics consider their service activities as reinforcing their teaching – 42 % of academics on average across 12 countries, half of the seniors (51 %) and around one third of juniors at universities (37 %). However, the proportions of academics that regard the teaching-service nexus vary notably by country, ranging from 29 % (juniors in Switzerland) to 69 % (seniors in Norway).[6] In contrast, only 6 % of senior and 7 % of junior

[6] Having in mind that senior academics from Norway reported how they allocate just 2 h per week in service activities, one might find this result on the potential of service to reinforce their teaching quite surprising.

Table 9.4 Applied, commercial and social emphasis in research put by academics at universities in 12 European countries (percentage*)

	2010					2007/2008						
	AT	CH	HR	IE	PL	NL	DE	FI	IT	NO	PT	UK
Applied/practically oriented												
Seniors at universities	61	56	81	58	54	56	67	66	60	57	76	68
Juniors at universities	60	59	73	64	54	57	67	63	62	60	69	64
Commercially oriented/intended for technology transfer												
Seniors at universities	11	13	22	12	18	15	15	16	14	2	22	18
Juniors at universities	14	17	23	15	17	12	18	21	17	15	17	15
Socially oriented/intended for the betterment of society												
Seniors at universities	40	37	53	46	28	39	48	33	33	32	50	37
Juniors at universities	38	33	55	52	32	41	26	29	34	29	52	42

∗Responses 1 and 2 on a scale from 1=Strongly agree to 5=Strongly disagree
Question D2: How would you characterize the emphasis of your primary research this (or the previous) academic year?

academics at universities in Portugal acknowledge the reinforcement of their teaching by the service activities.

As for the primary research orientation, the emphasis on applied/practically-oriented research is most pronounced – an average of 63 % of both senior and junior academics across all 12 countries (see Table 9.4). Variations by country are noticeable: on the part of senior academics from 54 % in Poland to 81 % in Croatia and from 54 % in Poland till 73 % in Croatia on the part of junior academics. In three countries – Poland, the Netherlands and Switzerland – just slightly more than half of the academics surveyed, both senior and junior, 'labeled' their primary research as applied.

A somewhat lower percentage of academics characterize their research work as socially oriented, intended for the betterment of society – an average of 39 % of both senior and junior academics across countries. Social orientation of research ranges from slightly more than half in Croatia and Portugal to less than one third of academics in Finland, Italy and Norway. The proportion of senior academics that marked their research work as socially oriented and intended for the betterment of society ranges from 28 % in Poland to 53 % in Croatia. As for the juniors, the percentage varies from 26 % (Germany) to 55 % (Croatia). While the responses by junior staff hardly differ from those of senior academics in almost all countries, substantially more senior academics in Germany characterize their research as socially relevant than their junior colleagues do (46 % as compared to 26 %).

The lowest percentage of academics qualified their primary research as commercially oriented and intended for the technology transfer – an average of 16 % of both senior and junior academics across all 12 countries. The responses vary by country between 11 % (senior academics in Austria) and 23 % (junior academics in Croatia).

9.5 Academics' Views on Scholarship

It was the seminal work of the late Ernest Boyer that has sparked a renewed interest in the notion of scholarship. It was he who started an ongoing debate about 'service' in his insightful call for the *scholarship of service* (Boyer 1990), which has been revised in different sources as the *scholarship of engagement* (Boyer 1996). Boyer argues that the sharing of (academic) knowledge will avoid discontinuity, and promotes its application to avoid irrelevance. Further, he argues for 'useful knowledge' without discarding basic scientific knowledge coupled with reflexive scholars who rigorously move between theory and practice. For service to be scholarship,

> service activities must be tied directly to one's special field of knowledge and relate to, and flow directly out of, this professional activity. Such service is serious, demanding work, requiring the rigor – and the accountability – traditionally associated with research activities. (Boyer 1990, pp. 22–23)

A number of scholars who follow his work have been emerging both in the U. S. and in Europe (Checkoway 2001; Ostrander 2004; Macfarlane 2005; Harkavy 2006; Greenbank 2006; Karlsson 2007; Ćulum and Ledić 2010). The ongoing debate on developing a broader view of scholarship, especially regarded to 'service', suggests that universities have to find a balance between a wide range of different roles and responsibilities of the professoriate.

Alongside their teaching and research, academics have been increasingly called upon to play a direct role in supporting regional and national economic development as well as to have a direct impact on society. As contemporary society faces challenges associated with rapid technological advancements, environmental changes, resource scarcity, increasing inequality, injustice and a democratic deficit, new demands are being placed upon universities with various expectations and opportunities for higher education and academics emerging (Stephens et al. 2008). Many argue that academics have the responsibility to be relevant – to take knowledge beyond the walls of the academia into the public domain (Checkoway 2001; Ostrander 2004; Calhoun 2006; Stephens et al. 2008; Ćulum and Ledić 2012).

Among the academics of 12 European countries, more than two-thirds share a favorable stance regarding the application of academic knowledge in real-life settings as an element of scholarship. As Table 9.5 shows, the highest proportion of senior academics at universities that share a positive view is evident in Ireland and Portugal (77 % for each), and Croatia as well (75 %). On the other hand, the lowest proportion of senior academics is evident in the Netherlands (41 %), Poland (54 %) and Italy (57 %). The differences between senior and junior academics are quite marginal in this respect. The highest proportion of junior academics that share a positive view on the application of academic knowledge in real-life settings as an element of scholarship is evident, again in Ireland (77 %), Portugal (76 %) and notably Finland (84 %). The lowest proportion of junior academics that share a positive view on this matter is evident, again in the Netherlands (42 %) – half the percentage of their junior colleagues from Finland.

Table 9.5 Views on scholarship by academics at universities in 12 countries (percentages of responses*)

	2010					2007/2008						
	AT	CH	HR	IE	PL	NL	DE	FI	IT	NO	PT	UK
Scholarship includes the application of academic knowledge in real-life settings												
Seniors at university	59	–	75	77	54	41	62	74	57	59	77	69
Juniors at university	62	–	74	77	61	42	67	84	64	65	76	65
Faculty in my discipline have a professional obligation to apply their knowledge to problems in society												
Seniors at university	60	56	72	63	40	45	61	65	62	50	73	58
Juniors at university	57	51	69	65	39	46	44	58	61	51	73	59

CAP survey and EUROAC survey (EUROAC data set June 2011)
*Responses 1 and 2 on a scale from *1*=Strongly agree to *5*=Strongly disagree
Question B5. Please indicate your views on the following

Table 9.5 shows as well, that 60 % of the senior and junior academics surveyed across all 12 countries share a favorable stance regarding academics' professional obligation to apply their knowledge to problems in society. The highest proportion of senior academics at universities that share a positive view is evident, again in Portugal (73 %) and Croatia (72 %), while the lowest, again in the Netherlands (45 %) and Poland (40 %). The differences between senior and junior academics are quite marginal in this respect as well.

9.6 Institutional Strategies and Service

Institutional culture has been recognized as a key factor in encouraging faculty to view service as vital to their roles as professors (Antonio et al. 2000). The extent to which academics are committed to (various) service activities reflects the micro-politics of life within modern universities (Macfarlane 2007). There is a key difference in the way institutions pay formal and informal attention to academics' engagement in service activities within their policies and procedures. The policy framework usually gives impetus to a wide range of links and initiatives with non-academic communities through teaching and research. Little evidence in scholarly literature, however, is available on whether and how various (formal) institutional strategies – policies and procedures – shape values, attitudes and professional practices of the academics in terms of their engagement in various forms of service activities (Table 9.6).

According to the academics surveyed in 12 European countries, the institutional emphasis on the presented two strategies differs strikingly by country, especially considering the encouragement of academics to adopt service and entrepreneurial activities outside their institution. The proportion of senior academics that report

Table 9.6 Institutional strategies as regards service activities, entrepreneurship and external collaboration as viewed by academics at universities in 12 European countries (percentages of responses*)

	2010					2007/2008						
	AT	CH	HR	IE	PL	NL	DE	FI	IT	NO	PT	UK
Encouraging academics to adopt service activities/entrepreneurial activities outside the institution												
Seniors at university	8	–	–	25	15	20	55	19	16	17	38	31
Juniors at university	12	–	–	26	10	15	49	16	12	12	26	30
Encouraging individuals, businesses, foundations, etc. to contribute more to HE												
Seniors at university	34	–	–	43	26	23	52	25	25	22	39	41
Juniors at university	34	–	–	46	18	22	44	19	19	19	33	32

Source: CAP survey and EUROAC survey (EUROAC data set June 2011)
*Responses 1 and 2 on a scale from *1*=Strongly agree to *5*=Strongly disagree
Question E6: To what extent does your institution emphasize the following practices?

this strategy as emphasized at their institution ranges from 8 % of seniors in Austria up to 55 % in Germany. The differences between senior and junior academics are quite marginal in this respect. The range of juniors that note such a strategy/policy varies from the lowest, 12 % in Austria, Italy and Norway, to 49 % in Germany. A somewhat higher percentage of academics – about 30 % across countries and academic status – note that their institution encourages individuals, businesses and foundations for contributing more to higher education. Again, this proportion is highest among respondents from Germany, this time also more than twice in comparison to some other countries. Interestingly, a multivariate analysis that was undertaken to identify the major factors contributing to academics' service act clearly indicates that these two institutional strategies/policies play a marginal role in academics' decision to devote their time to service activities.[7]

9.7 Academics and Public Engagement – Perspectives from Three European Countries

As the wider impact of universities upon regions and communities has become increasingly apparent over the last decades, it seems that academics' public engagement[8] is being widely adopted by universities around the world as a reinterpretation

[7] The variable encouraging individuals, businesses, foundations etc. to contribute more to higher education was not a significant predictor in any country. And the variable encouraging academics to adopt service activities/entrepreneurial activities outside the institution was even linked negatively to the actual work time academics in Netherlands devote to service: the workload devoted to service is even below average when such a strategy is in place (Ćulum et al. 2013).

[8] Scholarly literature reveals distinction between various terms, and obviously concepts related with academics' public engagement. For example, Bringle et al. (2006) do not use the 'public

of the role of higher education in creating "public good." In the context of higher education, public engagement describes the myriad of ways in which the activity and benefits of higher education and research can be shared with the public. As Holland (2001) puts it,

> The engaged university is committed to direct interaction with external constituencies and communities through the mutually beneficial exchange, exploration and application of knowledge expertise and information. These interactions enrich and expand the learning and discovery functions of the academic institution while also enhancing community capacity…The interaction also builds greater public understanding of the role of the university as a knowledge asset and resource. (Holland 2001, p.7)

That kind of community engagement has been established to benefit and enhance the place of higher education by bringing forth new knowledge (Hudson et al. 2007), through research and improving the teaching and learning process through various activities in local communities (Wynsberghe and Andruske 2007; Persell and Wenglinsky 2004; Vickers et al. 2004; Butcher et al. 2003). Increasingly both universities and governments around the world understand the importance of university engagement with the wider community but often that kind of academics' engagement stays peripheral to mainstream university activities of teaching and research.

The role of higher education institutions in local and regional economic development has been praised as an important component of university community engagement (Garlick 1998; Gunasekara 2004; OECD 1999). This expected role of universities as 'brains' behind the economic development is well explained within the national, European and international policies, as well as in strategies and relevant reports.[9] At the same time, it seems that within the overarching knowledge society discourses on higher education responsiveness to socio-economic problems of society, little attention was given to the academics' public engagement in the community/society. Even less emphasis is placed on how academics engage and interact with the non-economic local community. Some argue that the value of and commitment to community service remains on the margin of reality and academic debate (Star 2007). Singh and Little (2011) accentuate that investigating this kind of

engagement' discourse, but make distinction between community involvement and civic engagement. While service can be a passive act according to Star (2007), performed without any regard for the needs, desires or preferences of the community, community engagement requires entering the community, public engagement and debate with the community Some authors associate outreach activities with various projects and activities that have a social, socially sensitive character (Göransson et al. 2009), while others describe them through heterogeneous connections of universities and academics with civil society (Krücken et al. 2009).

[9] Lisbon strategy (2000), EU Communication *A new partnership for the modernisation of universities: the EU Forum for University Business Dialogue* (2009), EU Communication *Delivering on the modernisation agenda for universities: education, research and innovation* (2006), EU Communication *Mobilizing the brainpower of Europe: enabling universities to make their full contribution to the Lisbon Strategy* (2005), EU Communication *The role of the universities in the Europe of knowledge* (2003) OECD reports like *Higher Education and Regions: Globally competitive, locally engaged* (2007) and *Public-private partnerships for research and innovation: an evaluation of the Dutch experience* (2004) are only some of the examples.

relationship between higher education and community/society could be greatly enriched through greater attention being given to the public engagement dimensions of academics' role within the knowledge society discourse. Along the same line, Correa Bernardo et al. (2012) see a need for research on the ways in which community engagement is implemented by higher education institutions.

The interviews undertaken in the framework of the EUROAC study reveal that academics from the three countries addressed participated in various activities, which served the interests of local communities and/or regions of their university setting. The majority of the respondents from Germany, about half of them from Ireland and just a few from Croatia participated in some kind of community engagement activities. Irish and German academics identified altogether more than 20 different activities and events in their communities in which they engage. Some of those activities overlap with teaching, some with research, and others represent various forms of outreach activities and engagement with the non-academic community.

Identified activities could be summed up in two main categories: first one comprising of activities *integrated within teaching and research*, while the other one of activities that come *in addition to teaching and research*. Within the first category there are two activities recognized: (I) academic service learning and (II) community based research. Within the second category four additional activities can be identified: (III) Outreach activities, (IV) Volunteering and pro bono work, (V) Service organized by an institution (university, faculty, department) and (VI) Political engagement – altogether six different modes of activities interviewees get engaged in. Various community activities call for collaboration with various stakeholders (an/or vice versa), and academics interviewed reported cooperation with many stakeholders – public institutions (particularly in the field of education, health and social care), kindergartens, primary and secondary schools, civil society organizations and civic initiatives, museums, charities, local authorities and the media.

The interviews confirm that the interconnection of teaching, research and community engagement (i.e. service-learning and community-based research), regardless of the affiliation to an academic discipline, is rarely acknowledged: mainly among academics interviewed in Ireland, in rare instances among respondents from Germany but not recognized at all by the Croatian academics. Academics rarely get engage in long-term activities and significant partnership networks with various (relevant) community stakeholders. Academics reported volunteering engagement on various community projects designed by local community, mostly civil society organizations and institutions; just few reported they offer pro bono services, and altogether, they get quite rarely engaged in activities with a political profile. Most often academics get involved in various outreach activities, usually organized by their institution. They state that these activities are usually not associated with teaching and research but are performed additionally, on top of the basic academic activities, as one of the Irish respondents said: "this activity leads you to a different area and requires you to provide additional time and energy." Identified models of outreach activities are mainly directed towards (field) activities in local/regional elementary and in particular high schools, with the mission of promoting science

and universities, and attracting new (potential) students. Identified outreach activities are more of a short-term character, lasting for one day and/or one night, like *Day of Science, Long Night of Science, Science Festival, University Open Day, Children's University, Day of Open Teaching, Female in Science Day* etc. Some respondents think that the competition over students is the main initiator of these types of activities at universities, as an Irish interviewee explains:

> Community service for me means going to schools, bringing a school into a university institution, running races and Engineering Week. These activities are important because of the competition between the studies in higher education institutions in our region and you come to conclusion that you have to promote yourself … you must be seen helping the community (Ireland, natural and technical sciences).

Some differences among countries included in the study occur in analyzing the process of academics' engagement. Irish academics portrait their institutions as facilitators that promote, encourage, and sometimes direct their community engagement, but leaving their own initiative and personal decision to be a main driver for getting engaged, as captured in the following comment:

> The institution has civic engagement and volunteering initiatives for the students, but academics are also encouraged to participate in community events. The institution facilitates it for us, to a certain extent, but again, a lot of it is actually our own initiative (Ireland, natural and technical sciences).

Academics from Germany report that a variety of outreach activities, particularly those associated with the promotion of universities and science, are highly centralized. In their case, it is obvious that the governing and/or managerial levels expect them to engage, at least to a certain extent. The German academics interviewed explain how they engage in the community upon request, order and/or appointment from a higher managerial level, as captured in following comments:

> I actively participate in socially relevant university events, like Children University for example. Such activities come as a request (Germany, social sciences and humanities).
>
> I participated in activities related to contributions to society at the university level, for example, Long Night of Science and Open Day. Such activities are carried out at the request of the university administration or superiors (Germany, natural and technical sciences).
>
> I participate in Girls Day and other events. There are no business and industry events. The activities are mandatory and are also described as those that need to be done (Germany, natural and technical sciences).

When it comes to analysis of the institutional strategies toward promoting and evaluating community engagement, this research points to three basic categories: (I) *formal evaluation* (typical to a certain extent for the Irish higher education system), (II) *informal evaluation* (present in German higher education environment) and (III) the *lack of evaluation* (typical for Croatian higher education environment).

There are universities/institutions in Ireland that formally recognize community engagement as one of the basic academic activities, which makes it a part of the formal reward system, as one of the Irish interviewee explained:

> Community engagement is recognized in the patterns of promotion, where teaching activities, research and community engagement are clearly emphasized; so community engagement is one of the three activities that are evaluated (Ireland, medical sciences).

> However, some Irish academics warn about the actual status of the community engagement in terms of its influence to one's academic career progress, as well as about the (traditional) hierarchical relationship between academic activities that still exists:
>
> It would not necessarily help for promotion, but it would be acknowledged (Ireland, social and behavioral sciences).
>
> These types of activities are taken into account for promotions because they are the third category. It will not be crucial in improvement, but it will have a certain role (Ireland, natural and technical sciences).

German academics report a more informal acknowledgment of community engagement activities and their recognition by the colleagues from the discipline, the institution, and collaborators. Although not formally acknowledged, community engagement in German universities is recognized by the managerial level, as interviewees reported. In Croatia, in contrast, interviewees point to several dangerous tendencies that could suppress the future development of community engagement activities on Croatian universities: low level of recognition of the importance that community engagement carries, the marginalization of such activities on various levels (e.g. among colleagues, managerial and governing structures), mocking the academics who engage in the community, and even possible threats for further development of academic careers, as captured in following comments:

> If doing activities for the benefit of society and the community is in fact evaluated, then it is evaluated negatively (Croatia, social sciences and humanities).
>
> These activities are not rewarded and can only cause professional damage to an individual and his/her academic career. For example, a person can 'get in the way' of some older colleagues who could decide on his/her future. Bearing this in mind, a person thinks in terms of what is wise and what is not (Croatia, social sciences and humanities).

In a university environment where academics' community engagement is not institutionally positioned, promoted and evaluated, as is the case with Croatian universities (Ćulum and Ledić 2010, 2012), it is hard to believe and expect, as pointed out by a number of authors (Boyer 1990, 1996; Cummings, 2006; Bloomgarden and O'Meara 2007; Ćulum and Ledić 2010), that academics will involve in various activities of community engagement when there are no mechanisms for their appropriate evaluation.

9.8 Concluding Observations

The analysis of the service activities of academics in 12 European countries indicates that academics, regardless of their status and discipline, harbor positive views about the relevance of service. A majority believes in the importance of the application of academic knowledge and their professional obligation to apply that knowledge in an attempt to eliminate problems in society. Many of the academics consider their research as relevant for application and emphasize its social relevance, while only a few portray their research as commercially oriented and intended for technology transfer. They realize practice-oriented teaching and stimulate discussions on values in their classes. Academics engage in various service activities, out

of which some converge with teaching and research, while others are being performed in addition to teaching and research, with a strong focus on the non-academic community, and usually upon a request from a 'higher level'. A large range of service activities that academics engage in has been identified, as well as a large network of external associates.

Key differences in the way institutions in some countries pay formal and informal attention to service within their policies and procedures have been acknowledged – while in some countries (e.g. Ireland) service is recognized and evaluated as a 'third stream' of scholarship, in Croatia for example academics believe it can obstruct one's academic enhancement. Although studies suggest that academics would engage in those kind of activities they perceive as institutionally valued (Blackburn and Lawrence 1995), results presented here clearly show that institutional strategies/policies (notably encouraging academics to engage in service activities outside their institutions and encouraging external stakeholders to contribute more to higher education) play a marginal role in academics' decision to devote their time to service activities.

If we remind ourselves that the academics surveyed in 12 European countries allocate 3 h per week on average to service activities, questions related with its tangible relevance inevitably emerge. Although academics share positive viewpoints on the service activities, their actual engagement in terms of allocated time in such activities puts the 'service' on the margin of the 'holy trinity' – not competing with teaching and research, but practically 'battling' with administration, and as it appears to be, loosing that battle.

References

Altbach, P. G., & Lewis, L. S. (1996). The academic profession in international perspective. In P. G. Altbach (Ed.), *The international academic profession: Portraits from fourteen countries* (pp. 3–48). Princeton: Carnegie Foundation.

Antonio, A. L., Astin, H. S., & Cress, C. M. (2000). Community service in higher education: A look at the nation's faculty. *The Review of Higher Education, 23*(4), 373–397.

Arcury, T. A., Austin, C. K., Quandt, S. A., & Saavedra, R. M. (1999). Enhancing community participation in intervention research: Farmworkers and agricultural chemicals in North Carlina. *Health Education and Behavior, 26*, 563–578.

Berberet, J. (1999). The professoriate and institutional citizenship: Toward a scholarship of service. *Liberal Education, 85*(4), 32–39.

Blackburn, R. T., & Lawrence, J. H. (1995). *Faculty at work: Motivation, expectation, satisfaction*. London: The John Hopkins University Press.

Bloomgarden, A. H., & O'Meara, K. A. (2007). Faculty role integration and community engagement: Harmony or cacophony? *Michigan Journal of Community Service Learning, 13*, 5–18.

Bortagaray, I. (2009). Bridging university and society in Uruguay: Perceptions and expectations. *Science and Public Policy, 36*(2), 115–119.

Boyer, E. (1990). *Scholarship reconsidered: Priorities of the professoriate*. New York: Wiley.

Boyer, E. (1996). The scholarship of engagement. *Journal of Public Service and Outreach, 1*(1), 11–20.

Braxton, J., Luckey, W., & Helland, P. (Eds.). (2002). Institutionalizing a broader view of scholarship through Boyer's four domains. *ASHE-ERIC Higher Education Report*, 29.

Bringle, R. G., Hatcher, J. A., & Clayton, P. H. (2006). The scholarship of civic engagement: Defining, documenting, and evaluating faculty work. *To Improve the Academy, 25*, 257–279.

Butcher, J., Howard, P., Labone, E., & Bailey, M. (2003). Teacher education, community service learning, and student efficacy for CE. *Asia Pacific Journal for Teacher Education, 31*(2), 110–124.

Calhoun, C. (2006). The university and the public good. *Thesis Eleven, 84*, 7–43.

Checkoway, B. (2001). Renewing the civic mission of the American research university. *Journal of Higher Education, 72*(2), 125–147.

Clark, B. (1987). *The academic life: Small worlds, different worlds*. Princeton: Carnegie Foundation.

Correa Bernardo, M. A., Butcher, J., & Howard, P. (2012). An international comparison of community engagement in higher education. *International Journal of Educational Development, 32*, 187–192.

Ćulum, B., & Ledić, J. (2010). *Civilna misija sveučilišta: Element u tragovima*. Rijeka: Filozofski falultet u Rijeci.

Ćulum, B., & Ledić, J. (2012). *Sveučilišni nastavnici i civilna misija sveučilišta*. Rijeka: Filozofski fakultet u Rijeci.

Ćulum, B., Rončević, N., & Ledić, J. (2013). The academic profession and the role of service function. In U. Teichler & E. A. Höhle (Eds.), *Work situations, views and activities of the academic profession: Findings of a survey in twelve European countries* (pp. 137–158). Dordrecht: Springer.

Cummings, W. K. (1998). The service university movement in the US: Searching for momentum. *Higher Education, 35*(1), 69–90.

Cummings, W. K. (2006). The third revolution of higher education: Becoming more relevant. In *Reports of changing academic profession project workshop on quality, relevance and governance in the changing academia: International perspectives* (COE publication series 20, pp. 209–222). Hiroshima: Research Institute for Higher Education, Hiroshima University.

De Weert, E. (2009). The organised contradictions of teaching and research: Reshaping the academic profession. In J. Enders & E. de Weert (Eds.), *The changing face of academic life: Analytical and comparative perspectives* (pp. 134–154). New York: Palgrave.

Garlick, S. C. (1998). *Creative associations in special places: Enhancing the partnership role of universities in building competitive regional economies*. Canberra: Dept. of Employment, Education, Training and Youth Affairs, Evaluations and Investigations Programme, Higher Education Division.

Goddard, J. B., & Chatterton, P. (2003). The response of universities to regional needs'. In F. Boekema, E. Kuypers, & R. Rutten (Eds.), *Economic geography of higher education: Knowledge, infrastructure and learning regions*. London: Routledge.

Göransson, B., Maharajh, R., & Schmoch, U. (2009). New activities of universities in transfer and extension: Multiple requirements and manifold solutions. *Science and Public Policy, 36*(2), 157–164.

Greenbank, P. (2006). The academic's role: The need for a re-evaluation? *Teaching in Higher Education, 11*, 107–112.

Gregersen, B., Tved Linde, L., & Gulddahal Rasmussen, J. (2009). Linking between Danish universities and society. *Science and Public Policy, 36*(2), 151–156.

Gunasekara, C. (2004). Universities and communities: A case study of change in the management of a university. *Prometheus, 22*(2), 201–211.

Harkavy, I. (2006). The Role of universities in advancing citizenship and social justice in the 21st century. *Education, Citizenship and Social Justice, 1*(1), 5–37.

Holland, B. (2001). Toward a definition and characterization of the engaged campus: Six cases. *Metropolitan Universities, 12*(3), 20–29.

Hudson, Peter B., Craig, Robert F., & Hudson, Sue M. (2007). *Benchmarking leadership in university-community engagement: First steps and future directions for a new regional university campus*. Proceedings Australian Universities Community Engagement Alliance (AUCEA), Alice Springs, Northern Territory.

Jongbloed, B., Enders, J., & Salerno, C. (2008). Higher education and its communities: Interconnections, interdependencies and a research agenda. *Higher Education, 56*(3), 303–324.

Karlsson, J. (2007). Service as collaboration – an integrated process in teaching and research: A response to Greenbank. *Teaching in Higher Education, 12*, 281–287.

Karlsson, J., Booth, S., & Odenrick, P. (2007). Academics' strategies and obstacles in achieving collaboration between universities and SMEs. *Tertiary Education and Management, 13*(3), 187–201.

Kennedy, B. D. (1997). *Academic duty*. Harvard: Harvard University Press.

Kogan, M., & Teichler, U. (Eds.). (2007). *Key challenges to the academic profession* (UNESCO forum on higher education, research and knowledge). Paris/Kassel: International Centre for Higher Education Research.

Krücken, G., Meier, F., & Müller, A. (2009). Linkages to the society as "leisure time activities"? Experiences at German universities. *Science and Public Policy, 36*(2), 139–144.

Laredo, P. (2007). Revisiting the third mission of universities: Toward a renewed categorization of university activities? *Higher Education Policy, 20*(4), 441–456.

Lynton, C. J. (1995). An indirect model of service-learning: Integrating research, teaching and community service. *Michigan Journal of Community Service Learning, 2*, 105–111.

Macfarlane, B. (2005). Placing service in academic life. In R. Barnett (Ed.), *Reshaping the university: New relations between research, scholarship and teaching* (pp. 165–177). Berkshire: Open University Press.

Macfarlane, B. (2007). Defining and rewarding academic citizenship: The implications for university promotions policy. *Journal of Higher Education Policy and Management, 29*(3), 261–273.

Marek, K., & Antonowicz, D. (2013). Academic work, working conditions and job satisfaction. In U. Teichler & E. A. Höhle (Eds.), *Work situations, views and activities of the academic profession: Findings of a survey in twelve European countries* (pp. 37–54). Dordrecht: Springer.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey Bass.

Molas-Gallart, J., Salter, A., Patel, P., Scott, A., & Duran, X. (2002). *Measuring third stream activities. Final report to the Russell Group of Universities*. SPRU, University of Sussex.

Ngoc Ca, T. (2009). Reaching out to society: Vietnamese universities in transition. *Science and Public Policy, 36*(2), 91–95.

O'Meara, K. A. (2002). Uncovering the values in faculty evaluation of service as scholarship. *Review of Higher Education, 26*(1), 57–80.

O'Meara, K., & Braskamp, L. (2005). Aligning faculty reward system and development to promote faculty and student growth. *NASPA Journal, 42*(2), 223–240.

OECD/IMHE. (1999). *The response of higher education institutions to regional needs*. Paris: OECD.

Ostrander, S. (2004). Democracy, civic participation, and the university: A comparative study of civic engagement on five universities. *Nonprofit and Voluntary Sector Quarterly, 33*(1), 74–93.

Persell, C., & Wenglinsky, H. (2004). For-profit post-secondary education and civic engagement. *Higher Education, 47*(3), 337–359.

Rice, E. R., Sorcinelli, M. D., & Austin, A. (2000). *Heeding new voices: Academic careers for a new generation, New pathways: Faculty careers and employment for the 21st century, inquiry #7*. Washington, D.C.: American Association for Higher Education.

Schnaubelt, T., & Statham, A. (2007). Faculty perceptions of service as a model of scholarship. *Michigan Journal of Community Service Learning, 14*, 18–31.

Shils, E. (1997). *The calling of education: The academic ethic and other essays on higher education*. Chicago: University of Chicago Press.

Shin, J. C. (2010). Scholarship of service: faculty perceptions, workloads and reward systems. In *The changing Academic profession in international and quantitative perspectives: A focus on teaching and research activities* (RIHE International Seminar Reports, 15, pp. 173–188). Hiroshima: Research Institute for Higher Education, Hiroshima University.

Singh, M., & Little, B. (2011). Learning and engagement dimensions of higher education in knowledge society discourses. In J. Brennan & T. Shah (Eds.), *Higher education and society in changing times: Looking back and looking forward* (pp. 36–44). London: The Open University. CHERI report.

Star, C. (2007). Whither engagement? Challenges for community engagement within academia. In *2007 International Women's Conference: Education, Employment and Everything… the Triple Layers of a Woman's Life*, 26–29 Sept 2007, Toowoomba, Queensland. http://eprints.usq.edu.au/3314/. Accessed 3 Apr 2010.

Stephens, J. C., Hernandez, M. E., Roman, M., Graham, A. C., & Scholz, R. W. (2008). Higher education as a change agent for sustainability in different cultures and contexts. *International Journal of Sustainability in Higher Education, 9*(3), 317–338.

Thorn, C., & Soo, M. (2009). *Latin American Universities and the third mission: Trends, challenges and policy options* (World Bank Policy Research, Working Paper 4002). Washington, DC: World Bank.

Tierney, W. G., & Bensimon, E. M. (1996). *Promotion and tenure: Community and socialization in academe*. New York: State University of New York Press.

Vickers, M., Harris, C., & Mc Carthy, F. (2004). University community engagement exploring service learning options within practicum. *Asia Pacific Journal of Teacher Education, 32*(2), 129–139.

Ward, K. (2003). *Faculty service roles and the scholarship of engagement* (ASHE-ERIC Higher Education Report, Vol. 29, No. 5). Hoboken: Jossey-Bass, ERIC Clearinghouse on Higher Education.

Westfall, J. M., VanVorst, R. F., Main, D. S., & Herbert, C. (2006). Community-based participatory research in practice-based research networks. *Annals of Family Medicine, 4*, 8–14.

Wolhuter, C. C., Higgs, P., & Higgs, L. G. (2006). The South African academic profession and the transformation of higher education. *Higher Education Review, 38*(2), 1–20.

Wynsberghe, R. V., & Andruske, C. L. (2007). Research in the service of co-learning: Sustainability and community engagement. *Canadian Journal of Education, 30*(1), 349–376.

Chapter 10
Gender Differences in Research Scholarship Among Academics: An International Comparative Perspective

Jisun Jung

10.1 Introduction

A comparison of two comparative surveys undertaken in 1992 (Carnegie survey) and in 2007/2008 (CAP surveys) shows considerable changes in the demographic distribution of academics. In particular, the proportion of female academics has increased in almost all participating countries (except Mexico). For instance, the figure increased from 8 % to around 17 % in Japan, which has the lowest proportion of female academics (Arimoto 2008). In the U.S., the proportion of academic women rose from 36 % to 42 % (Finkelstein and Cummings 2008). In the latter survey, the proportion of female academics was 59 % in Argentina and 57 % in Australia, in contrast to only 17 % in Japan and 18 % in Korea.

Demographic factors, including gender, have been frequently observed only as control variables in many studies regarding academics issues (Teodorescu 2000; Horta et al. 2012). However, as Keller (2001) points out, demography is one of the most important variables at the individual and institutional level for deciding academic issues such as their teaching and research activities. In particular, gender is a powerful factor not only in terms of pathways to particular professions but also in relation to processes operating within workplace practices, such as discrimination screening and opportunities for promotion (Poole et al. 1997).

The interest in gender issues in academia was linked to minority issues in the U.S. Initially, these issues were mainly related to topics of discrimination in terms of employment barriers and the salary gap between male and female academics (Toutkoushian and Bellas 2003). There have been substantial empirical studies regarding the differences in scholarship between male and female academics (Bellas and Toutkoushian 1999). Previous literature about gender issues can be summarized as looking into several of these issues. First of all, many studies, including one by

J. Jung (✉)
Faculty of Education, The University of Hong Kong, Hong Kong SAR, China
e-mail: jisun@hku.hk

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_10

Bellas (1994), have proven that there is an unequal job market for female academics. Second, beyond mere hiring issues, some studies have proven that women remain disadvantaged in terms of promotion, tenure, and salary (Bellas 1997; Preffer and Davis-Blake 1987). Third, studies have shown that there exist practical career barriers for female academics, such as family and children (Gmelch et al. 1986). In addition, female academics have lower job satisfaction and higher stress (Hagedorn and Sax 1999). Fourth, studies have shown differences in the teaching and research activities of women and men. The most common finding was that female academics are more involved in teaching activities, while their research performance is lower than that of male academics (Sax et al. 2002). Different explanations regarding teaching effectiveness and research productivity between male and female academics have been put forward. For instance, Poole et al. (1997) argue that female academics are more person-oriented and that they value social, communication and interaction patterns associated with teaching. In contrast, Olsen et al. (1995) suggest that the gender differences are not so much merely a matter of personal preference and orientation but are equally a product of institutional requests or demands. Finally, there have been recent studies concerning management and governance issues, such as the decision-making participation of female academics in universities and the lack of female academics in high positions, an issue related to the "glass ceiling." As such, women still have limited opportunities to formulate university policies as presidents, vice presidents, academic deans, and department chairs (Bornstein 2008).

This study focuses on how research scholarship is different between male and female academics. It examines differences of gender issues in academia according to higher education systems (see also Bain and Cummings 2000). Five countries (Australia, Brazil, China, UK and the U.S.) are chosen to explore in detail the differences in research scholarship between male and female academics. Moreover, this study raises additional questions, such as (1) "Is research productivity among female academics generally lower than that of male academics?" (2) "Is this difference simply a gender issue or are their contextual factors that are more important?" and (3) "Does it come from their individual profile or academic discipline?"

10.2 Literature Review

10.2.1 Individual and Institutional Profiles Among Male and Female Academics

Gender issues in academia vary from those about previous educational backgrounds and experiences to current teaching and research activities and working conditions. Prior research has shown that male and female academics have slightly different profiles, not only in terms of educational background but also in terms of the institutions where they are employed. These profiles need to be examined because factors such as employment status have an impact on academics' perception and the practice of their work.

First of all, women are less likely than men to hold a doctoral degree, and they have fewer years of academic experience than men. For instance, the proportion of Japanese academics holding a PhD degree was 60 % for males and 25 % for females in 1992. The gap did not disappear, but was smaller in 2008 with 75 % of men and 50 % of women (Arimoto 2009). Toutkoushian and Bellas (2003) point out, that differences between men's and women's educational attainment partly explain the gender gap in employment.

Second, there have been studies regarding faculty employment status. Men are more likely to be in secure, tenured positions, whereas a higher proportion of women have short-term or part-time contracts (Poole et al. 1997). Among academics in the UK, the proportion of women academics with full-time positions was 37 %, while the proportion with part-time positions was 53 % (Locke 2008). However, as Toutkoushian and Bellas (2003) indicate it is unclear whether the greater percentage of women with part-time employment reflects individual preferences or responses to blocked opportunities and discrimination.

Third, male academics tend to have more experience with international mobility than women, though there are only a few studies about gender differences regarding internationalization. Poole et al. (1997) have shown that there exist gender differences in terms of international experience among academics since their appointment to a professor position. They suggest that men are given greater access to travel abroad and research-related internationalization.

Fourth, a greater proportion of male academics are employed at research-oriented universities, whereas more female academics often work at teaching-oriented universities or other types of higher-education institutions. This holds true, for example, for Japan where women comprise only 6 % of the academics at research universities (Daizen and Yamanoi 2008). In Hong Kong, women comprised 27 % at research oriented universities in 2007 as compared to 38 % at other institutions (Postiglione and Tang 2008).

10.2.2 Research Scholarship Among Male and Female Academics

Though all faculty members are expected to teach, research, and do service, currently the decisive factor in tenure and promotion decisions is research. Therefore, the main gender issues will be discussed specifically here with respect to research scholarship. The term research scholarship in this study is used broadly to include not only research productivity but also perceptions of research and actual research activities.

It has been stated that women academics have "less time, energy, and commitment to invest in their professional careers and are therefore less productive scientifically than men" (Toren 1993: 72). This implies that women are less oriented to research. Women are also perceived as being less concerned with, or as underutilizing, institutional resources (Davis and Astin 1990). In addition, prior analyses of the CAP survey have shown that interests in teaching and research are different

between male and female academics. For instance, in Argentina, men prefer research activity (9 %) or both, teaching and research, 'with a leaning towards research' (49 %), while the respective aggregate figure is 51 % for women (Marquina and Lamarra 2008).

Such a pattern is also revealed in terms of workload. Men, on average, devote a higher portion of their time than women to research activities, whereas women spend a higher percentage of their time than men on teaching and service activities (Park 1996). Female faculty members are more likely than their male counterparts to be involved in undergraduate teaching and service and, consequently, are less engaged in research (Mamiseishvili and Rosser 2011).

These preferences and time investments are directly related to research productivity (Shin and Cummings 2010). Women academics publish less than men academics (Bellas and Toutkoushian 1999; Sax et al. 2002; Toutkoushian and Conley 2005). In 1979, Cole reported that men had on average 1.6 times as many publications as women (Cole 1979). A decade later, the gender gap in publishing rates remained significant. From 1986 to 1988, men published almost twice as many articles and books as women. In 1989, 35 % of men, but only 13 % of women, had published 11 or more articles in professional journals, and 49 % of men, but only 36 % of women, had ever published or edited a book (Boyer 1992). Toren (1993) and Billard (1994) report that women college and university faculty members publish less than their male counterparts, that women's scholarly work is generally regarded as being of a lower quality, and that they are rarely cited as having made scholarly contributions. The most recent study of Horta et al. (2012) specifically indicates that men produce 8 % more articles in refereed journals than women in the U.S., but no gender differences are perceived in the other types of outputs. In addition, according to current research by Postiglione and Jung (2012), who studied top-tier researchers in Asia, approximately 90 % of highly productive researchers are male academics.

This state of affairs is also significant in terms of differences in research collaboration patterns. Building relationships with co-workers can be a challenge for women academics (Aguirre 2000). For instance, O'Leary and Mitchell (1990) report that even those women who did attend meetings reported fewer productive conversations leading to collaboration compared to men. They also report on the existence of an invisible college, an old-boy network whose members "functioned as gatekeepers, controlling finances, reputations, and the fate of new scientific ideas." Women academics have been found "to be less well integrated into their academic departments and disciplines than men" because they lack mentors and networks, that can assist in professional integration and productivity (O'Leary and Mitchell 1990).

10.2.3 Gender Issues Concerning Academic Rank and Academic Disciplines

Based on previous studies regarding gender and research performance, this study raises the question, "Are male academics always more productive than female academics in terms of research scholarship?" Davis and Astin (1990) raise questions

about the subtle biases and contextual factors that affect scholarship for men and women. Thus, this study tried to include contextual factors that influence gender differences between male and female academics. To do this, it started with two questions. First, is the productivity gap between male and female groups the same regardless of academic rank? In the current system, there are many male academics in senior positions. Bain and Cummings's study (2000) examined ten university systems and showed that females constitute one-third of all academics, but among full professors only one of every ten is a woman. However, the educational level of female academics has been considerably enhanced recently and the labor market available to female academics has expanded over the last decades. Thus, we can currently find many female academics in junior positions.

Differences between women and men in terms of years of experience have led to further reductions in the gender gap. In addition, publication rates among women faculty have increased significantly in recent decades (Sax et al. 2002), and there has been some narrowing of the gender gap over time (Ward and Grant 1996). Rank is highly relevant in academia because academic identity, scholarship, and interpersonal relationships can change according to one's position or length of service. For instance, seniority is a significant factor in academic careers; the behavior and performance of academics is recognized through their networks, resources, and their power within their higher-education institution and within the academic community at large (Jung et al. 2013).

This can be shown in several ways. In Finland, it is common to have more men than women in higher academic posts, but in lower academic posts, the proportions are inverted. For example, in universities of applied sciences, slightly less than one-fourth (24 %) of professors are female, yet 41 % of principal lecturers and 63 % of lecturers are female (Aarrevaara and Holtta 2008). In Australia, a higher proportion of female academics (19 %) are employed part-time than of male academics (12 %), while the rate of short-term employment is similar among women and men. In terms of rank, Australian male academics are more likely to occupy higher academic ranks than female academics. In Japan, the proportion of women among academics increased over time; however, men continued to be more highly represented in senior positions as well generally in research universities (Daizen and Yamanoi 2008).

The second question asked in order to look at contextual factors that influence gender differences between male and female academics was the following: is the gap in productivity between males and females related to academic discipline? Relatively more women academics work in the fields of nursing, library science, and education, in contrast to the more male-dominated fields such as business, engineering, medicine, law, and the military (Bain and Cummings 2000). It is generally noted that the proportion of male academics is higher in hard disciplines (e.g., engineering and the natural sciences), while the proportion of female academics is higher in soft disciplines (e.g., the humanities and education). In addition, the fact that research productivity in hard disciplines is usually higher than that in soft discipline is known from previous empirical studies.

For women in the science to be successful, their interest in publishing research and their competence in conducting successful research need to be extraordinarily high in order to survive in these male-dominated fields (Blackburn and Bentley

1993). According to Bellas (1997), for faculty in highly feminized disciplines in which the work is already devalued, it is plausible that the notion of comparable worth may influence perceptions of the unfair and inequitable institutional treatment of female faculty. Interestingly, the differences in the composition of male and female faculty between fields explain virtually none of the gender differences (Toutkoushian and Bellas 2003).

10.3 Method

10.3.1 Data

This study uses data from the international comparative survey entitled "The Changing Academic Profession," conducted in 2007–2008. To examine gender differences in the research scholarship of academics, 5 countries were selected from the 19. First, countries that had a sample size of more than 1,000 were selected for analysis. Second, in order to reduce bias from the imbalance of cases, only countries were selected that had approximately 40 % of academics that were female. See the proportion of female academics in all higher education systems analysed in the CAP survey in Fig. 10.1. Third, it was assumed that the academic-scholarship pattern would be different according to each higher education context; therefore,

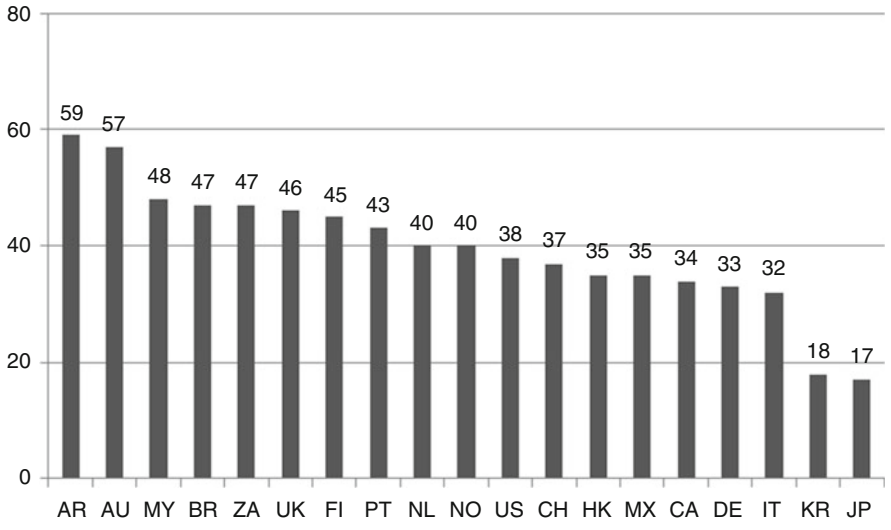

Fig. 10.1 Proportion of female academics in 19 higher education systems. Note: *AR* Argentina, *AU* Australia, *MY* Malaysia, *BR* Brazil, *ZA* South Africa, *UK* United Kingdom, *FI* Finland, *PT* Portugal, *NL* Netherlands, *NO* Norway, *US* Untied States, *CH* China, *HK* Hong Kong, *MX* Mexico, *CA* Canada, *IT* Italy, *KR* Korea, *JP* Japan (*Source*: CAP survey)

one country was chosen from each continent. Based on these three criteria, the target group for analysis in this study was chosen to be China, Australia, the U.S., Brazil, and the UK.

10.3.2 Variables and Measurement

This study analyzes the main differences in research scholarship between male and female academics, as well as whether these differences remain once rank and academic disciplines are controlled. First, the profile differences are compared in terms of educational background, such as holding a doctoral degree, and institutional background, such as the type of institution at which they work. Before these academics' research activities are studied, the profile analysis is examined in order to look at whether gender differences are inherent before professorship. Second, to examine and compare research scholarship, this study identifies research scholarship using six dimensions: research preference, time allocation for research, research productivity, research funding, research collaboration, and research service activities. Third, to examine gender in terms of differences in rank and academic discipline, academic discipline is classified into two categories based on Biglan (1973) hard and soft – and academic rank is categorized as being senior or junior. As regards the former, disciplines that have a cumulative and obvious theory, such as the natural sciences, engineering, and medical science, are categorized as hard disciplines, whereas disciplines that have less-defined paradigm structures, such as the humanities, the social sciences, and business, are categorized as soft disciplines. As regards the latter, we adopt the classification employed in the CAP project: senior academics, or "professors," i.e., those occupying a position equivalent to associate professors and full professors in the US higher-education system and junior academics or "junior staff", i.e., those in a lower position, such as assistant professors, lecturers, research associates, and assistants. Table 10.1 shows both, the independent and dependent variables of the subsequent analysis.

10.4 Findings and Discussions

10.4.1 Individual and Institutional Profiles Among Male and Female Academics

In examining the individual and institutional profiles of academics, we aim at establishing whether variations between academics of different genders are the inherent result of their backgrounds rather than a consequence of their current performance level.

Actually, as expected, the proportion of male academics with doctorates is higher than that of female academics with doctorates. As Table 10.2 shows, this pattern is common across almost all countries. There are substantial variations, however,

Table 10.1 Variables and measurements

Variables		Measurement
Independent variables		
Gender		Male = 1, Female = 2
Rank		Senior = 1, Junior = 2
Academic discipline		Hard = 1, Soft = 2
Dependent variables		
Individual profile	Doctoral degree	Yes = 1, No = 2
	International mobility experience	Yes = 1, No = 2
	Employment condition	Full-time = 1, part-time = 2
Institutional profile	Types of current institution	Universities: 1, Other HE institutions: 2
Research preference		Preference for research = 1, Teaching = 2
Time allocation for research		Average hours per week
Research productivity	Books, articles, conference, reports granted funding, and patents	Number of papers in previous 3 years
Research funding source	Institution, public, and private	Percentage (%) of each funding source
Research collaboration	Institutional, International	Yes = 1, No = 2
Research services	Peer review for articles, Journal editor work	Yes = 1, No = 2

between countries. The gender gap in the U.S. and Brazil (less than 5 %) is not high, while it is higher in China: male: 37 % vs. female: 21 %.

This finding is similar to that of international mobility experiences. In this study, the definition of international mobility experience includes immigration and travelling for study. The male academics in this study were more internationally mobile throughout their lives and careers than the female academics. Such a gap is significant in the Australian sample, but low in the case of China. In contrast, female academics in the UK are more mobile than men academics.

Finally, a less-favorable employment environment is observed for female academics. Except for the U.S., the proportion of part-time work among female academics is much higher than that of male academics. This difference is substantial in Australia and the UK. The finding seems to be confirmed, when we categorize institutional types into universities and other types of higher-education institutions. However, this gap is not significant.

10.4.2 Gender Differences in Research Scholarship Among Academics

Six aspects of academics' research scholarship have been addressed in this study: (a) Preference for research (compared with teaching); (b) Time allocation for research per week; (c) Research publications: (co-)authored book, (co-)edited book,

Table 10.2 Individual and institutional profiles among male and female academics in five countries

	AU		BR		CH		UK		US		
	M	F	M	F	M	F	M	F	M	F	Summary
Doctorate (%)	404 (79.5)	356 (69.3)	358 (59.1)	293 (54.5)	801 (36.3)	271 (20.8)	469 (68.5)	402 (59.9)	560 (84.8)	385 (81.1)	M > F
International mobility experience (%)	246 (52.0)	182 (38.0)	81 (14.6)	50 (10.0)	54 (3.1)	22 (2.1)	129 (23.7)	146 (27.7)	151 (23.1)	71 (15.2)	M > F (except UK)
Contract: part-time (%)	34 (6.7)	101 (19.8)	269 (44.6)	257 (48.0)	73 (3.4)	34 (2.7)	30 (5.1)	106 (18.2)	40 (6.1)	23 (4.9)	M < F (except US)
Institutional type: University (%)	348 (68.5)	358 (69.6)	298 (49.7)	254 (47.4)	1,878 (85.2)	1,093 (83.9)	521 (92.7)	518 (94.5)	487 (73.8)	352 (74.1)	–
N	508 (37.1)	514 (37.5)	606 (52.8)	538 (46.9)	2,205 (61.0)	1,302 (36.0)	685 (43.8)	671 (42.9)	660 (57.6)	475 (41.4)	

Source: CAP survey

International mobility: including foreign born, early immigrant foreigners, early immigrant citizens, PhD immigrant foreigners, PhD immigrant citizens, Professional migrant citizens, Study mobile academics, and PhD mobile academics

M male, *F* Female, *AU* Australia, *BR* Brazil, *CH* China, *UK* United Kingdom, *US* United States of America

journal article, report from funded project, or conference presentation; (d) Research funding: funding source from own institution, public agency, or private agency; (e) Research collaboration: institutional, international collaboration; (f) Research service activities: peer reviewer, journal editor. A short glance at Table 10.3 suggests an expected gender gap, but the differences vary across variables, and do not hold true for all countries in some instances.

Male academics prefer research more than do female academics. In China, for example, 56 % of male academics prefer research to teaching, in contrast to 31 % of female academics. The respective figures are 48 % and 39 % in the U.S. However, there are not any significant gender differences in this respect in some countries.

Male academics allocate more time to research. The gap ranges from only 0.1 to 4 h per week.

In terms of the number of publications by male and female academics, male academics' productivity is higher than that in the junior group across publication types and countries, except for book publication. In particular, this gap is highly significant with regard to journal articles and conference presentations.

A substantial proportion of female academics obtain research funding from their own institution rather than from outside, including through public or private agency. By contrast, male academics tend to rely on more diverse funding sources.

The proportion of research collaboration is considerably different between male and female academics across countries. Male academics have participated in more collaboration not only inter-institution collaborations but also inter-national collaborations.

Lastly, male academics are highly involved in research service activities, such as peer-review and journal-editing work. The gender gap in this respect is most striking in China (see Table 10.3).

10.4.3 Gender Differences in Research Scholarship Among Academics by Rank and Discipline

Figures 10.2 and 10.3 are presented here to show the extent of gender differences according to rank and disciplines. Actually, information is provided on senior ranks and hard disciplines, i.e. those segments where gender differences are highest.

In our analysis whether academic rank and discipline affect the research scholarship of male and female academics differently, we concentrated on a single country, i.e. the U.S. The findings are documented in Table 10.4.

Gender differences are weaker if analyzed separately by rank than for the whole sample. In particular, there is no significant difference between genders among junior academics in terms of time allocation for research.

The research activity is not significant in the junior group except regarding the sources of research funding: male academics receive a higher proportion of research funding from public agencies. Also, international collaboration and participation as a journal reviewer is significantly higher among male academics than among female academics in the junior group.

Table 10.3 Gender differences among academics in research scholarship in five countries

	AU		BR		CH		UK		US	
	M	F	M	F	M	F	M	F	M	F
Preference (%)										
Research > teaching	71.8	67.6	46.9	49.0	56.3***	30.7	70.7*	63.2	47.9*	39.0
Time allocation (hours per week)										
Research	15.1*	13.2	9.0	8.9	15.0***	11.0	14.3***	10.0	13.7***	10.6
Publications										
(Co) authored books	0.3	0.3	0.5	0.6	0.9*	0.7	0.5**	0.3	0.3	0.2
(Co) edited books	0.2	0.2	0.3*	0.2	0.8	0.9	0.4*	0.3	0.2	0.3
Journal articles	8.5***	5.9	5.1***	3.8	9.5***	6.3	7.8***	4.7	4.8*	3.6
Report from funded project	1.5	1.5	1.4	1.4	1.6*	1.1	1.6***	0.9	1.5***	0.8
Conference presentation	5.9	5.7	6.2*	4.8	2.9***	1.9	6.5***	5.0	6.1	5.2
Research funding sources (%)										
Own institution	36.2	40.6*	15.4	19.1***	40.9	50.1***	36.5	44.4*	50.6	52.3*
Public agency	44.6	42.1	27.2	24.6	37.6*	32.7	45.2	38.3	25.6***	16.2
Private agency	12.9	13.8	6.1*	4.4	–	–	14.0	12.6	13.9	14.4
Research collaboration (%)										
Institutional	67.4	66.3	68.2***	50.4	38.8***	31.5	72.0**	62.5	63.4	56.2
International	64.9***	53.4	37.2***	18.8	14.8***	8.3	68.5***	53.3	36.7*	27.9
Research service activities (%)										
Peer-reviewer	75.0***	69.3	52.2	47.4	20.2***	6.8	74.7***	64.9	69.1*	62.0
Journal/book editor	22.5	18.6	23.0**	15.8	6.9	3.0	28.0**	20.4	21.5	17.1
N	478	471	438	409	1,228	560	437	419	609	424

Source: CAP survey
Time allocation, Publications, Research funding source: T-test
Preference, Research collaboration (%), Academic service (%): Chi-square
M male, *F* Female
*p<.05; **p<.01; ***p<.001

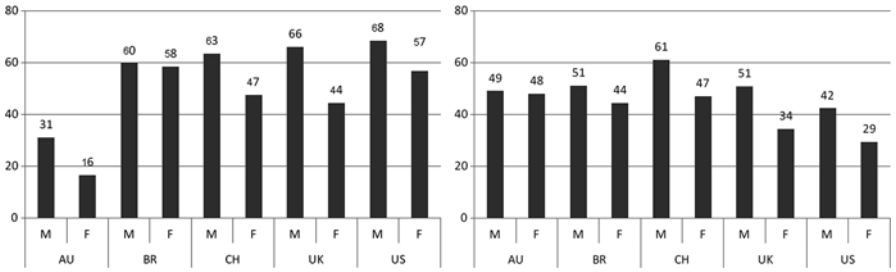

Fig. 10.2 Gender distribution in senior positions in five countries (percent) (*Source*: CAP survey)

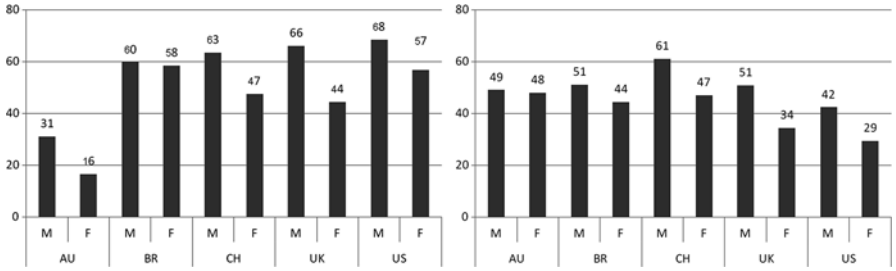

Fig. 10.3 Gender distribution in hard disciplines in five countries (percent) (*Source*: CAP survey)

Moreover, the gender gap turns out to be large according to this analysis in hard disciplines; however, these differences scarcely appear in soft disciplines. However, gender difference in terms of the number of articles published, which is the most powerful research performance indicator, is weaker if it is controlled by academic discipline. In particular, in soft disciplines, gender differences are rare except with regard to generating reports from funded projects and funding from public agencies.

10.5 Discussions and Conclusion

The analysis focusing on eventual differences of the gender gap by country, academics' rank and by discipline provides evidence that some gender issues can be found across countries.

For example, some differences exist more or less consistently in terms of their educational background, employment status, and working institution. Higher proportions of male academics hold doctoral degrees and have more international experience. Moreover, a higher proportion of male academics hold full-time positions and work in research universities, compared to female academics. These results confirm what previous studies have shown (Kirshstein et al. 1997). Although

Table 10.4 Gender differences in research scholarship among academics in the U.S. by rank and discipline

	Gender	Gender and rank		Gender and disciplinary group	
		Senior	Junior	Hard	Soft
Preference					
Research > teaching	M > F*		M > F*	M > F*	
Time allocation					
Research	M > F***				
Publications					
Co-authored books		M > F*		M > F*	
Co-edited books					
Journal articles	M > F*	M > F*			
Reports from funded project	M > F***	M > F***	M > F*	M > F*	M > F*
Conference presentations					
Research funding sources (%)					
Own institution		M < F*		M < F*	
Public agency	M > F***	M > F***	M > F*		M > F*
Private agency					
Research collaboration (%)					
Institutional					
International	M > F*	M > F*		M > F*	
Research activities (%)					
Peer reviewer	M > F*		M > F*	M > F**	
Journal/book editor				M > F*	

Source: CAP survey
M male, *F* Female
*p < .05; **p < .01; ***p < .00

there has been much progress in the job market for female academics, it is still common for male academics to have preferable working conditions. This is confirmed by their research scholarship: male academics tend to be more active in terms of performance, collaboration, funding, and research service. Teodorescu (2000) had already indicated that women receive fewer grants than men and are employed disproportionately in disciplines that have an article productivity that is lower than average.

Numerous hypotheses have tried to explain these differences in terms of biological, cultural, structural, and psychological factors. For instance, these differences in research productivity have been explained as being the result of women's structural positions in universities: "women carry heavier teaching loads, bear greater responsibility for undergraduate education, and have more service commitments. Women also have less access to graduate teaching assistants, travel funds, research money, laboratory equipment, and released time for research" (Park 1996: 55). Some studies claim that women are simply not socialized to be career oriented or ambitious to the same degree as men. Certain tasks, such as managing money, may

be considered more masculine, whereas other tasks, such as dealing with clients, may be considered more feminine, thus replicating gender stereotypes that exist outside the corporation (Park 1996: 47).

However, this study considers contextual variables such as academic rank and discipline. It shows that the gender gap is smaller than it seems to be at first glance, if one compares women and men within the same rank and the same disciplinary group.

Yet, there remain substantial gender differences in some respects. Male academics receive much more funding than female academics and male academics participate much more in collaborations, even when academic discipline is controlled. This collaboration pattern is ultimately related to research performance, given that research collaboration is highly correlated with research productivity (Katz and Martin 1997). This discussion touches on issues regarding the strength or weakness of academic networks among male and female academics. According to O'Leary and Mitchell (1990), while women have networks, they do not benefit that much professionally: "women who reported low connectedness with the old boy network saw themselves as operating on the periphery of their disciplines which resulted in difficulty in obtaining resources for their work, getting published, and earning recognition" (O'Leary and Mitchell 1990).

Altogether, we note a substantial gender gap, if we look at aggregate data. Women have less often a doctoral degree, are less often in advanced positions, are less frequently international mobile, and are less strongly represented in the financially most favored disciplines.

Male academics prefer research, invest much more time in research, have higher publication rates, have diverse funding sources, and are involved in a greater number of international collaborations and academic service activities. These features are common across countries, even though the proportions are different. Moreover, while female academics' efforts and outputs have improved in the last decades, women continue to have network-related issues: they show less involvement in networks.

This study showed that differences are smaller or partly non-existent, if controlled by various features of the composition of male and female academics. Further, investigations might be helpful in examining factors explaining causes for different types of workload.

Thus, more detailed analysis might help to understand the strengths and weakness of female academics in order to improve gender-related policies.

References

Aarrevaara, T., & Holtta, S. (2008). Changes in the Finnish academic profession reflect reforms in higher education. In *The changing academic profession in international comparative and quantitative perspectives* (pp. 117–130). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.

Aguirre, A. (2000). *Women and minority faculty in the academic workplace: Recruitment, retention, and academic culture*. San Francisco: Jossey-Bass.

Arimoto, A. (2008). International implication of the changing academic profession in Japan. In *The changing academic profession in international comparative and quantitative perspectives* (pp. 1–32). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.

Arimoto, A. (2009). Changing academic profession in the world from 1992 to 2007. In *The changing academic profession over 1992–2007: International, comparative, and quantitative perspectives* (pp. 1–38). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.

Bain, O., & Cummings, W. (2000). Academe's glass ceiling: Societal, professional-organizational, and institutional barriers to the career advancement of academic women. *Comparative Education Review, 44*(4), 493–514.

Bellas, M. L. (1994). Comparable worth in academia: The effects on faculty salaries of the sex composition and labor market conditions of academic disciplines. *American Sociological Review, 59*, 807–821.

Bellas, M. L. (1997). Disciplinary differences in faculty salaries: Does gender bias play a role? *The Journal of Higher Education, 68*(3), 299–321.

Bellas, M. L., & Toutkoushian, R. K. (1999). Faculty time allocation and research productivity: Gender, race, and family effects. *Review of Higher education, 22*(4), 367–390.

Biglan, A. (1973). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology, 57*(3), 204–213.

Billard, L. (1994). Twenty years later: Is there parity for academic women? *Thought and Action, 10*, 115–144.

Blackburn, R. T., & Bently, R. J. (1993). Faculty research productivity: Some moderators of associated stressors. *Research in Higher Education, 34*, 725–745.

Bornstein, R. (2008). Women and the college presidency. In J. Glazer-Raymo (Ed.), *Unfinished agendas: New and continuing gender challenges in higher education* (pp. 162–184). Baltimore: Johns Hopkins University Press.

Boyer, E. L. (1992). *Scholarship re-considered: Priorities of the professoriate*. Princeton: Carnegie Foundation for Advancement of Teaching.

Cole, J. R. (1979). *Fair science: Women in the scientific community*. New York: Free Press.

Daizen, T., & Yamanoi, A. (2008). The changing academic profession in an era of university reform in Japan. In *The changing academic profession in international comparative and quantitative perspectives* (pp. 293–326). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.

Davis, D. E., & Astin, H. S. (1990). Life cycle, career patterns and gender stratification in academe: Breaking myths and exposing truths. In S. Lie & V. E. O'Leary (Eds.), *Storming the tower: Women in the academic world* (pp. 89–107). London/New York: Kogan Page/ Nichols/GP.

Finkelstein, M., & Cummings, W. (2008). The changing academic profession in the United States: 2007. In *The changing academic profession in international comparative and quantitative perspectives* (pp. 58–74). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.

Gmelch, W. H., Wilke, P. K., & Lovrich, N. P. (1986). Dimensions of stress among university faculty: Factor-analytic results from a national study. *Research in Higher Education, 24*, 266–286.

Hagedorn, L. S., & Sax, L. J. (1999). *Marriage, children, and aging parents: The role of family-related factors in faculty job satisfaction*. Paper presented at the annual meeting of the American Educational Research Association. Montreal.

Horta, H., Dautel, V., & Veloso, F. M. (2012). An output perspective on the teaching-research nexus: An analysis focusing on the United States higher education system. *Studies in Higher Education, 37*(2), 171–187.

Jung, J., Kooij, R., & Teichler, U. (2013). Internationalization and the new generation of academics. In F. Huang, M. Finkelstein, & M. Rostan (Eds.), *The internationalization of the academy: Changes, realities and prospects* (pp. 207–236). Dordrecht: Springer.

Katz, J. S., & Martin, B. R. (1997). What is research collaboration? *Research Policy, 26*(1), 1–18.
Keller, G. (2001). The new demographics of higher education. *The Review of Higher Education, 24*(3), 219–235.
Kirshstein, R. J., Matheson, N., & Jing, Z. (1997). *Instructional faculty and staff in higher education institutions; Fall 1987 and Fall 1992 (NSOPF-93)*. Washington, DC: Department of Education, National Center for Education Statistics.
Locke, W. (2008). The academic profession in England: Still stratified after all these years? In *The changing academic profession in international comparative and quantitative perspectives* (pp. 89–116). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.
Mamiseishvili, K., & Rosser, V. J. (2011). Examining the relationship between faculty productivity and job satisfaction. *The Journal of the Professoriate, 5*(2), 68–100.
Marquina, M., & Lamarra, N. F. (2008). The academic profession in Argentina: Characteristics and trends in the context of a mass higher education system. In *The changing academic profession in international comparative and quantitative perspectives* (pp. 346–362). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.
O'Leary, V. E., & Mitchell, J. M. (1990). Women connecting with women: Networks and mentors in the United States. In S. S. Lie & V. E. O'Leary (Eds.), *Storming the tower: Women in the academic world* (pp. 58–73). London: Kogan Page, Nichols/GP.
Olsen, D., Maple, S., & Stage, F. (1995). Women and minority faculty job satisfaction. *Higher Education, 66*, 267–292.
Park, S. M. (1996). Research, teaching, and service: Why shouldn't women's work count? *Journal of Higher Education, 67*(1), 46–84.
Poole, M., Bornholt, L., & Summers, F. (1997). An international study of the gendered nature of academic work: Some cross-cultural explorations. *Higher Education, 34*, 373–396.
Postiglione, G., & Jung, J. (2012). World-class university and Asia's top tier researchers. In Q. Wang, Y. Cheng, & N. C. Liu (Eds.), *Building world-class universities: Different approaches to a shared goal* (pp. 161–181). Rotterdam: Sense Publisher.
Postiglione, G., & Tang, H. (2008). A preliminary review of the Hong Kong CAP data. In *The changing academic profession in international comparative and quantitative perspectives* (pp. 227–250). Hiroshima: Hiroshima University, RIHE Research Institute for Higher Education.
Preffer, J., & Davis-Blake, A. (1987). The effects of the proportion of women on salaries: The case of college administration. *Administrative Science Quarterly, 32*, 1–24.
Sax, L. J., Hagedorn, L. S., Arredondo, M., & Dicrisi, F. A., III. (2002). Faculty research productivity: Exploring the rope of gender and family-related factors. *Research in Higher Education, 43*(4), 423–446.
Shin, J. C., & Cummings, W. K. (2010). Multi-level analysis of academic publishing across discipline: Research performance, collaboration, and time on research. *Scientometrics, 85*(2), 582–594.
Teodorescu, D. (2000). Correlates of faculty publication productivity: A cross-national analysis. *Higher Education, 39*(2), 201–222.
Toren, N. (1993). The temporal dimension of gender inequality in academia. *Higher Education, 25*, 439–455.
Toutkoushian, R. K., & Bellas, M. L. (2003). The effects of part-time employment and gender on faculty earnings and satisfaction: Evidence from the NSOPF:93. *Journal of Higher Education, 74*(2), 172–195.
Toutkoushian, R. K., & Conley, V. M. (2005). Progress for women in academe, yet inequities persist: Evidence from NSOPF:99. *Research in Higher Education, 46*(1), 1–28.
Ward, K. B., & Grant, L. (1996). Gender and academic publishing. In J. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XI, pp. 172–212). Edison: Agathon.

Chapter 11
The Academic Profession: The Dynamics of Emerging Countries

Monica Marquina and Mariela Ferreiro

11.1 Introduction

It is not easy to find clear specific characteristics of the academic profession in emerging countries because the history of the systems and the local contexts make each country a special case. However, the academic profession in emerging countries can be differentiated from that in the industrialized mature nations because of its dependence on the center.

The purpose of this chapter is to analyze variations of internal fragmentation in the academic profession of emerging countries compared to mature ones. Just as in mature countries the academic profession in emerging countries is part of the global academic community. We will analyze the academic professions of six emerging countries highlighting the differences between those scholars who are connected with international standards and those with a more local orientation. We assume in each country that it is possible to identify a strata of "elite" academics that considerably distant from the rest of the academics in terms of better working conditions, productivity and perceptions of their profession. However, we will try to demonstrate that this distance is significantly less evident in mature countries.

This chapter is organized in four parts. First, we will present a background that explains the main features of the higher education systems and the academic professions in each of the six selected countries. Second, we present the methodology applied to analyze data from CAP survey regarding some variables and dimensions. Third, we show results from some aspects of the academic profession in order to validate our hypothesis. Finally, we suggest some conclusions as regards further research in this domain.

M. Marquina (✉) • M. Ferreiro
University of General Sarmiento (UNGS), Buenos Aires, Argentina
e-mail: mmarqui@ungs.edu.ar

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_11

11.2 Main Features of Academic Profession in Emerging Countries

In recent years, economic and social literature has begun to use the category "emerging" to refer primarily to developing countries where economies begin to improve either by a technological advance in a short space of time or by marketing a scarce commodity. These are developing countries that are growing at a faster rate than the rest, on the basis of low labor costs, increasing industrialization, and the opening up of a free market system. To define this group of countries, not only indicators linked to economic growth but also with human development are considered, such as per capita income, life expectancy, and education. While originally these countries were grouped by the BRICS acronym (Brazil, China, India, Russia and South Africa), the name "emerging economy" extends generally to the situation of a country which has changed from a subsistence economy to that of rapid industrial development. The category, therefore, is applied to those countries whose economies have not yet reached the status of developed, but have gone further than their competitors in the developing world.

In this framework, from the total number of countries participating in the CAP study we have selected a group of six countries that have shown signs of considerable development in recent times, and which is reflected in their higher education systems. For example, these countries originally had a higher education system based on traditional models, mainly supported by the State and composed of public institutions. They also have had to respond to a growing demand for higher education by expanding dramatically their systems and undergoing major reforms.

These transformations of higher education systems have come from the important processes of democratization and economic developments. In most cases the reforms followed a government agenda based on opening a private sector, introducing quality assurance systems, and encouraging institutional diversification leading to new sectors requiring higher education. Each country, based on their own stories of development of higher education, has incorporated this agenda with its peculiarities. However, the explosive growth of higher education systems in a few decades has set up an academic profession with certain common characteristics.

According to Altbach (1998, 2004), the academic professions of developing countries constitute the "periphery". They are characterized by low wages, being largely made up of part time staff and unsuitable working conditions when compared with mature countries. In most of these countries, there may be limited participation in university government and a restricted autonomy to generate an academic career and academic programs. Members of the academic profession in the periphery have to develop their activities in a global academic community where they are in at a disadvantage. For example, they have to use English since it is the main language of the academy, when it is not their native language; they have less participation in the academic centers of power control, for example with less chances of performing as journal referees or at other places where the structure of decision making has the basis in the mature countries, reflecting the dominant interests of the academics. They are far from the main sources for the finance of

research; they have less access to adequate libraries, laboratories, data bases and IT; they have to use knowledge produced by others and have infrequent opportunity to contribute to the overall growth of knowledge.

We propose that the concept of "the academic profession in the periphery" applies to the six emerging countries under consideration, though the features vary by country. For the purposes of our analysis, the main feature to emphasize in the academic profession of emerging countries is the fragmentation within each system, as a result of increasing stratification of institutions with particular ways of organizing academic work. Let's see the nature of stratification in each case.

11.2.1 Argentina

The Argentine higher education system manifests a highly complex historical evolution characterized by an emphasis on teaching, professional training, a reliance on part time faculty, and the massification realized primarily through the expansion of the free public and open-access sectors. With high level of institutional participation in government by all actors including students, the higher education system expanded during twentieth century almost exclusively by the growth of public universities, which receive today more than 85 % of university enrolment. Separate from the universities, there is a tertiary non-university sector dedicated to teacher training and vocational programs. These institutions constitute less than one third of the total higher education enrolment and they are perceived as devaluated options when compared to the possibilities offered by universities. After the military coup in 1983, and as a response to the growing demand for higher education, the system underwent a rapid unplanned expansion that was accompanied by an increased reliance on part time professors. The most recent reform during the 1990s introduced new options of funding assigned competitively to institutions, a quality assurance system and the creation of new universities making the system more diverse, although not on the basis of a significant growth of the private sector (Marquina 2011). In this sense, the academic profession differentiates according to a university profile that is more or less research oriented. Although, Argentina has the highest enrolment rate in Latin America, access to higher education is uneven according to region and social background which reflects in high dropout rates during the first years of study (Chiroleu and Marquina 2010).

11.2.2 Brazil

The Brazilian academic profession is a very good example of the reproduction of a high level of diversification of the higher education system. As Balbachevsky and Schwartzman (2010) point out, Brazilian higher education is a case of extreme diversity based on different types of institutions and by ownership. The public sector concentrates on a small group of research universities offering graduate education and receiving most of the public resources for science. They succeed in

attracting the most talented competitive scholars in the country. The vast majority of institutions are part of the private sector, including an emerging for-profit sector that has responded to the mass higher education market and offers few chances for scholars in terms of a good academic environment. This diversification is the result of a set of reforms that occurred during the 1990s that responded to the increasing demand for higher education from new social groups.

11.2.3 Mexico

In a context of high enrolment growth, the Mexican higher education system has increased in terms of institutions, faculty, academic programs, private sector and research budget. From almost a non-existing full time professor group four decades ago, now nearly one third of about 300,000 academics do research and shows high levels of productivity. However, despite public policies supporting research it can be said that Mexican academics are centered in teaching. One main feature of the academic profession in Mexico is that it is "over-evaluated" and linked to a merit-pay system. Up to a 60 % of research-oriented faculty income is a conditional monetary transfer according to productivity. This system is pushing academics to pay more attention to fulfill research requirements rather than teaching (Galaz Fontes et al. 2011), and is reflected in new policies that are less performance-based and more long-term plan oriented.

11.2.4 South Africa

The higher education system in South Africa underwent a strong reform in the last two decades as a consequence of the end of apartheid that had racially divided the system in a binary structure of white institutions that were better resourced and located with a focus on research, compared to vocational institutions that were short on resources and uneven in quality. Higher education in democratic South Africa faced huge challenges in its search for quality and equity. Universities have opened their doors to students of all races, and the binary system has been dismantled. Today there are three types of institutions, the traditional research-focused universities, the universities of technology, and comprehensive universities combining academic and vocational oriented education. The academic profession is diversified according to these different purposes (Teichler et al. 2013).

11.2.5 China

Chinese higher education reflects different stages according to national political changes. The period from the middle of the twentieth century to the mid 1960s is considered the best time for higher education, with institutions following the Russian

model primarily focused on teaching and training. Research was concentrated in the Chinese Academy of Sciences system where a minority of ambitious students could submit dissertations towards a doctorate. The Cultural Revolution stopped the progress of higher education, and universities were closed until 1976. Three decades passed since higher education in China recovered and graduate education developed as well as academic careers for full professors and other members of an emergent academic profession. The twenty-first century came with a strong reform that included policies from the government aimed at encouraging private investment and a loan scheme system to allow access to needy students. Policies included also the creation of top research public funded universities and a highly diversified system that included about 2,000 institutions offering 3 and 4 year collegiate programs. Despite the growth of the participation rate of higher education Chinese higher education is criticized because it does not have enough qualified faculty, is short on public funding, and has strong administrative control (Teichler et al. 2013).

11.2.6 Malaysia

Higher Education in Malaysia has developed according to the economic growth of the country. Before the 1990s the system consisted primarily of public universities and a non-university sector of polytechnics and colleges. Since the 1980s the system started to diversify with the establishment of both private and public institutions generating the rapid growth of the private sector. During the 1990s the reform took place with new regulations aimed at liberalizing and privatizing higher education to meet national objectives, with policies of quality assurance and more diversification. This transformation has allowed the system to triple student enrolment within a decade. Recent reforms since the beginning of the twenty-first century were aligned to an economic model that needs the spearhead human capital formation. For that it is planned to develop "world class" universities and a strong stratification of institutions according to their missions and visions. So, in addition to a few "world class" universities the next level is a group of comprehensive universities and after that, technical institutions. The academic profession reflects this stratification with academic rank divided into several grades linked to a prescribed salary scale and a hierarchy of income and prestige among the various levels (Teichler et al. 2013).

11.3 Methods

The purpose of this chapter is to analyze variations of internal fragmentation of the academic profession in higher education systems of emerging countries compared to mature ones. The hypothesis that guides our study points out that within the academic professions of each of the six emerging countries considered, there is a group of scholars connected with international standards and therefore a part of the global academic community. This sector, very close to what Clark characterized as "cosmopolitans" in

contrast to "locals" (2008) is named here as the "elite" group. We assume that this group has a considerable distance from the rest of the academics in their countries in terms of working conditions, productivity and perceptions of their profession. We thought that this distance is less evident in mature countries and this would be, therefore, the main feature that brings together the emerging countries analyzed.

As said before, we have worked with a sample of six emerging countries within the CAP study: China, Malaysia, South Africa, Mexico, Argentina and Brazil. We also created a control group of seven mature countries taken in aggregate: United States, Hong Kong, Korea, Norway, Canada, Japan, and United Kingdom.

We have identified for each of the six countries a group of scholars considered the "elite", since they share certain characteristics: they have obtained a graduate degree, they are full timers, they spend more than 10 h per week on research, and they prefer research to teaching. These elite groups are compared, for each country, with the rest of their colleagues in some aspects such as time allocation in research, satisfaction, internationalization, vision of improvement, pressure and perceived restrictions.

We expected that the comparisons would show significant difference between the group of elites and the rest of the academics in each of the six emerging countries. We expected as well that this difference would be bigger in emerging countries than in mature countries. This would be an important dynamic to highlight the difference in the academic professions of mature and emerging countries.

11.4 Results

11.4.1 The "Elite Group" Is Bigger in Mature Countries

Our first task was to determine the size of the "elite" group in each emerging country, and to compare each of them with the average size of a similar group in the mature countries. This analysis showed that in emerging countries the elite group constitutes only a minority—between 6.2 % (Malaysia) and 18.8 % (Mexico)—but represents about 30 % of academics in mature countries (see Fig. 11.1). This means that in the latter countries with a better established higher education system and academic profession there are more academics with advanced credentials, more who report good working conditions, more who are likely to have a stronger preference for research, and more who actually conduct research.

11.4.2 Smaller Differences Between "Elite Group" and Others in Mature Countries in Time Spent on Research

One aspect to demarcate the elite group in each country was examining the time spent on research. As expected the hours engaged in this activity in the elite group of each country is bigger than in the non-elite group. What is significant in this

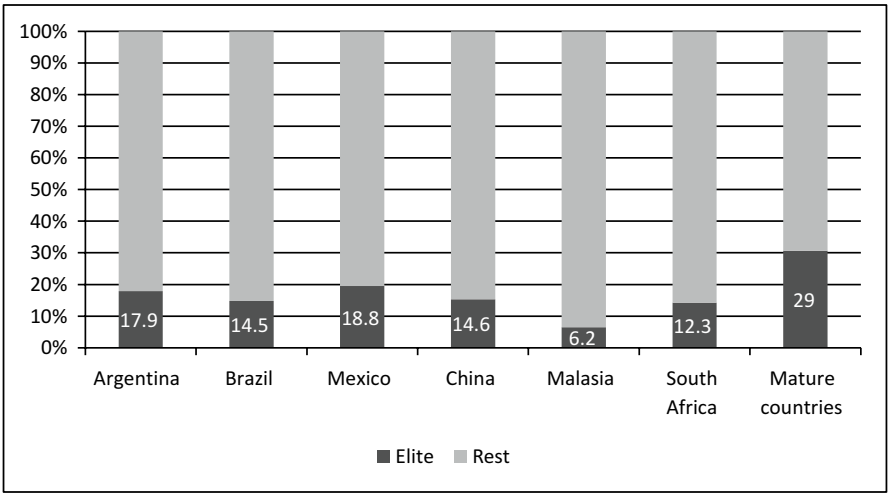

Fig. 11.1 The proportion of the "Elite group" among academics in six emerging countries compared with mature ones (*Source*: CAP survey)

context is that the difference in the number of hours devoted to research in the elite groups of emerging countries in respect of their colleagues is higher than that of both groups in the mature countries. As seen in Fig. 11.2, in emerging countries differences in hours spent on research among elite groups and the rest vary between 10 and 15 h. For example, at one end is China, with more than 25 h spent on research by the elite, against 10 h by the rest, or Mexico, where the elite group spends about 18 h on this activity while the rest spends only 6. Within the group of emerging countries the smallest difference between the two groups is presented by South Africa with elite devoting about 12 h to research and the rest of the academics about 7. By contrast this difference is relatively low in mature countries. The hours spent on each activity by the two groups are more balanced in general, and regarding research activity we can see that while the elite group devotes about 18 h, the rest averages about 13 h.

11.4.3 Slightly Higher Satisfaction of "Elite Groups" Both in Mature and Emerging Countries

In terms of overall satisfaction, elite groups are slightly more satisfied than the rest of their colleagues and there is not a significant difference when compared to mature countries in this distinction. Mexico shows the highest levels of overall satisfaction of its academic profession among the countries analyzed, but curiously this country is the exception with an elite group a little less satisfied. The rest of the countries, including the mature ones, show a more satisfied elite group compared to the rest. Academics of China and South Africa are the least satisfied (Fig. 11.3).

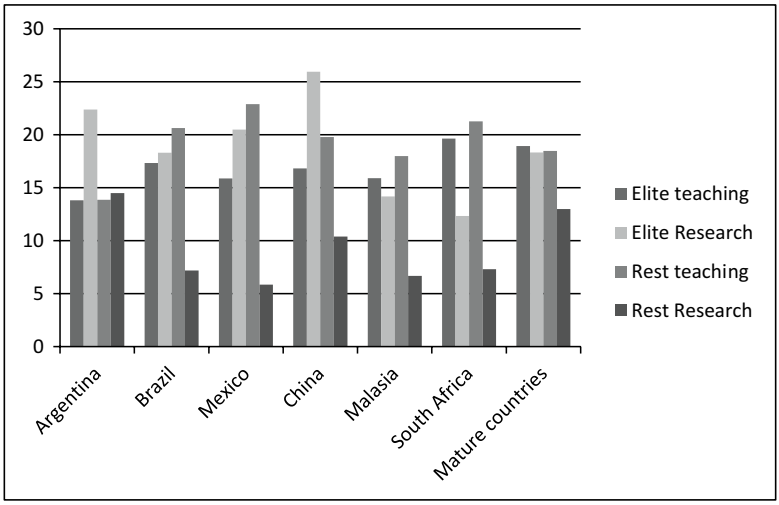

Fig. 11.2 Hours spent in a typical week during classes (*Source*: Cap survey. QB1. Considering all your professional work, how many hours do you spend in a typical week during class? (%))

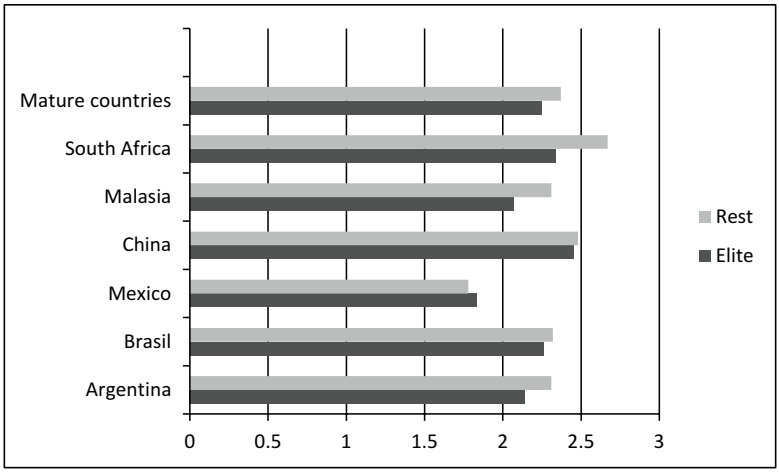

Fig. 11.3 Overall satisfaction (*Source*: Cap study. QB6. How would you rate your overall satisfaction with your current job? (0 = Very high 5 = Very low))

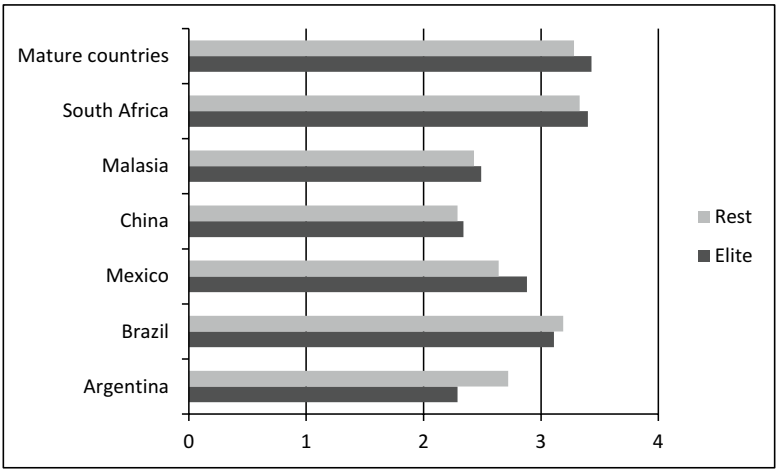

Fig. 11.4 Improvement in working conditions (*Source*: Cap study. QB7. Since you started your career, have the overall working conditions in higher education improved or declined? (0 = Improved 5 = Declined))

However, the differences appear when academics have to value improvement in their working conditions. In this matter perceptions are lower in elite groups (excepting Argentina and Brazil), and mature countries are more pessimistic in general, considering both the elite group and the rest (see Fig. 11.4). It is interesting to note that Asian countries recognize more improvement than the rest of the countries, and that Argentina shows the biggest distance between elite group and the rest in this matter. It is possible to explain the different perceptions about improvement in working conditions with recent governments funding policies in specific higher education sectors, as we mentioned for Malaysia, China and Argentina in a previous section.

11.4.4 Less Pressure to Raise Funds and More Restrictions in Publications Felt by Elite Groups: Notably in Emerging Countries

In order to investigate aspects of academic activity that generate more pressure between groups and countries, we have selected a question that focuses attention on fundraising for research activities and the possibilities for publishing research results. Regarding the activity of external fundraising, the elite groups feel less pressure than the rest, in all cases. This is probably because the elite group in each country has greater ease of obtaining funding for their research activity, generating what Merton (1973) has called the "Matthew effect" in the sense that the more privileged are the ones that receive more. In this aspect, once again we see that the gap

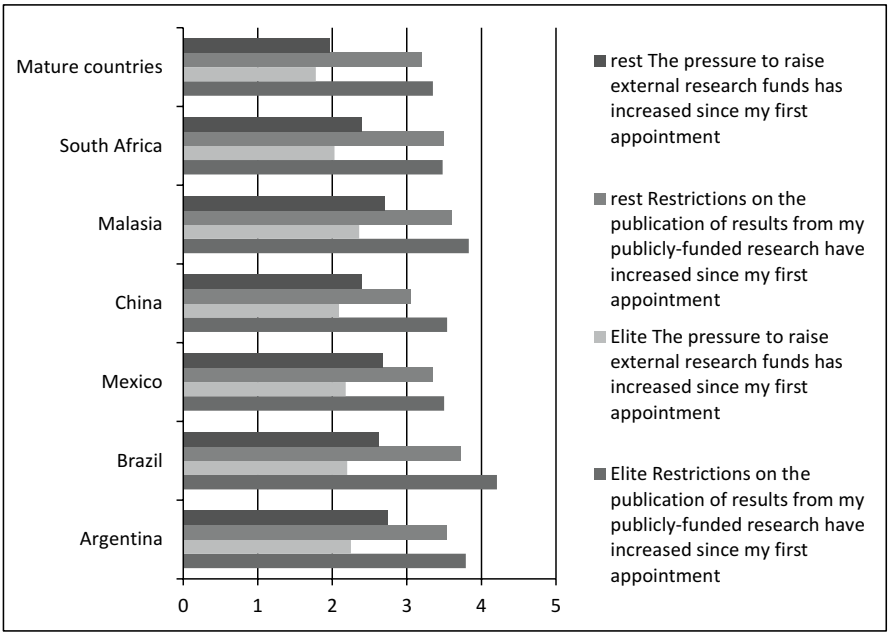

Fig. 11.5 Pressure and restrictions in research activity (*Source*: Cap survey. QD6. Please indicate your views on the following… (1 = agreement, 5 = disagreement))

between this group of privileged and other academics is lower in mature countries than in emerging ones.

But a different picture emerges when we consider the perceptions about the possibilities for publication. Notably, this activity is perceived by all as more restrictive in recent years, and members of the elite groups are the ones who most perceive this difficulty in all the analyzed cases (with the exception of South Africa where this perception is similar in the two academic groups). The elite groups of Brazil followed by Malaysia and then by that of Argentina are the most critical in this matter. By contrast, Mexico and China are the countries that are closer to the perceptions of mature countries, where the critical eye is not so evident, and the difference between the elite group and the rest much more balanced. Again, this shorter distance reveals a less fragmented profession in mature countries, and in general terms restrictions are perceived to be of a lesser degree than in the emerging countries (Fig. 11.5).

11.4.5 Higher Internationality of Elite Groups—Notably in Emerging Countries

Internationalization is the aspect that most clearly shows the differences between the elite and the rest of the academics in each country. Beginning with teaching activity, and taking two indicators (teaching abroad and teaching in a different

language of native) we can see significant differences between elite groups and the rest in all the countries. Starting with the countries of Latin America, we see a common pattern in which elite groups are more international in teaching both because they teach abroad and because they do it in a language different than their native tongue. The differences between groups are most evident in Argentina, while in Brazil and Mexico they are smaller. In these cases it is likely that more privileged academic groups have a greater chance of teaching abroad due to their international connections, whether in the case of Mexico because of its proximity to the United States, or in the case of Argentina and Brazil by virtue of their integration into the MERCOSUR. Meanwhile, the Asian countries and South Africa show significant differences between the elites and the rest with regard to teaching abroad, and to a lesser extent with regard to teaching in different languages. However, these distinctions do not overcome the main difference that can be observed in Fig. 11.6, between emerging and mature countries. It is clear that the balance between the two groups (elites and the rest) is more evident in the mature countries, consistent with our argument that the academic profession in the advanced countries is more homogeneous.

Another way to analyze the level of internationalization of academic activity is to consider the extent of academic collaboration with international colleagues. Figure 11.7 shows that, overall, elite groups establish more international links than the rest. And this distance, once again, is significantly lower in mature countries. With the exception of Argentina, where the difference between this two groups is around 20 points, in the rest of the emerging countries international collaboration of the elite groups was twice as frequent as for the rest of the academics. All emerging countries, excluding China, show high levels of international connections of their elite groups (between 50 % and 70 %). China is the

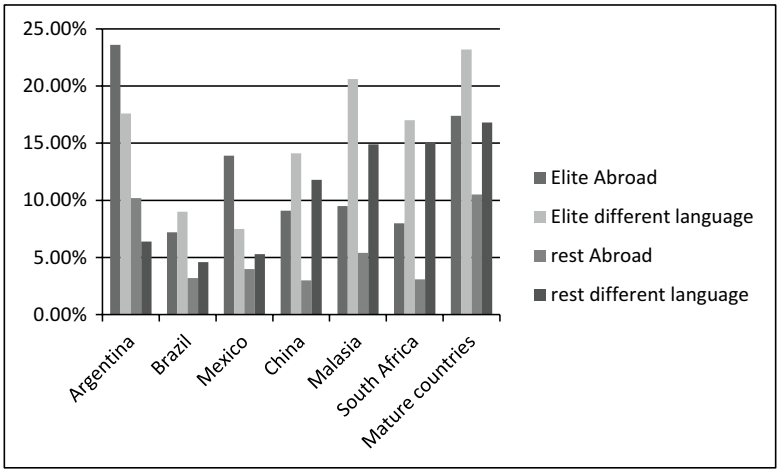

Fig. 11.6 Internationalization in teaching (*Source*: Cap survey. QC5. During the current (or previous) academic year, are you teaching any courses…)

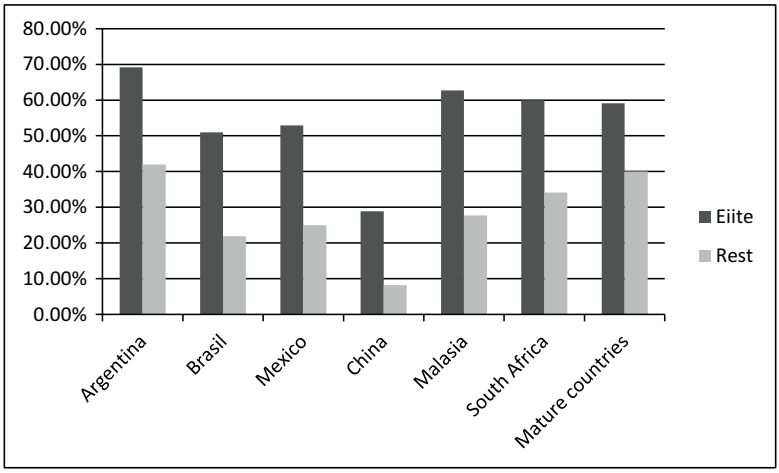

Fig. 11.7 Collaboration with international colleagues (*Source*: Cap Survey. QD1,4. Do you collaborate with international colleagues? (Yes))

group with the lowest level of international connections it also shows important differences between the two groups of academics. On the other hand, even when mature countries also present different levels of international collaboration between these two groups, the gap is less than 20 percentage points, which would show that connections with colleagues from other countries is a general trend in more established higher education systems.

Finally, we have analyzed the level of internationalization of academic research, which shows a greater internationalization of elite groups and a smaller gap between the two groups (elite and the rest) in mature countries. We used three indicators: publications in a language different from that used in the current institution, co-authorship with colleagues from other countries, and foreign publications. In all cases the lowest indicator is co-authorship with foreign colleagues and the highest indicators are publications in different languages and in other countries. A comparison between the two groups, the elite and the rest, shows that in all national cases the elite groups are higher on all three indicators, demonstrating once again that this group is more international everywhere. However, continuing the trend that we recognized from the dimensions discussed above, in mature countries this difference between groups is lower. For example, in these countries, about 39 % of the members of the elite group have publications in another language, versus 37 % for other scholars. These differences are far more pronounced in emerging countries: in Argentina, over 50 % of elite academics publish in other countries, against 27 % for the rest of the colleagues. These differences are equally significant in other emerging countries. In the activity of publications, South Africa is the least international emerging country, and Argentina and Mexico are the most international, always emphasizing the large gap between groups (see Fig. 11.8).

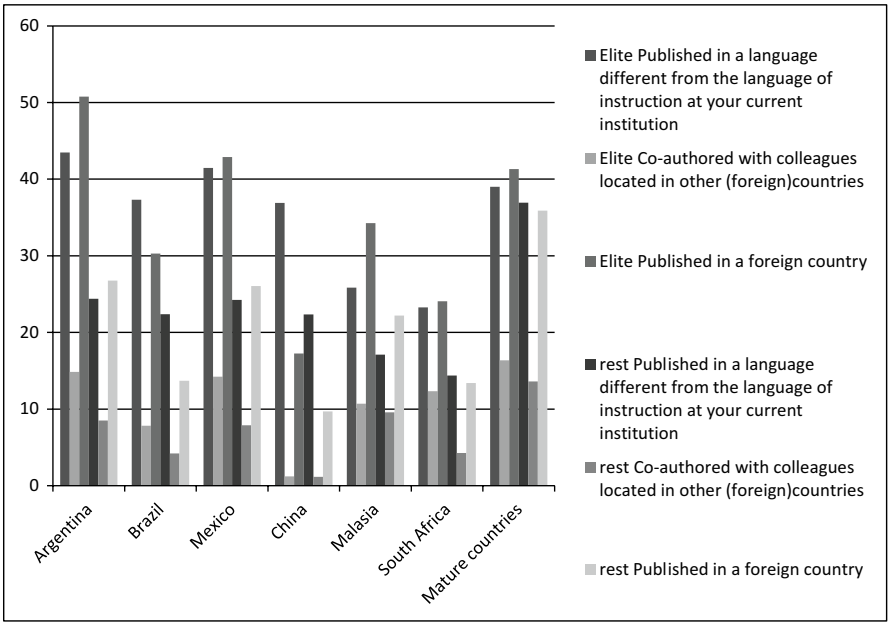

Fig. 11.8 Internationalisation in academic production (*Source*: Cap Survey. Q D5. Which percentages of your publications in the last 3 years were…?)

11.5 Conclusion

The aim of this analysis was to explore the extent to which "elite groups" among academics differ from the "rest" in terms of their perception of their work situation, their values, and their activities. Thereby, we expected more substantial differences in those respects in emerging countries than in mature countries. Our expectation was confirmed: the "elite groups" spend more time on research, both their teaching and their research seems to be more international, they report more involvement in international cooperation, and they are overall more satisfied than the "rest". The "elite groups" also differ in their perception of working conditions from the rest, but not all of these distinctions could be expected in advance: They note smaller improvements of working conditions over time, they note less pressure to raise research funds, and they note more restrictions on publishing. In almost all respects, the differences between the "elite groups" and the "rest" are more substantial in emerging countries than in mature countries. Only concerning their assessment of the improvement of working conditions is the difference between the two groups of countries not evident.

Overall our hypothesis is corroborated: greater differentiation and fragmentation typifies the life of the academic profession in the emerging countries. As Altbach has pointed out (1998, 2004) the patterns of academic work in industrialized coun-

tries set the standards worldwide, and the academic systems of developing countries are influenced by the examples from the north. For the emerging countries we could see that not all academics adapt their work to those patterns, but some (we call them the elites) are in a better condition to follow the international rules. Anyway, emerging countries' scholars are dependent on the main centers of knowledge and scientific networks worldwide, with great inequality regarding resources and infrastructure compared to the mature countries and within the profession in each of the emerging countries. In this sense, the academic profession in emerging countries is also a profession in the periphery. As academic staff around the world increasingly becoming part of a global academic community, emerging countries are at the bottom of the global system of unequal academic relationships. Some groups are able to adapt, survive, and compete due to favorable public policies aimed at realizing world class international standards. But policies make the gap bigger within each emerging country. Fragmentation is the result of the current dynamic for the development of the academic profession in emerging countries.

References

Altbach, P. (1998). *Comparative higher education: Knowledge, the university and development.* Comparative Education Research Centre, The University of Hong Kong.

Altbach, P. (Ed.). (2004). *El ocaso del gurú. La profesión académica en el tercer mundo* (The decline of the guru: Academic profession in the third world). Cultura Universitaria/Serie Ensayo 77. México City: Universidad Autónoma Metropolitana.

Balbachevsky, E., & Schwartzman, S. (2010). The graduate foundations of Brazilian research. *Higher Education Forum (Hiroshima University), 7*, 85–100.

Chiroleu, A., & Marquina, M. (2010). Argentina. In B. Vlaardingerbroek & N. Taylor (Eds.), *Getting into varsity–comparability, convergence and congruence*. New York: Cambria Press Inc.

Clark, B. (2008). *Differentiation and integration of the academic profession. Higher education. Selected writings, 1956–2006*. Baltimore: The John Hopkins University Press.

Jesus Galaz Fontes, J., Sevilla-García, J. J., Padilla-González, L. E., Arcos-Vega, J. L., Gil-Antón, M., Martínez-Stack, J., et al. (2011). Mexico: A portrait of a managed profession. In W. Locke, W. K. Cummings, & D. Fisher (Eds.), *Changing governance and management in higher education: The perspective of the academy* (pp. 57–81). Dordrecht: Springer.

Marquina, M. (2011). Higher education reform in Argentina in the 1990s: Paradoxes of government intervention in a minimalist state model. *Higher Education Forum (Research Institute for Higher Education, Hiroshima University), 8*(3), 93–104.

Merton, R. K. (1973). *The sociology of science*. Chicago: The University of Chicago Press.

Teichler, U., Arimoto, A., & Cummings, W. (2013). *The academic profession. Major findings of a comparative survey* (The changing academy – The changing academic profession in international comparative perspective, Vol. 1). Dordrecht: Springer.

Chapter 12
The Impact of Government Policies on the Profiles and Attitudes of Academics in Two Emerging Economies: Brazil and Mexico

Jorge Martínez Stack, Marion Lloyd, and Imanol Ordorika

12.1 Introduction

12.1.1 The Objectives of the Analysis

As Latin America's largest nations, Brazil and Mexico are home to many of the region's dominant universities and its most extensive systems of higher education. Together, they account for nearly half the region's tertiary enrollment and more than two-thirds of the scientific articles by Latin American scholars in international peer-reviewed journals (RICYT 2012). However, there are major differences between the two countries' higher education policies as well as in their levels of support for science, technology and innovation. These, in turn, are the result of the divergent economic development strategies adopted by both countries, which took shape during their initial industrialization period in the 1930s and accelerated during the rapid economic growth of the 1950s and 1960s. In general, Brazilian governments have focused on developing an elite, public research sector as part of a broader goal of achieving technological self-sufficiency, while leaving most tertiary enrollment in the hands of private institutions of often dubious quality. Mexico, in contrast, has paid lip service to the importance of science and technology, while in practice prioritizing access to professional education at public institutions.

The Brazilian government's longtime support for scientific research is a major factor in the country's regionally dominant position in the international university rankings, which tend to equate the institutions' scientific production with their

J. Martínez Stack • M. Lloyd (✉) • I. Ordorika
National Autonomous University of Mexico (UNAM), Mexico City, Mexico
e-mail: marionlloyd@gmail.com

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_12

overall quality[1] (Lloyd et al. 2012; Ordorika et al. 2008; Ordorika and Rodríguez 2010; Slaughter and Rhodes 2009). Of the ten Latin American institutions represented in the 2012 Academic Ranking of *World Universities*,[2] six were Brazilian while just one was Mexican. The top-ranked Brazilian institution, the University of São Paulo (USP), came in 129th place, ahead of the University of Buenos Aires (UBA), in 186th place, and the National Autonomous University of Mexico (UNAM), in 195th place. That discrepancy is largely due to USP's heavy investment in postgraduate studies and research in science and technology; according to the ARWU ranking, the USP, Brazil's largest and most prominent public institution of higher education, had the highest number of doctoral graduates among the 682 institutions for which data was available and its research budget was the third highest out of 637 institutions surveyed (ARWU 2012). While neither USP nor UNAM are representative of the two country's higher education systems as a whole, the greater volume of research produced by the Brazilian university is a reflection of the priority its government has placed on S&T and postgraduate education, while in Mexico a majority of postgraduate studies are at the master's level, and in professional areas.

What impact, if any, do such differences in higher education policy have on the perceptions and profiles of academics in the two countries? Judging by the results of the Changing Academic Professions (CAP) survey for Mexico and Brazil, the answer is quite a lot, particularly among full-time academics in the public sector. In this chapter, we use the CAP survey to explore the main differences and similarities between academics in the region's two economic powerhouses, with special emphasis on the impact of public policies on this relatively privileged subset of the academic profession; in both Mexico and Brazil, as in most developing countries, the bulk of research is conducted by tenured professors at public universities, although these represent a small minority of academics nationwide. Our analysis includes data on the following areas: professional profiles and trajectories; education levels; dominant academic fields; scientific production; teaching and research activities; and attitudes and perceptions toward workplace and work.

[1] In previous articles, we have argued that the rankings' methodologies – which tend to give primary weight to measures of scientific production, such as articles published in English-language journals – are biased in favor of a sole model of higher education institution: the elite, U.S. research university. In essence, the rankings are "harvardometers", measuring how much a university looks like Harvard. In that context, Latin American universities, which fulfill a much broader role in their country's development as "state-building universities" (Ordorika and Pusser 2007) and are generally more focused on teaching than on research, tend to fare poorly in the international rankings.

[2] The *Academic Ranking of World Universities* was the first classification of universities at an international level. It has been produced by the Jiao Tong University in Shanghai, China, since 2003. It currently ranks 500 universities primarily on the basis of their scientific production, measured on the basis of the number of articles they publish in international peer-reviewed journals (as measured by the Reuters Science Citation Index), the number of Nobel Prize laureates among their staff or graduates, among other indicators. In most of the international rankings, the USP and the UNAM tend to lead the region, although in recent years the Brazilian university has consistently come out on top.

We do not pretend to provide a comprehensive overview of the academic profession in Mexico and Brazil, given the enormous diversity of the two country's higher education systems and the intrinsic limitations of the CAP survey. However, we do seek to contribute to the discussion of the results from a Latin American perspective; so far, a majority of the studies utilizing the CAP data have focused either on single countries or on comparisons among developed regions, in particular Europe and the Anglo-speaking world. By comparing two of the world's largest emerging economies, we seek to highlight the challenges that higher education systems in the developing world face in participating in the knowledge economy, and the different strategies they are adopting to overcome historic obstacles.

This chapter is divided into six sections. We begin by outlining the methodology behind our analysis of the academic profession in Mexico and Brazil, with emphasis on the challenges we encountered in comparing two such heterogeneous systems. The second section places the two countries within the economic context of Latin America, and describes the key differences in the two countries' economic models and development strategies. In the third section, we provide a brief history of their government policies on higher education, science and technology (S&T). We then describe the main differences and similarities between the two higher education systems, which help explain Brazil's stronger showing in the international university rankings. The fifth section centers on the CAP survey itself, with particular attention placed on the impact of S&T policies on scientific production and attitudes among academics. We conclude by summarizing the most significant differences between the academic professions in Brazil and Mexico, and the likely impact of public policy on the full-time academics in both countries.

12.1.2 Some Methodological Considerations

The CAP survey, in comprising data from thousands of academics in 19 countries, provides a valuable tool for understanding the changing nature of academe in highly heterogeneous higher education systems. However, certain differences in its application among countries should be taken into account when analyzing the results. In the case of Mexico and Brazil, the survey was applied to a different sample group for reasons related to differences in the two countries' higher education systems. While in Mexico, only full-time professors were surveyed, in Brazil, due to the predominance of part-time professors within the private sector, the survey also included part-time academics.

In the interest of making our data sets as comparable as possible, we have restricted our analysis to full-time professors in both countries: 612 academics in Brazil and 1,758 in Mexico. The vast majority of those academics work in the public sector, which in the case of Brazil is not representative of higher education as a whole. However, given that the public institutions are the most directly affected by government policies, we believe that an analysis of this segment of academe can shed light on the impact of the different approaches to higher education in the two countries.

12.2 Brazil and Mexico in the Latin American Context

12.2.1 Economic and Technologic Development

Latin America represents 8.3 % of the world's population and 8.2 % of world GDP (World Bank 2012), but the region's technological impact is considerably smaller. It accounts for 3 % of high technology exports (World Bank 2012) and just 0.5 % of industrial patents requests filed in the United States in 2010 (World Intellectual Property Organization [WIPO] 2010). The technological lag is apparent in the region's weak showing in the new Global Innovation Index, compiled jointly by WIPO and the France-based INSEAD business school. The study ranked 141 countries according to their innovation capabilities, defined as their overall capacity to invent new products. Of Latin American countries, only Chile ranked among the world's 50 innovation leaders, in 39th place; meanwhile, Brazil ranked 58th and Mexico 79th. The study also cited Mexico, Argentina, Ecuador and Venezuela among a group of "innovation underperformers" (WIPO/INSEAD 2012, p. 24).

In other technology indicators, Brazil is the undisputed regional leader. The South American nation invests far more than its neighbors on research and development; in 2009, it spent 1.18 % of GDP, a figure that closely trails some European countries such as Spain (1.38 % in 2009) and Italy (1.27 %), but represents half the 2.3 % average spent by members of the Organization for Economic Cooperation and Development (OECD 2011). In contrast, Mexico spent 0.39 % of GDP in 2009 (OECD 2011; RICYT 2012). Brazil also accounts for 2.41 % of the global share of scientific articles registered in the ISI Web of Knowledge, while México accounts for just 0.68 % (RICYT 2012).

Eighty years ago, Schumpeter (1942) argued that a country's rate of economic growth was dependent on its level of technological development, defined in the broader sense as its technological capacities and level of knowledge production. Today, that paradigm has become increasingly accepted among policy makers with the emergence of the so-called "knowledge societies", in which access to technology and information are viewed as the prerequisites sine qua non to development. At the same time, the economic gap between countries with strong technological capabilities and those without is growing (Persaud 2001; UNESCO 2010).

In that context, Brazil is investing much more heavily in S&T than its neighbors in hopes of widening its competitive advantage, a policy that has historic roots. The country's relatively strong and growing scientific output is the culmination of decades of government policies designed to promote economic growth through investment in S&T research, which began with the populist government of Getulio Vargas (1930–1945, 1950–1954) and continued through the military dictatorship (1964–1985), before accelerating under the democratic government of Luiz Inácio Lula da Silva (2002–2010).

Under Lula, Brazil also began to take a much more active role in international forums and to forge new pacts with economic giants such as India and China, diversifying its economy and reducing its dependence on traditional markets in the United States and Europe. In 2003, the U.S. investment firm Goldman Sachs named

Brazil, together with Russia, India and China, among the economies that would dominate international markets by 2050. At the time, the inclusion of Brazil among the elite group of BRICs (an acronym coined by Goldman Sachs using the first letter of each country) sparked skepticism, in part because the country was in the throes of chronic hyperinflationary pressures. However, after 8 years of sustained growth, Brazil surpassed Great Britain in 2011 in absolute terms as the world's sixth largest economy. Meanwhile, Mexico remained in a distant 14th place, after having held the 9th spot in 2001 (World Bank 2012). Also, by 2011, Brazil had surpassed Mexico in terms of GDP per capita—US$12,594 compared with US$10,064 in 2011—due in part to the strengthening of the Brazilian currency, the real, against the U.S. dollar (World Bank 2012).

12.2.2 One Region, Two Models

Despite similarities in the two countries, development strategies – for example, both adopted import substitution industrialization from the 1940s through the 1970s – there are key differences, which have become more pronounced in the past few decades. Such differences partly explain the variations in the two countries, growth rates since 2000.

The Brazilian model is characterized by heavy government intervention through large, state-controlled companies (Malkin and Romero 2012). The South American giant is at the head of a group of Latin American countries with similar structural characteristics: all are net exporters of commodities (whose prices have surged over the past decade due largely to the demand from China); they are working to diversify their exports to devote a smaller share to industrialized nations, giving preference to emerging nations, which have higher investment rates; and are dependent to a lesser degree on remittances from industrialized nations. Other members of this group are Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela as well as Trinidad and Tobago (DGEI/UNAM 2012).

For its part, Mexico has focused on free trade, open markets, and on deregulation of industries (Malkin and Romero 2012). It heads a group of countries that are characterized by being more dependent on industrialized nations' economies and on the remittances that their migrants send home; being net importers of commodities; exporting their goods and services mainly to developed markets; and having relatively low investment rates with respect to GDP. This group includes most of the Central American and Caribbean countries (DGEI/UNAM 2012).

On average the Brazilian model has proved more effective during the first decade of the twenty-first century, in part due to the strong demand for its commodities exports to economic giants China and India. Brazil also emerged virtually unscathed following the 2008–2009 economic crisis in the United States, with its growth rate slowing just 0.3 % in 2009, before growing a hefty 7.5 % in 2010. Mexico, meanwhile, was the Latin American country hardest hit, with the economy shrinking 6.9 % in 2009 before rebounding by 5.5 % in 2010 (International Monetary Fund 2012).

However, given the recent slowdown of the Chinese economy, it is unclear which of the two strategies will yield greater levels of economic growth over the next decade. In 2011, the Brazilian economy suffered a major drop in GDP growth, from 7.5 % to 2.7 %, while Mexico's growth rate slowed to a lesser degree, from 5 % to 4 % (IMF 2012). In one sign that the regional trade balance may be shifting, in 2011 Brazil imported more cars to Mexico than it exported to the North American country (Malkin and Romero 2012). However, the South American economy was projected to recover and grow at a faster rate between 2013 and 2018, with average growth of 4.1 %, compared with 3.4 % in Mexico (IMF 2012).

12.3 Policies in Higher Education and Science and Technology

12.3.1 The Brazilian Strategy

As mentioned in the introduction to this chapter, since the 1930s and with greater emphasis starting in the 1950s, Brazil has pursued a goal of achieving technological self-sufficiency as part of a strategy for economic development. The strategy has been characterized by strong, central state-planning designed to strengthen the S&T sector, and since the late 1960s, through efforts to create internationally competitive, U.S.-style research institutions with postgraduate studies at their core. Key landmarks in the Brazilian strategy include the creation, both in 1951, of the National Council for Technological and Scientific Development (CNPq), which is charged with promoting scientific research, and the Office for the Improvement of Higher Education Personnel (CAPES), which funds further studies for university professors and evaluates graduate programs.

In 1965, the military government created a series of government funds in order to provide long-term support for scientific research projects in Brazil. The largest of these is the National Fund for Scientific and Technological Development (FNDCT), which has become one of the major engines behind scientific research both within and outside universities in Brazil (De Negri et al. 2006). Then, in 1968, the government enacted a new higher education law that instituted sweeping reforms in response to a series of recommendations by American policy experts. The university reform law laid the foundations for a nationwide system of postgraduate studies; prescribed full-time contracts as the norm for university professors; replaced the traditional university chair system with a more modern system of faculties and departments; and substituted sequential courses with a more flexible credit system (Lei 5,540/1968 (1968); Schwartzman and Klein 1994). One of the key elements of the reform was its emphasis on scientific research, which was cited as the primary function of the university (Lei 5,540/1968 (1968, art. 1). The government also established that only institutions that conduct research and offer postgraduate programs can call themselves "universities" and that all university professors must engage in both teaching and research (Lei 5,540/1968 (1968, art. 32).

At the same time, the military government relaxed controls on private institutions of higher education, in a bid to meet mushrooming demand for college degrees among the growing middle class. The decision, which faced heavy criticism from higher education experts who worried about a decrease in quality, paved the way for the current dominance of the private sector in Brazilian higher education (Schwartzman and Klein 1994).

The 1968 reforms also served as a catalyst for the development of a modern research sector in Brazil. They included: the creation of the first large-scale research centers, primarily in the states of Sao Paulo and Rio de Janeiro; the development of long-term strategies and increased funding for the sector; a nuclear cooperation agreement with Germany; and protectionist policies for industries such as telecommunications and computers, among other changes (Schwartzman 1993). In 1985, the government created the federal Ministry of Science and Technology to coordinate the different agencies charged with fomenting S&T research, making Brazil one of the few countries in the region to have a Cabinet-level office for the sector.

Many of those changes were enshrined in the new Constitution enacted in 1988, 3 years after the return to democracy. It established the academic, financial and administrative autonomy of public universities (Schwartzman 1989), as well as setting aside a fixed percentage of taxes to go toward universities: 25 % at the municipal and state level and 18 % at the federal level (Paulo Renato 2005). In addition, it required all Brazilian states to create their own agencies to support science and technology, the most well-funded of which is the Sao Paulo State Foundation for the Support of Research, which by law receives 0.5 % of tax revenue to fund grants for graduate students and for scientific research projects (FAPESP 2012). A year later, Sao Paulo approved a new state constitution, which earmarks 9.57 % of state taxes to fund its three universities, including the country's top-ranked research institutions, the University of Sao Paulo and the State University of Campinas.

The measures came toward the end of the so-called "lost decade" in Latin America, when government spending plummeted as countries sought to respond to the debt crisis. Throughout the region, the 1980s were characterized by institutional agitation, heightened bureaucracy and budget uncertainty. However, Brazil declined to follow to the letter the austerity measures dictated by the International Monetary Fund and instead increased its spending on higher education relative to GDP, from 0.78 % in 1982 to 0.9 % in 1992 (Oro and Sebastián 1993). In contrast, Mexico slashed higher education spending from 0.79 % to 0.45 % of GDP between 1980 and 1992 (Mungaray and Valenti 1997).

In the following decade, while much of the region recovered economically, Brazil continued to battle with skyrocketing inflation, which reached a maximum of 2,000 % in 1993 (Rohter 2010). However, the 1990s were also a decade of growth for both higher education and the S&T sector. The number of Brazilian postgraduate programs nearly doubled and the number of scientific articles registered by the Institute for Scientific Information of Brazil multiplied 4.7 times to reach a record 12,686 articles in 2000 (Pinheiro-Machado and De Oliveira 2001). The

government also created the first of a series of research funds linked to specific strategic industries, such as oil, which operated under the aegis of the state-owned oil company Petrobras. The 1996 Education Law (Lei de Diretrizes e Bases (LDB) 1996) sought to strengthen the research universities by requiring full-time contracts for all staff and that one-third of their teaching staff hold graduate degrees, among other measures directed toward quality assurance. At the same time, the law also legalized for-profit[3] institutions of higher education, which now account for half of tertiary enrollments in Brazil.

The efforts to strengthen the country's research sector gained strength under President Lula, with the passage of the Innovation Law (2004) and the Good Law (2005), which created incentives for the private sector to increase its investment in research and development. Among the most ambitious of Lula's policies was the Action Plan for Science, Technology and National Development, announced in 2007, under which the government committed to increase total investment in S&T to 1.5 % of GDP by 2010 and to double the number of government grants for college students.

Also during Lula's administration, although not directly as a result of government policies, the country's public universities also began implementing affirmative action policies for public high school graduates and members of disadvantaged racial groups, in particular Afro-Brazilians, who comprise more than half the population but have suffered historic discrimination. As of 2010, at least 70 % of state universities had implemented such policies (Downey and Lloyd 2010; Lloyd 2009). In August 2012, the federal government followed suit, mandating that half the seats at federal universities be reserved for graduates of public high schools; those seats in turn will be distributed among black, mixed race and indigenous students proportionally to the racial composition of each state.

Lula's successor, President Dilma Rousseff, has expanded on his policies for the S&T sector. In 2011, she announced that her government would spend US$1.8 billion to offer 75,000 scholarships for students to pursue university degrees in the world's top universities under the Science without Borders Program. The private sector pledged to fund an additional 25,000 scholarships, which are restricted to students in the STEM fields (science, technology, engineering and mathematics). Her government has also continued to expand the federal university system, a process that begun under Lula, with particular emphasis on underserved areas of the country.

[3] While most private institutions are money-making ventures, the form in which they utilize their profits determines their legal and fiscal status in most countries. In general, not for profit institutions are legally required to reinvest their profits in the institution in exchange for receiving tax exempt status, while for-profit institutions distribute profits among shareholders or their owners, and are required to pay taxes on a share of their earnings. The enormous growth in the for-profit model of education providers in recent years has sparked controversy in many countries, with critics arguing that the market logic should not apply to education, while proponents argue that the institutions offer a low-cost and flexible alternative for students who are not accepted into the public universities (Bok 2003).

12.3.2 The Mexican Strategy

Mexico has the region's second largest S&T sector, measured in terms of the number of scientific articles and patents produced each year. However, the country lags significantly behind Brazil in both areas. Brazil had 37,000 scientific documents registered in ISI in 2009, compared with 11,000 by Mexico. Similarly, residents of Brazil made 7,242 patent requests in 2008, compared with 685 requests by Mexican residents. Still, the number of patents actually granted was quite low for both Brazil and México—529 vs. 197, respectively—due to the relatively low level of technological innovation and commercialization in both countries compared with more industrialized nations (Lloyd 2013).

Mexican S&T policies are more recent than those of Brazil and have been characterized by a lack of long-term vision and funding, a reflection of the Mexican political system in which government programs are typically designed to last a single, 6-year presidential term (Mexican presidents cannot be reelected) (Campos Ríos and Sánchez Daza 2008). Government S&T policies tend to set ambitious goals, which later go unmet, and there is little coordination among the different agencies charged with designing and carrying out government policies (Canales 2011). Mexico's National Council of Science and Technology (Conacyt) was founded in 1970, nearly two decades after its Brazilian counterpart, and received little initial government support. Even today, the agency is hamstrung by a lack of financial and administrative autonomy to carry out its wide array of tasks, which include funding a majority of research projects and scholarships for graduate students in Mexico and abroad. Conacyt also oversees the National System of Researchers (SNI), a financial stimulus program introduced in 1984 in an effort to stem the exodus of top researchers due to the debt crisis. Since then, the number of SNI members has grown from 1,396 to more than 15,000 in 2009, when members received monthly bonuses of between $400 and $1,900 (Conacyt 2011). However, while a similar program in Brazil run by the CNPq requires recipients to spend half their grant money on research, in Mexico the funding primarily serves to supplement—or as much as double—researchers' salaries.

Despite such efforts, the scientific community has long warned that the overall low level of investment in S&T in Mexico represents a major brake on the country's future economic growth (Canales 2011). While government officials have publically recognized the problem, there has been little effort to resolve it through effective, long-term policies for the sector (Canales 2011). One example is the Global Development Plan (1980–1982), which set the goal of achieving scientific and technological "self-determination" by strengthening the S&T sector. It also mandated that spending on the sector should double within 2 years, to reach 1 % of GDP. However, the timing couldn't have been worse, with the country on the verge of the biggest economic debacle in a century. Two years later, Mexico defaulted on its international loans, triggering a ripple effect throughout the region; as a result of the debt restructuring, between 1980 and 1988 investment in S&T had shrunk from 0.41 % to 0.25 % of GDP (Canales 2011).

By the early 1990s, the worst of the crisis was over, and Mexico secured a series of loans from the World Bank to support scientific research. Then, in 1995, the government again set the goal of doubling investment in the sector, as well as increasing the private share. However, by 2000, industry accounted for just 20 % of spending on S&T—compared with 40 % in Brazil—and the total share remained below 0.5 % of GDP (González-Brambila et al. 2007). In 1999, the Congress passed the first legislation governing the sector, the Law for the Promotion of Scientific and Technological Research, which called for greater coordination between higher education and industry, and well as the decentralization of S&T research away from the capital. After the 2000 election, which put an end to 71 straight years of one-party rule in Mexico, then-President Vicente Fox again vowed to make S&T a central part of his economic strategy. His government sponsored its own legislation, the Law for Science and Technology (2002), which was reformed in 2004 to impose mandatory spending on S&T, from combined public and private sources, equivalent 1 % of GDP. However, the mandate did not include penalties for non-compliance nor specify mechanisms to achieve the goal.

There are many historic reasons that help explain Mexico's lack of sustained support for science and technology; for example, the country's proximity to the United States has made it relatively cheap to import technology from abroad (Cárdenas 2010). Mexico's incorporation in the North American Free Trade Agreement and the Organization for Economic Cooperation and Development, both in 1994, has further increased the country's technological dependence with relation to the industrialized nations (Cárdenas 2010; Park 2011). Mexico is by far the largest producer of high-tech products in the region, exporting $37.6 billion in such products in 2010 compared with $8.1 billion by Brazil (World Bank 2012). However, most of those exports are assembled at foreign-owned maquiladora plants, with little resulting technology transfer to Mexican companies (Hill 2002; Sklair 1992). Mexico has also relied on its massive oil reserves to fuel development; today, profits from the state-owed oil company, Petróleos Mexicanos (Pemex) account for 40 % of the federal budget. In contrast, Brazil has had a greater incentive to develop its own technological capabilities, given its geographic isolation from the world's economic powers and its lack—until recently—of major petroleum reserves (Brainard and Martinez-Diaz 2009; Rohter 2010).

In sum, Brazilian higher education policies clearly place a higher premium on scientific research. In Mexico, the government invested far less in promoting S&T, despite laws requiring total spending in the sector to reach 1 % of GDP, and instead has focused on expanding access to the undergraduate level. Such differences, we argue in this chapter, necessarily have an impact on the academic profession in both countries.

12.4 Higher Education in Brazil and Mexico

In both Brazil and Mexico, more than half the scientific research is conducted in public universities and research centers, with a few, large research universities accounting for the lion's share of production. For example, the National Autonomous

University of Mexico produces 33 % of all articles published by Mexico-based academics in international, peer-reviewed journals, while the University of Sao Paulo accounts for 23 % of Brazil's share of articles in ISI (Lloyd 2013). However, public universities fulfill quite different roles in Brazil and Mexico; in the former, until very recently, they were bastions of the mostly white elite, while in the latter, public universities, particularly at the state level, draw from a fairly wide socioeconomic base.

Both Brazil and México have undergone massive growth in their higher education systems over the past decade. Today, Brazil has 6.5 million students in higher education (MEC/INEP 2011), while Mexico has 3.1 million (Subsecretaría de Educación Superior 2011). However, despite major gains over the past decade, the gross enrollment rate in both countries still lags behind the regional average; Brazil has 34 % enrollment and México 27 %, compared with an average of 37 % for Latin America as a whole (UNESCO 2011).

Brazilian higher education is essentially divided into two parallel systems (Schwartzman 2003): a minority public sector, which includes the country's most prestigious and competitive research universities and enrolls just 25 % of students (INEP 2011); and a minority private sector, which conducts little research and is comprised mostly of corporate, for-profit institutions. Most students at the tuition-free, public universities are still graduates of private high schools, which tend to better prepare their students for the highly competitive admissions process to the public universities. Meanwhile, the graduates of public high schools pay to attend private institutions, many of them of dubious quality (Schwartzman 2003). The socio-economic and racial composition of the public universities, however, is starting to change with the implementation of affirmative action policies over the past decade.

The public system includes 280 higher education institutions, of which roughly 100 are universities and the rest are technological institutes (MEC/INEP 2011). In general, the Sao Paulo state universities and a handful of federal universities are considered the most prestigious, and competition for limited study places is extremely fierce (Schwartzman 2003). The rest of the students attend a vast universe of more than 2,377 private institutions (MEC/INEP 2011), a majority of which are of questionable quality, with the exception of some of the Roman Catholic institutions. Roughly half the students in private institutions are enrolled in night courses and two thirds attend for-profit institutions (Schwartzman 2003; Pedrosa 2010). In fact, Brazil has one of the region's largest shares of private-sector enrollments, 73 %, compared with 46 % in the region as a whole in the mid-2000s (IESALC 2006).

The Mexican higher education system is more egalitarian, although only a small minority gains admission to the top federal universities. Despite increasing inroads by private higher education providers, 68 % of tertiary enrollments are still in the public sector, which in 2010 included a total of 740 institutions: 166 public universities, including 8 federal universities, 34 state universities, 11 intercultural universities, and 28 polytechnic colleges, as well as a vast system of technological institutes and teachers colleges (ExECUM 2011). A majority of students in the public sector are graduates of public high schools, some of which are run by the

universities themselves. The private sector includes nearly 1,500 institutions, of which about a dozen compete with the public universities for top students and prestige. Unlike in Brazil, few higher education institutions declare themselves as for-profit, but in practice, institutions that are owned by U.S. for-profit providers represent the fastest growing sector in the country's highly diverse higher education system (ExECUM 2011).

In general, the two countries have adopted markedly different strategies for expanding enrollment in higher education, which in turn have implications for their public-sector institutions. In the following section, we will analyze the possible impact of public policy on full-time, public university professors in both countries.

12.5 The CAP Survey

12.5.1 Key Theme Addressed

Our analysis of the CAP survey is divided into four parts. We begin by comparing the personal and academic profiles of full-time academics in both countries, including their gender, the share that have undergone doctoral and postdoctoral studies, and whether those degrees were earned at home or abroad. We then examine their main areas of study, research activities, and academic production in terms of the number of articles, chapters and books published over a given period. We go on to review their academic preferences, their views on the quality of their research facilities, and whether these have improved or declined since they began their academic careers. Finally, we analyze the perceived degrees of influence of different actors in the institutional context, as well as the perceptions of academics in both countries of their own influence within their departments or universities.

As mentioned in the introduction, our analysis of the CAP study involves a subset of full-time faculty at public institutions in Mexico and Brazil. We have focused our comparisons on areas in which the differences among Brazilian and Mexican academics are particularly significant. In all cases, we attempt to draw conclusions in the broader context of public policies in both countries.

12.5.2 Personal and Academic Profiles

While several of the survey questions refer to personal characteristics, such as age, length of career and gender, we found the greatest discrepancies between academics in the two countries in terms of the final category. In general, the survey showed significantly greater gender parity among full-time faculty in Brazil than in Mexico. The ratio of males to females among the Brazilian sample group was 334 (55 %) to

278 (45 %), respectively; in contrast, in Mexico there were 1,159 men (66 %) and 599 women (34 %). In both cases, the gender gap within countries widens the higher up the education ladder you go, although there was a greater proportion of female academics in Brazil at all levels. Of Brazilians with doctoral degrees, 42 % were women, compared with 29 % of Mexicans. Similarly, of those who had undergone post-doctoral fellowships, in Brazil 30 % were women and in Mexico, 26 %. Such discrepancies indicate the persistence of a "glass ceiling" in academe in both countries, particularly among those at the highest levels, although there seem to be fewer entrance barriers for Brazilian women.

While the emphasis in Brazil on post-graduate education does not explain the greater gender parity within the Brazilian system vis-à-vis Mexico, it does suggest correlations in other areas. For example, a far greater proportion of Brazilian academics reported holding PhD's (see Table 12.1): 73 % versus 31 % of Mexicans. Similarly, a greater share of Brazilians had also undergone post-doctoral fellowships: 21 % compared with 5 % in Mexico. Of those with a PhD or higher, a greater proportion of Brazilians earned their terminal degrees in their home country: 85 % of Brazilians with PhD's versus 61 % of Mexicans; and in the case of post-doctoral studies, the relationship was 42–13 %, respectively.

There were also differences in the level of support academics in both countries received while pursuing their doctoral degrees. In Brazil, 68 % of those with doctoral degrees reported receiving grants, compared with just 38 % of Mexicans (see Table 12.2).

Those results are not surprising, given the relative strength and scope of Brazilian graduate programs at the public universities, which were in turn bolstered by a shift in government policy in the 1990s. After sending thousands of graduate students abroad in the 1970s and 1980s, the government began diverting that funding to strengthen domestic graduate programs staffed by foreign-earned PhDs (Knobel 2012). In that context, Brazil's Science without Borders program represents a return to past policies, however with a new emphasis on training a generation of scholars in the STEM fields. In contrast, Mexico has gradually increased the number of scholarships for graduate studies abroad over several decades, although, when compared with the new program in Brazil, the numbers remain extremely small, with 2,799 scholarships reported in 2010 (Conacyt 2011).

Table 12.1 Distribution of survey groups by gender, highest degree earned

Country	Degree	Male	Female	n Total
Brazil	Doctoral	256 (76.3 %)	193 (69.4 %)	449 (73.4 %)
	Post Doctoral	88 (26.3 %)	38 (13.7 %)	126 (20.6 %)
Mexico	Doctoral	388 (33.5 %)	159 (26.6 %)	547 (31.1 %)
	Post Doctoral	69 (6.0 %)	24 (4.0 %)	93 (5.3 %)

Source: CAP survey
N = 344 male and 278 female academics in Brazil, 1,159 male and 599 female academics in Mexico

Table 12.2 Place of study and financial support received by academics Brazil and Mexico 2007

Country of doctoral degree		
	Brazil	Mexico
In home country	84.7 %	61.1 %
Abroad	15.3 %	38.9 %
Scholarship or fellowship (doctoral degree)		
	Brazil	Mexico
Yes	68.2 %	38.2 %
No	31.8 %	61.8 %
Country of post-doctoral degree		
	Brazil	Mexico
In home country	42.0 %	12.8 %
Abroad	58.0 %	87.2 %

Source: CAP survey

12.5.3 Areas of Study and Research Production

The CAP survey also reveals variations in the distribution of academics among different fields, which in turn have repercussions in terms of the number of scientific articles produced in both countries. In Mexico, one-fifth (20 %) of academics surveyed earned their highest degree in the combined fields of architecture, engineering, manufacturing and construction, areas that have little presence in ISI. In contrast, in Brazil the highest concentration of academics (18 %) hold degrees in the combined fields of medical sciences, health and related sciences, and social services, followed by 14 % with degrees in physical sciences, math and computer science—fields which are disproportionately represented in the scholarly journals indexed in ISI. In Mexico, the second largest concentration of academics (13 %) is found in the fields of business administration and economics, and in the physical sciences, math and computer science (see Fig. 12.1).

Those differences may be partly explained by the strong tradition of professional education in Mexico. For example, Mexico has the highest number of engineering graduates of any country in Latin America—52,000 per year in 2008 (National Science Foundation 2012)—in what is typically an undergraduate major. In addition, the proportion of engineering students in Mexico (20 %) is twice that of Brazil, Argentina and the United States, according to World Bank figures (2012). That tendency is on the rise, with the massive growth over the past two decades of government technological institutes, which now comprises 25 % of total enrollment in higher education in Mexico (Rodríguez 2012).

In contrast, in Brazil, the dominant fields are medical and physical sciences, both of which have a strong presence at the post-graduate level. However, while that distribution may favor production of scientific articles, the shortage of engineering graduates in Brazil is often cited as a key obstacle to economic development. A recent study by the Relações do Trabalho, a Brazilian network of experts on labor relations, found that the country only graduates 33,000 engineers each year, one-third of the 90,000 it needs to meet demand in expanding sectors such as the oil

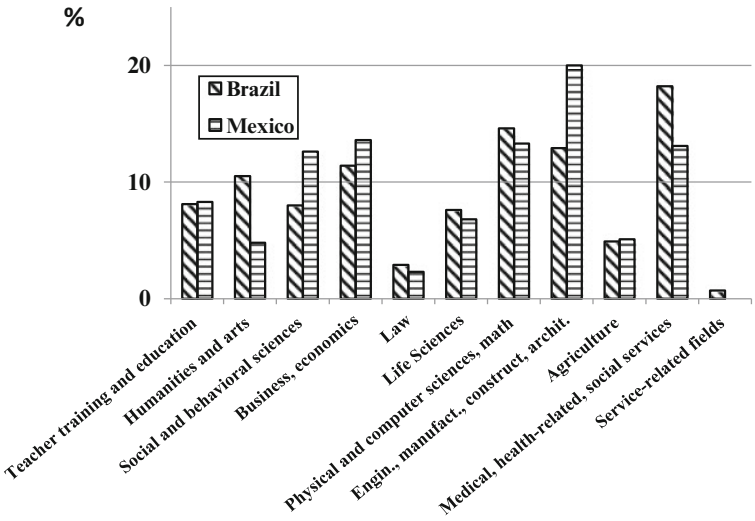

Fig. 12.1 Highest degree of academics in Brazil and Mexico 2007 by field of the highest degree (*Source*: CAP survey)

industry (Boas 2011). The Brazilian government is hoping that Science without Borders Program will vastly increase the number of highly skilled graduates in STEM fields, and boost the number of engineers in particular. However, it has so far had difficulty finding enough students proficient in English and other foreign languages to take advantage of all the available scholarships (Knobel 2012).

The different concentration among scholarly fields is also reflected in the professional activities of academics in both countries. In general, Brazilian academics spend more time on research and produce more in terms of scholarly publications and papers. For example, when asked about their academic contributions over the previous 2 years, the Brazilians delivered an average of 6.5 presentations in academic congresses, compared with 4.0 by their Mexican colleagues; produced 1.7 research reports on a funded study, compared with 0.7; published 5.3 articles in a book or journal, compared with 3.2; edited or coedited 0.28 books, versus 0.26; and authored or coauthored 0.6 scholarly books, compared with 0.47 by their Mexican counterparts. In sum, the only case in which Mexican academics reported marginally greater production was in academic book editing.

The Brazilians were also more likely than their Mexican colleagues to have conducted research activities during the previous year. Fifty-eight percent of Brazilians reported preparing experiments and research, compared with 49 % of Mexicans; 46 % supervised a postgraduate research team, versus 36.5 %; 58 % conducted their own experiments or research, against 50 %; and 92 % of the Brazilians reported writing academic articles that contained the results of their research, compared with 70 % of their Mexican colleagues.

When questioned about a broader range of academic activities during the current year, there were also significant differences between the two groups. For instance,

the largest share of Mexicans (64 %) reported serving as a member of a national or international committee, compared to 42 % of Brazilians. In contrast, the most widely cited activity by Brazilians (68 %) was serving as a peer-reviewer for scholarly journals, research foundations or institutional evaluations, while just 35 % of the Mexicans surveyed reported participating in the peer-review process. In addition, 25 % of Brazilians reported serving as a book editor, compared with 14 % of the Mexicans. However, a similar proportion of both groups (about one-fourth) reported serving as elected officials or leaders of professional or academic organizations, as members of community organizations or having participated in community projects.

12.5.4 Views Toward Research and Work Environment

Perhaps not surprisingly, given the different ways Brazilian and Mexican academics spend their time, they express variations in preferences in terms of research and teaching, and regarding their work environment in general. Asked where their primary interests lay, Brazilians expressed a stronger preference for research than their Mexican counterparts, although they also tended to see the two activities as complementary – a likely reflection of the indivisibility of both activities within Brazilian universities. For example, 6.6 % of Brazilians said they were primarily interested in research and 50.6 % said they were leaning toward research, for a combined 57 % preference for research, compared with 44 % who expressed preferences for teaching. In contrast, 7.2 % of Mexicans said their main interest was research and 38 % said they were leaning toward research (a total of 43.5 %), compared with 56.5 % who preferred teaching. Of particular relevance given the professionalizing nature of Mexican higher education, 18.8 % of Mexican academics said they were primarily interested in teaching, compared with just 5.4 % of Brazilians. In fact, judging by the previous description of their professional activities, teaching may likely be the sole activity of many of the Mexican academics surveyed.

Nonetheless, despite the divisions between teaching and research within Mexican universities, in both Mexico and Brazil, a majority of academics disagreed with the affirmation that "teaching and research are not compatible"; their responses averaged 4.2 on an inverted Likert scale of 1–5, in which 5 equaled "strongly disagree". Brazilians were even more in disagreement, averaging 4.5 on the scale. Such converging views may reveal more about socially constructed ideals of the academic profession than about the actual daily practice, particularly in the case of Mexico, where a significant share of academics surveyed conduct little or no research.

When asked about the day-to-day realities of their profession, however, the two groups expressed more divergent views. For example, Brazilians were slightly more critical of their profession, with a larger – if still minority – share saying that it was a poor time to start a career in academe (3.9 on average, compared with 4.2 for Mexicans, on a scale where 5 means "strongly disagree"), and that if given the chance, they would not have chosen to be an academic (4.0 versus 4.5). Brazilians

on average were more likely to see their job as a source of "considerable personal strain" (3.2 compared with 3.5 for Mexicans)—a sentiment reflected by the 143,000 Brazilian professors and other federal university employees who went on strike for weeks starting in May 2012 to demand higher pay and better working conditions. The strikers were protesting the increase in student-teacher ratios and classroom crowding in what was once an elite sector, following a decade of government efforts to increase enrollment (Downey 2012; Micheloni et al. 2012).

For their part, a majority of Mexican academics say that faculty within their discipline have a "professional obligation to apply their knowledge to resolving problems in society" (1.8 compared with a score of 2.4 among Brazilians), a likely reflection of the stronger emphasis placed on social responsibility within Mexican universities. Mexicans were in general more satisfied with their jobs (1.8 vs. 2.2)—perhaps because they feel less stress. They were also more likely to agree that research funding should be directed toward the most productive researchers (2.5 vs. 3.1). The latter view could simply reflect the status quo in Mexico under the Conacyt stimulus program, the SNI, which awards significantly larger bonuses to its top-ranked scientists than the program operated by its Brazilian counterpart, the CNPq.

When asked about their specific work environments, however, Brazilian academics were more positive—or rather, less negative—than their Mexican counterparts in evaluating all of the following areas: research funding (3.5 vs. 3.9); support staff for research (3.5 vs. 3.8); laboratories (2.8 vs. 3); and research equipment and instruments (2.95 vs. 3.3). Overall, both groups rated those areas at average or below average, with Mexican respondents giving particularly scathing criticism of the amount of available research funding. When it came to evaluating their overall working conditions, however, the results were the opposite: nearly half (45.9 %) of Mexican academics saw improvements in both higher education as a whole and within research institutes (46.6 %), compared with 36.9 % and 34.9 % for Brazilians, respectively. That disparity may reflect the fact that public universities in Brazil received greater government investment than their Mexican counterparts starting in the 1960s, and have recently begun facing shortages due to expansion in enrollment. Alternatively, the respondents may simply be reflecting different cultural perceptions of the ideal work environment.

12.5.5 Who Wields the Power?

A final area of comparison is the degree to which academics in both countries see themselves as influential actors within their institutions or departments. That is, who really wields the power? In general, Brazilian academics view themselves as more influential than their Mexican counterparts and their institutions as a whole as wielding more autonomy vis-à-vis the government (see Fig. 12.2). However, in both cases, the degree of influence is directly proportional to the size of the sphere of influence. For example, 80 % of Brazilian academics consider themselves

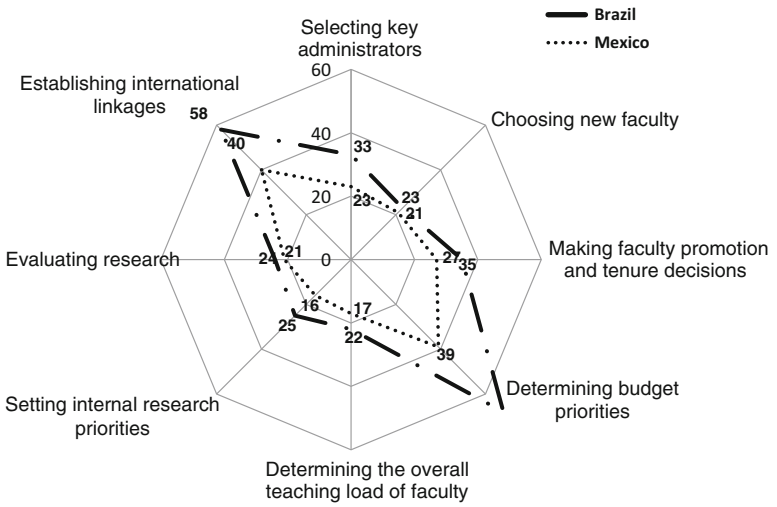

Fig. 12.2 Perceived primary influence by Government or external stakeholders – academics in Brazil and Mexico 2007 (percentage) (*Source*: CAP survey)

somewhat or very influential within their department or similar academic unit, 56 % within their academic body, school or similar unit; and 31 % at an institutional level. In comparison, among Mexicans the share who considers themselves influential is 66 %, 49 % and 26 %, respectively.

There were also notable differences in views regarding which actors exert the most influence over decisions affecting their institutions (see Fig. 12.3). Mexicans perceived a much greater government or external influence; 59 % said that external actors exerted the primary influence in terms of personnel selection; 40 % saw external actors as critical in establishing international ties; and 39 % cited these actors as key in determining budget priorities, on a par with institutional managers. In contrast, Brazilians viewed institutional managers as exerting by far the greatest influence over those and other decisions; 68 % saw them as the key agents in determining budget priorities and 58 % cited their role in establishing international ties.

Such perceptions suggest that Brazilian academics feel a greater sense of institutional autonomy than their Mexican counterparts. This could be a result of "the university reform of 1968 and the 1988 federal Constitution, both of which sought to remake Brazilian higher education largely in the U.S. model. In Mexico, where academic autonomy has long been a buzz word on campus, and many universities carry the word "autonomous" in their names, in practice the government continues to wield significant power over the day-to-day operations of the institutions, particularly in the case of state-run universities. However, in both cases, a small minority of academics feel that they wield influence over their institutions as a whole.

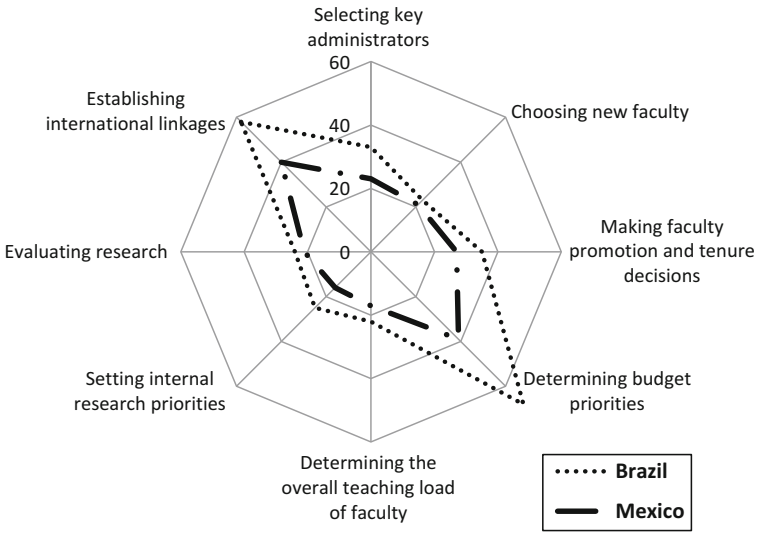

Fig. 12.3 Perceive primary influence by managers – academics view in Brazil and Mexico 2007 (percentage)

12.6 Conclusions

While it would be irresponsible to draw sweeping conclusions from a limited subset of academics in Mexico and Brazil, the results of the CAP survey suggest certain patterns that are worthy of further study. This is particularly true given the growing influence of both countries in the global economy (Mexico forms part of the expanded BRIMC group of future economic powers), a paradigm in which higher education systems play a key role. Brazil is betting on its relatively strong and growing support for S&T research to improve its competitive advantage in the knowledge economy, although it faces challenges in transforming that research into a catalyst for development. In Mexico, in contrast, the government has prioritized opening its markets ahead of developing a domestic knowledge base, a strategy that is reflected in the overwhelming foreign ownership of patents and other indicators of innovation.

Such policy choices are reflected in many of the responses to the CAP survey, in particular in areas related to academic research. While full-time academics at public universities produce the majority of scientific research in both countries, most, if not all, Brazilians surveyed are involved in those endeavors, while in Mexico a sizeable share of academics conducts little or no research. Brazilians are also more prepared to carry out research, with nearly twice the percentage holding PhDs and four times as many having undergone postdoctoral research. That gap is particularly pronounced between men and women in both countries, with just 9 % of Mexican

female academics holding PhDs, compared to 32 % of the Brazilians. In addition, twice as many Brazilians received financial support while undergoing their studies, and in general, they have a more positive view of their research facilities. Not surprisingly, Brazilians are both more likely to prefer research and to conduct it, producing a significantly greater share of articles, chapters and books than their Mexican counterparts. They are also more likely to feel empowered within their work environment, and to view their institutions as more autonomous from the government and other external actors.

Despite those seeming advantages, however, Brazilian academics are on the whole less satisfied than their Mexican counterparts with their overall work environment. The Mexicans report feeling less stressed; nearly half believe that the work conditions at their institutions and research centers are improving and a third see no change, while a small minority holds a more pessimistic view. Mexican academics are also more likely to view their work as having a social imperative—both in terms of teaching and in research. Even as they tend to prefer teaching over research, they support rewarding the most productive researchers and a majority sees the two activities as compatible.

Those differences mask many similarities among full-time academics in the two countries. Both groups enjoy a privileged status compared with a majority of their peers, either with those in the private sector (in the case of Brazil) or with part-time professors in the public sector (in Mexico). In both those cases, the professors are typically paid by the class, lack basic job benefits such as health care and pension plans, and have little or no time for research. Nor are they eligible for government stimulus programs for researchers or full-time professors, which, particularly in Mexico, can more than double their salary.

Such a diverse academic workplace is common throughout the developing world, and even within heterogeneous systems such as that of the United States. However, in both Brazil and Mexico, enrollment in higher education remains low, even by regional standards, meaning that the current competition for resources between teaching and research will likely become even more extreme. How the two countries address the challenge may have lasting repercussions, not only for their higher education systems, but for their future role in the knowledge economy.

References

ARWU. (2012). *Academic Ranking of World Universities – 2012*. Shanghai, China: Center for World-Class Universities/Shanghai Jiao Tong University. http://www.shanghairanking.com/ARWU2012.html. Accessed 1 Oct 2012.

Boas, M. V. (2011). Brazil goes to college but chooses wrong major: The ticker. *Bloomberg*. http://www.bloomberg.com/news/2011-11-08/brazil-goes-to-college-but-chooses-wrong-major-the-ticker.html. Accessed 20 Mar 2013.

Brainard, L., & Martínez-Díaz, L. (2009). Brazil: The "B" belongs to BRICs. In L. Brainard & L. Martínez-Díaz (Eds.), *Brazil as an economic superpower: Understanding Brazil's changing role in the global economy* (pp. 1–13). Washington, DC: The Brookings Institution.

Campos Ríos, G., & Sánchez Daza, G. (2008). El desarrollo de la ciencia y la tecnología en el ámbito regional. *Tecsistecatl*, 3. http://www.eumed.net/rev/tecsistecatl/n3/crsd.htm. Accessed 20 Mar 2013.

Canales Sánchez, A. (2011). *La política científica y tecnológica en México: El impulso contingente en el periodo 1982–2006*. Mexico City: Miguel Ángel Porrúa/SES-ISSUE.

Cárdenas Sánchez, E. (2010). *Para entender la economía: México en su bicentenario*. Mexico City: Nostra Ediciones.

Consejo Nacional de Desarrollo Científico y Tecnológico [Conacyt]. (2011). http://www.cnpq.br/estatisticas/bolsas/modalidade.htm. Accessed 23 Mar 2011.

De Negri, J. A., Lemos, M. B., & De Negri, F. (2006). *The impact of university enterprise incentive program on the performance and technological efforts of Brazilian industrial firms*. Washington, DC: Inter-American Development Bank. http://idbdocs.iadb.org/WSDocs/getdocument.aspx?docnum=907638&Cache=True. Accessed 30 Mar 2013.

DGEI/UNAM. (2012). *La complejidad del logro académico: Estudio comparativo sobre la Universidad Nacional Autónoma de México y la Universidad de Sao Paulo*. Report prepared for the Rector of the UNAM. Mexico City: Dirección General de Evaluación Institucional/UNAM.

Downey, A. (2012). Brazil: Mushrooming strikes put Dilma to the test. *The Christian Science Monitor*. http://www.csmonitor.com/World/Americas/2012/0822/Brazil-Mushrooming-strikes-put-Dilma-to-the-test. Accessed 25 Sept 2012.

Downey, A., & Lloyd, M. (2010). At Brazil's universities, affirmative action faces crucial tests. *The Chronicle of Higher Education*. http://chronicle.com/article/At-Brazils-Universities/123720/. Accessed 25 Sept 2012.

Explorador del Estudio Comparativo de Universidades Mexicanas [ExECUM]. (2011). *Dirección General de Evaluación Institucional de la UNAM*. http://www.ecum.unam.mx/. Accessed Sept 2012.

Fundação de Amparo à Pesquisa do Estado de São Paulo [FAPESP]. (2012). www.fapesp.br. Accessed Sept 2012.

González-Brambila, C., Lever, J., & Veloso, F. (2007). Mexico's innovation cha-cha. *Issues in Science and Technology*. http://www.issues.org/24.1/gonzalez-brambila.html. Accessed 20 Mar 2013.

Hill, D. (2002). Latin America: High-tech manufacturing on the rise, but outpaced by East Asia. *Infobrief*. Washington, DC: National Science Foundation (NSF). http://www.nsf.gov/statistics/infbrief/nsf02331/nsf02331.pdf. Accessed 6 Sept 2012.

Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira [INEP]. (2011, octubre). *Censo da Educação Superior 2010*. portal.mec.gov.br/index.php?option=com_docmanytask=doc_downloadygid=9332yItemid. Accessed 18 Oct 2012.

International Institute for Higher Education in Latin America and the Caribbean [IESALC]. (2006). *Informe sobre la educación superior en América Latina y el Caribe. 2000-2005. La metamorfosis de la educación superior*. Caracas: IESALC. http://www.redetis.org.ar/media/document/iesalc.pdf. Accessed 15 Sept 2012.

International Monetary Fund (IMF). (2012). World economic and financial surveys. World Economic Outlook Database. http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/index.aspx. Accessed 15 Oct 2012.

Knobel, M. (2012). *Affirmative action in Brazil and other challenges for higher education in a rapidly growing economy*. Presentation delivered at the Center for International Higher Education, Boston College.

Lei de Diretrizes e Bases da Educação Nacional. (1996). Brasilia, Brasil. http://portal.mec.gov.br/seesp/arquivos/pdf/lei9394_ldbn2.pdf. Accessed 15 Oct 2012.

Lei 5,540/1968. (1968). http://www.soleis.com.br/L5540.htm. Accessed 15 Oct 2012.

Lloyd, M. (2009). Affirmative action, Brazilian-style. *The Chronicle of Higher Education*. http://chronicle.com/article/Affirmative-Action/48734/. Accessed 15 Oct 2012.

Lloyd, M. (2013). *Las políticas de fomento a la educación superior y la ciencia y tecnología en México y Brasil: un estudio de caso de la Universidad Nacional Autónoma de México y la*

Universidad de Sao Paulo. Master's thesis in Latin American Studies, National Autonomous University of Mexico. http://132.248.9.195/ptd2013/febrero/510451136/Index.html

Lloyd, M. W., Ordorika Sacristán, I., & Rodríguez-Gómez Guerra, R. (2012). *Los rankings internacionales de universidades: su impacto, metodología y evolución*. Cuadernos de Trabajo de la Dirección General de Evaluación Institucional, 7 (2). Mexico City: UNAM.

Malkin, E., & Romero, S. (2012). World leaders meet in a Mexico now giving Brazil a run for its money. *The New York Times*. http://www.nytimes.com/2012/06/18/world/americas/group-of-20-meets-in-a-mexico-outperforming-brazil.html?_r=1. Accessed 12 Oct 2012.

Micheloni, M., Logato, C., & Koehl, (2012). *Brazilian federal university professors on strike. Council on hemispheric affairs*. Blog post. http://www.coha.org/brazilian-federal-university-professors-on-strike/. Accessed 20 Mar 2013.

Ministerio da Educação/Instituto Nacional de Estudos e Pesquisas Educacionais (MEC/INEP). (2011). *Censo de educação superior 2010*. Brasilia: MEC/INEP. http://portal.inep.gov.br/superior-censosuperior. Accessed 20 Mar 2013.

Mungaray Lagarda, A., & Valenti Nigrini, G (coords.) (1997). *Políticas públicas y educación superior*. ANUIES. http://www.anuies.mx/servicios/d_estrategicos/libros/lib5/000.htm. Accessed 20 Sept 2012.

National Science Foundation. (2012). Science and engineering indicators 2012 (Appendix table 2-33). http://www.nsf.gov/statistics/seind12/appendix.htm. Accessed in Oct 2012.

Ordorika, I., & Pusser, B. (2007). La máxima casa de estudios: Universidad Nacional Autónoma de México as a state-building university. In P. G. Altbach & J. Balán (Eds.), *World class worldwide: Transforming research universities in Asia and America* (pp. 189–215). Baltimore: Johns Hopkins University Press.

Ordorika, I., & Rodríguez Gómez, R. (2010). El ranking Times en el mercado del prestigio académico. *Perfiles Educativos, 32*(129), 8–29.

Ordorika, Sacristán, I., Rodríguez Gómez, R., Alcántara Santuario, A., Canales Sánchez, A., López Martínez, P., Lozano Espinosa, F. J., et al. (2008). *Comentarios al Academic Ranking of World Universities 2008*. Cuadernos de Trabajo, 1. Mexico City: UNAM-DGEI. http://www.dgei.unam.mx/arwu.pdf. Accessed 15 Sept 2012.

Organisation for Economic Cooperation and Development [OECD]. (2011/2012). http://stats.oecd.org/. Accessed Sept 2012.

Oro, L. A., & Sebastián, J. (Eds.). (1993). *Los sistemas de ciencia y tecnología en Iberoamérica*. Buenos Aires: Fundesco/Eudeba.

Park, W. G. (2011). Technology trade and NAFTA. In A. Tavidze (Ed.), *Progress in economics research* (Vol. 25, pp. 51–90). Canada: Nova Scotia Publishers Inc.

Paulo Renato Souza Consultores, Tendências Consultoria Integrada & Núcleo de Estudos de Políticas Públicas da Universidade Estadual de Campinas. (2005). *Sector study for education in Brazil: Summary*. http://www.jica.go.jp/activities/schemes/finance_co/approach/pdf/brazil.pdf. Accessed 20 Aug 2012.

Pedrosa, R. H. L. (2010). *Master planning in Brazilian higher education: Expanding the 3-year public college system in the state of Sao Paulo*. Berkeley: Center for Studies in Higher Education, University of California, Berkeley. http://cshe.berkeley.edu/publications/docs/ROPS.Pedrosa3YearHEBrazil.7.15.10.pdf. Accessed 20 Mar 2013.

Persaud, A. (2001). The knowledge gap. *Foreign Affairs*. http://www.foreignaffairs.com/articles/56855/avinash-persaud/the-knowledge-gap. Accessed 15 Sept 2012.

Pinheiro-Machado, R., & De Oliveira, P. L. (2001). The Brazilian investment in science and technology. *Brazilian Journal of Medical and Biological Research*, *34*, 1521–1530. Accessed October 18, 2012 in: http://www.scielo.br/pdf/bjmbr/v34n12/4270.pdf

Red de Indicadores de Ciencia y Tecnología (RICYT). (2012). http://www.ricyt.org/index.php?option=com_content&view=article&id=149&Itemid=3. Accessed Sept 2012.

Rodríguez Gómez, R. (2012). Ingeniería, ¿área profesional saturada? (primera parte). *Campus Milenio*. http://www.campusmilenio.com.mx/index.php?option=com_content&view=article&

id=2511:ingenieria-iarea-profesional-saturada-primera-parte&catid=39:opinion&Itemid=142. Accessed 18 Sept 2012.

Rohter, L. (2010). *Brazil on the rise: The story of a country transformed*. New York: Palgrave Macmillan.

Schumpeter, J. A. (1942). *Capitalism, socialism and democracy*. New York: Harper & Brothers.

Schwartzman, S. (1989). *The University of Sao Paulo – An overview*. Paper published online. http://www.schwartzman.org.br/simon/pdf/usp.pdf. Accessed 25 Sept 2012.

Schwartzman, S. (1993). Políticas de educación superior en América Latina: el contexto. In H. Courard (Ed.), *Políticas comparadas de educación superior en América Latina* (pp. 21–44). Santiago de Chile: FLACSO.

Schwartzman, S. (2003). *Universities and the Transformation of Society in Brazil*. Paper prepared for the research project on The Role of Universities in the Transformation of Societies. London: Centre for Higher Education Research and Information (CHERI)/and The Association of Commonwealth Universities (ACU). http://www.schwartzman.org.br/simon/pdf/transformation.pdf. Accessed 5 Oct 2012.

Schwartzman, S., & Klein, L. (1994). Higher education and government in Brazil. In G. Neave & F. A. van Vught (Eds.), *Government and higher education relationships across three continents: The winds of change* (pp. 210–224). London: Pergamon Press/International Association of Universities.

Sklair, L. (1992). The maquilas in Mexico: A global perspective. *Bulletin of Latin American Research*, *11*(1), 91–107. http://www.public.asu.edu/~idcmt/MaquilasinMexico.pdf. Accessed 10 Oct 2012.

Slaughter, S., & Rhoades, G. (2009). *Academic capitalism and the new economy: Markets, state, and higher education*. Baltimore: Johns Hopkins University Press.

Subsecretaría de Educación Superior (SES). (2011). Mexico. http://www.ses.sep.gob.mx/index.jsp. Accessed Sept 2012

UNESCO. (2010). La educación en peligro: El impacto de la crisis financiera. In *Informe de seguimiento de educación para todos en el mundo 2010* (pp. 19–41). http://www.unesco.org/new/es/education/themes/leading-the-international-agenda/efareport/. Consulted on 18 Oct 2012.

UNESCO. (2011). *Una crisis encubierta: conflictos armados y educación*. http://unesdoc.unesco.org/images/0019/001921/192155s.pdf. Accessed 25 Sept 2012.

WIPO/INSEAD. (2012). *Global Innovation Index. Stronger innovation linkages for global growth.* Geneva: World Intellectual Property Organization/ISEAD. http://www.globalinnovationindex.org/gii/main/fullreport/index.html. Accessed 5 Oct 2012.

World Bank (2012). http://data.worldbank.org/. Accessed Sept 2012.

World Intellectual Property Organization (WIPO). (2010). *PCT: The international patent system yearly review*. Geneva: WIPO. http://www.wipo.int/pct/en/activity/pct_2010.pdf. Accessed Sept 2012.

Chapter 13
The Transformation of the Production and Circulation of Knowledge and the Pedagogic Synergy: A Research Study on Three Argentine Universities

Graciela C. Riquelme

13.1 Universities and Their Functions: From Theories and Approaches on University Economic Demarcation and Autonomy Constraints

13.1.1 Recent Trends in Argentina

A core issue of the research studies carried out by the Education, Economy and Work Programme (Programa Educación, Economía y Trabajo – PEET), that I have headed over the past 30 years, is the relationship between higher education, the productive structure and the job market. Back in 1995, a small institution in the northern part of Argentina – the National University of Misiones (Universidad Nacional de Misiones – UNaM) – requested for the search of alternative institutional assessment processes through the interpretation of the role of universities faced with social and productive demands. As UNaM is close to the national borders with Paraguay and Brazil (MERCOSUR), the significance of such a request rested in the possible impact it may bring about on local development as well as its potential in terms of local and sub-regional intervention.

The perspective of the project was also unconventional, as it intended to move over from the more economical approaches present at the university reforms of the previous decades and/or the traditional professional training demand forecast. Hence it strove to become a research-action process, involving all social actors. A concept key to such methodological strategy was therefore to understand demand

G.C. Riquelme (✉)
PEET-IICE (Programa Educación, Economía y Trabajo - Instituto de Investigaciones en Ciencias de la Educación), Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Universidad de Buenos Aires (UBA), Facultad de Filosofía y Letras, Puan 480 4to piso oficina 2, Ciudad Autónoma de Buenos Aires, Argentina
e-mail: griquelm@filo.uba.ar

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_13

as a collective social construction of the requirements posed to social and productive policies, specially taking into account the role played by UNaM in MERCOSUR.

Our project stated that the available diagnosis on the social and productive scenario would allow the members of the academic community to build on alternative scenarios to link the demand of technical staff trained in higher education with different fields on social and productive life both local and regional. Through a variety of research-action strategies, our proposal delivered the instruments to interpret demands on university and its possibilities to respond to them, therefore contributing to a joint construction of requirements derived from social and productive policies and intended to serve as basis for change and updates on the curriculum.

The economic transformations that Argentina has gone through over the past twentyfive years have deeply impacted the common sense on universities and therefore the functions they should fulfil. These changes are in turn reflected in new policies. Hence it may be of interest to briefly review Argentina's Higher Education and Technology Transfer laws as they have seriously affected the working logic of all public universities in our country. One of the most remarkable changes lies on the importance entailed on the transfer of knowledge (technology) from the scientific field to the general public (and more specifically, companies).

The paradox behind the educational processes and regulations resulting from the 1990s policies reflect on the Higher Education Law, passed in July 1995, which has since been highly criticized while several reforms have also been attempted. To sum up, its most conflicting effects were:

- the encouragement for the search of alternative financing resources through service sale, entailing a market logic into an environment which should be purely academic;
- an autonomy decrease, as the Ministry of Education preserved its authority in establishing those contents that could be of "social interest";
- the promotion of private universities through certain privileges previously exclusive of public universities, such as research support through public funding and tax and national social security exemptions;
- an autonomy decrease affecting funding as the resources are partially assigned through external auditing processes (every six years, the teaching, research, extension and institutional management functions are assessed by CONEAU, a "quality assessment bureaucracy", which addresses the universities' academic and institutional organization in specific directions);
- international cooperation agencies curriculum assessment and funding also entails competence between universities through efficiency parameters (e.g. Programa de Incentivos de Docentes e Investigaciones Universitarias),
- the lack of regulations to support research as a priority amongst university functions,
- autarchy decrease, as the National Treasury manages national universities budgets according to "efficiency and equity" parameters, always dependent of the political power (Table 13.1).

We would hitherto like to introduce some key figures related to the main trends in Argentina's higher education as general background. Analyzing higher education

Table 13.1 University students in Argentina. 2000, 2003, 2007 and 2010, absolute figures and percentages

Disciplinary area	2000		2003		2007		2010	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
Total	1,338,981	100.0	1,489,142	100.0	1,567,519	100.0	1,718,507	100.0
Applied sciences	320,505	23.9	349,315	23.5	375,671	24.0	421,435	24.5
Basic sciences	37,118	2.8	45,026	3.0	44,501	2.8	55,869	3.3
Health sciences	173,658	13.0	193,843	13.0	211,770	13.5	227,720	13.3
Human sciences	195,356	14.6	240,587	16.2	254,197	16.2	288,114	16.8
Social sciences	612,344	45.7	660,371	44.3	681,380	43.5	719,390	41.9

Source: Based on SPU 1999–2000/1999–2003/2000–2004/2007 and 2010 Yearbooks on University Statistics. University Policy Secretary (SPU_Secretaría de Políticas Universitarias), Ministry of Education, Science and Technology

in Argentina from the fields of knowledge, a high concentration in social sciences may be observed (45.7 % in 2000) with a mild decrease in the recent decade (41.9 % in 2010), coinciding with stronger support to basic and applied sciences from the science and technology sector, which have increased 26.7–27.8 % (see Table 13.1).

Further analysis of such trends can be made by taking the year 2000 as a basis for verifying the increase of basic and applied sciences and human sciences as well.

Our choice of the universities analysed was made by taking into account their institutional size, their history and academic traditions. Table 13.2 may help to understand Argentine universities as per their size and it may also serve to clarify the specific positioning of the chosen universities.

Argentina's complex university system lived through two expansion waves: the first one over the 1970s and the second one during the 1990s, which diversified institutions by creating new public universities and acknowledging new private ones. We have sorted the state universities according to size in Table 13.2. Actually recently created universities range from 2,000 to 2,600 students.

Even though these alignments were introduced throughout the university system, provincial universities – and specially those smaller in size and tradition – were the most affected. This article highlights the deep effects in one of the universities involved mainly in their definitions of transfer, linking, extension and research. According to the former UNaM headmaster a withdrawal occurred from basic research and classical extension activities to others more related to the productive sector.

Both new ideas and policies are clearly expressed in the boom of the Misiones Technological Park (Parque Tecnológico Misiones PTMi). It's main goal lies on the transfer of knowledge and its launch coincides with university's turn to transfer activities which may be closely related to the productive sector, especially to companies.

Table 13.2 Undergraduate and graduate university students in Argentina. National universities by sizes. 1998, 2004 and 2010 (absolute figures and percentages)

	1998[b]		2004		2010	
National universities	Absolute	%	Absolute	%	Absolute	%
Main totals	945,790	100.0	1,273,156	100.0	1,316,119	100.0
Group 1						
Buenos Aires	226,073	23.9	336,947	26.5	305,066	23.2
Group 2						
Córdoba	104,471	11.0	114,012	9.0	105,279	8.0
La Plata	82,926	8.8	91,135	7.2	107,090	8.1
Group 3						
Rosario	65,995	7.0	75,380	5.9	73,109	5.6
Tecnológica Nacional	64,775	6.8	57,654	4.5	82,468	6.3
Nordeste	48,239	5.1	54,445	4.3	49,993	3.8
Tucumán	43,601	4.6	63,291	5.0	61,855	4.7
Group 4						
Lomas de Zamora	28,765	3.0	35,881	2.8	36,285	2.8
Litoral	20,854	2.2	32,924	2.6	40,834	3.1
Comahue	17,740	1.9	27,342	2.1	27,259	2.1
Mar del Plata	20,247	2.1	27,063	2.1	23,218	1.8
Cuyo	22,357	2.4	31,527	2.5	30,996	2.4
Group 5						
Sur	16,529	1.7	24,545	1.9	20,181	1.5
Salta	15,984	1.7	22,840	1.8	25,002	1.9
La Matanza	14,303	1.5	19,368	1.5	33,607	2.6
Misiones	10,697	1.1	24,880	2.0	21,340	1.6
Luján	14,277	1.5	18,803	1.5	16,717	1.3
Group 6						
Río Cuarto	12,898	1.4	20,244	1.6	15,898	1.2
San Luis	13,357	1.4	13,893	1.1	12,719	1.0
San Juan	12,978	1.4	21,110	1.7	17,892	1.4
Group 7						
Patagonia San Juan Bosco	10,151	1.1	15,952	1.3	13,451	1.0
Entre Ríos	9,580	1.0	13,204	1.0	12,910	1.0
La Rioja	8,864	0.9	16,519	1.3	26,520	2.0
Jujuy	7,754	0.8	12,417	1.0	13,444	1.0
Catamarca	8,557	0.9	14,067	1.1	12,294	0.9
Santiago del Estero	10,211	1.1	11,659	0.9	15,418	1.2
Group 8						
Centro de la Prov. de Bs. As.	7,840	0.8	10,427	0.8	13,591	1.0
La Pampa	6,661	0,7	9,804	0.8	9,216	0.7
Quilmes	3,411	0.4	10,539	0.8	15,075	1.1

(continued)

Table 13.2 (continued)

	1998[b]		2004		2010	
National universities	Absolute	%	Absolute	%	Absolute	%
Formosa	5,970	0.6	11,937	0.9	11,862	0.9
Patagonia Austral	3,738	0.4	6,940	0.5	7,213	0.5
Gral. San Martín	2,612	0.3	7,942	0.6	12,012	0.9
Lanús	1,137	0.1	7,079	0.6	10,990	0.8
Tres de Febrero	750	0.1	4,723	0.4	10,317	0.8
Villa María	867	0.1	2,427	0.2	4,067	0.3
Gral Sarmiento	621	0.1	3,468[c]	0.3	5,315	0.4
Group 9	–	–				
Chilecito[a]	–	–	768	0.1	4,303	0.3
Noroeste de la PBA	–	–	–	–	5,672	0.4
Río Negro	–	–	–	–	2,948	0.2
Chaco Austral	–	–	–	–	2,693	0.2

Source: Based on SPU 1998/2000–2004 and 2010 yearbooks on University Statistics. University Policy Secretary (PU_Secretaría de Políticas Universitarias), Ministry of Education, Science and Technology

[a]The National University of Chilecito split up in 2004 from the National University of La Rioja

[b]Catamarca, Jujuy, La Rioja and Misiones data corresponds to 1997

[c]Absolute figures do not include the admittance course (Ciclo de Aprestamiento Universitario)

The regulations at the National University of Mar del Plata (UNMdP) specifically point out that research activities must serve as "background for the production of knowledge" closely related to "the country's main problems". UNMdP academic and research activities are hence more focused on social problems than UBA's (University of Buenos Aires) and more specifically stated than UNaM's.

The following question guided our research: Where would such changes lead universities to? More precisely: What role did society assign to higher education institutions given the transformation processes on research, teaching, extension and transfer functions?

A debate on the transfer of knowledge and technology must contemplate some main issues in public university: is an active policy on the transfer of knowledge a core function of a public university? And should the answer be positive: How and where should this be done?

The social functions of universities have been redefined throughout the 1990s up to the present. Its traditional values emphasizing the creation and distribution of culture and national knowledge, as well as their training of key professions have lost ground over the alleged possibilities of insertion in the logics of capital. New growth and economic development possibilities lie in the creation of renewed knowledge and technology.

Mainstream discourse assigns a decisive role to universities and other scientific institutions in the provision of economic – and hence social – wellbeing. Therefore, universities are supposed to have close bonds with other institutions addressing

society's economic wellbeing. Here lies – according to our perspective – the main ideological turn in the mainstream discourse: Social wellbeing would be strictly related to companies' wellbeing, which therefore entails the necessity of science and technology development to serve the latter. Hence, it is the market that rules the new social role of university.

The following ideas and theories on science enlightened our perspective and allowed us to explore and explain the objectives imposed on scientific and university institutions as per their key economic role in contemporary society, as well as the limits to be overcome. The main interest in such theories and perspectives does not only lie on how they address scientific and university policies, but on how they prevail in the background common sense of our country's scientists.

A key component of such ideas and theories derives from the links between teaching and research groups and their abilities to address social and productive demands. We have unveiled how deeply these discourses animate university actors, as when asked to ponder on the different policies that have ruled and still rule the goals of science and university in Argentina, they ultimately resourced to them.

13.1.2 Universities Faced with Social and Productive Demands: And Their Capacity to Produce and Circulate Knowledge

The project spotted three nodes of different regional locations (Misiones, Mar del Plata and Greater Buenos Aires) anticipating its possible progressive expansion to other groups in terms of methodological and technical transfer. The respective universities (UBA, UNaM and UNMdP) belong to the national scientific system as they are members of CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas) and the national incentive system for national universities.

Our analysis focused on four basic aspects:

- the geographical differentiation in the extension of the projects, its current nodes and the future ones, which called for an integrated approach;
- complexity which called for multidisciplinary work;
- management of the higher education institutions;
- the perspectives of all the involved actors – teachers-researchers, students, graduates and other actors from the social and productive world.

A brief description of the three universities to might help understand their social-economic contexts and academic profile. The University of Buenos Aires (UBA) was founded in 1821 and is the second oldest university in the country as well as the most important in terms of students and graduates' volumes, graduate and post-graduate courses supply and research development. The National University of Misiones (UNaM) and the National University of Mar del Plata (UNMdP) were founded in the 1970s. Several university institutes originated from

Table 13.3 Undergraduate students (2004) and graduates (2003) of three national universities in Argentina (UBA, UNMdP and UNaM) by disciplinary area (percentages)

Fields	National universities totals	UBA	UNMdP	UNaM
Students	100.0	100.0	100.0	100.0
Applied sciences	24.4	21.0	22.5	24.7
Basic sciences	3.4	1.9	5.7	10.6
Health sciences	13.7	17.6	7.1	7.1
Human sciences	16.8	13.5	20.0	14.7
Social sciences	41.8	46.0	44.7	42.8
Graduates	100.0	100.0	100.0	100.0
Applied sciences	22.9	17.4	23.6	22.0
Basic sciences	2.8	1.6	5.7	8.5
Health sciences	21.1	22.9	7.8	10.2
Human sciences	14.3	13.8	12.5	22.0
Social sciences	39.0	44.4	50.4	37.4

Source: SPU (2004) 2000–2004 yearbook on University Statistics. University Policy Secretary (SPU_Secretaría de Políticas Universitarias), Ministry of Education, Science and Technology

the North-Eastern National University gave birth to the UNaM in 1973. UNMdP was created in 1975 on the basis of the Buenos Aires Province University and some careers from the Stella Maris Catholic University. Social sciences are the three universities the largest fields in terms of amounts of students and graduates, followed by Applied sciences and Applied, Health and Human sciences (see Table 13.3). There are large percentages of Health Sciences' students and graduates at UBA, while approximately 25 % of UNMdP's students are enrolled in Human Sciences and UNaM's Basic Sciences have the largest percentages of students.

The methodological design included a complex variety of approaches and resources such as: quantitative data (e.g. interviews of teachers and researchers), qualitative data; case studies, research-action interventions; transfer and implementation of instruments and data collection to other nodes in the network; pedagogical evaluation and implementation; etc. (Table 13.4).

It focused on the assessment of the capacity of promotion and intervention in local and provincial environments to address demands from society as a whole, the changing administrations and the productive development. In such respects, the project explored: (i) how knowledge is produced, and reproduced in the academic world; (ii) the links within the academic world and its connections with other national and international centers; (iii) connections with the productive sector, the State and government agencies and NGOs, as well as with emerging social movements, and; (iv) the role the researchers, national and international academic networks of centers and institutes play in promoting the work of university groups.

The project additionally strived to explore dimensions facilitating and/or inhibiting the capacity of higher education institutions to promote social, scientific and productive development at a local level and the intervention of alternative lines of work and/or projects required by their local, provincial and regional environments.

Table 13.4 Segmentation by group's major activities at three universities

	UBA		UNaM		UMMdP	
Main activity	Quantity	%	Quantity	%	Quantity	%
R	10	19	2	4	28	43
R+Tr	–	–	–	–	11	17
R+E+Tr	–	–	–	–	2	3
R+E	22	42	4	8	–	–
R+T	5	9	22	44	–	–
R+T+E			5	10	11	17
T	6	11	7	14	5	8
D+E	7	13	10	20	8	12
E/Management	3	6	–	–	–	–
Total interviewed	53	100	50	100	65	100

Source: PICTR00013 Interviews PEET-IICE-FFyL-UBA/CONICET
[a]*T* teaching, *R* reason, *Tr* transfer, *E* extension, *D* development

Furthermore, we strove to explore the behavior of dynamic teams but also to be able to examine the difficulties and limitations of others, hence including young groups but also more consolidated ones and others with long pathways. On top of that, we wanted to include specific demands by local or regional environments, to explore both the issues they worked on as well as the links they established with local or provincial governments and the productive sectors.

13.1.3 Typology of Activities of the Teacher-Researchers Groups

In this section, a comparative profile on universities is presented, introducing some categories intended to describe the groups behavior; some of the available statistical references on the institutions are also included. Tables 13.4 and 13.5 presents the categories constructed on the basis of responses to the question: "Which would you say is the main or prevailing activity of the group?"

The weight of teaching activities stated by the universities shows the real possibilities to perform the other functions (research, transfer and extension) in background of national policies and regional and local demands, which impose universities and their teaching-research groups' intervention in a variety of instances.

Another interesting finding lies on the fact that UNaM has the larger full time (45.8 %) or part time teaching staff, followed by UNMdP (27.5 %), and UBA (19.3 %). Furthermore, the ratio of CONICET researchers associated with each university varies enormously and is significantly high in UBA. As the only available data on CONICET researchers is regional (and not by university), we were forced to produce our own statistics on the differences in proportions

Table 13.5 Incentives granted to teachers and researchers of the various research categories at three universities in Argentina

University	Total	Research category					
		A y I	II	III	IV	V	% I+II
Universities' total	19,778	2,074	2,676	6,261	4,878	3,889	24,0
UBA	2,453	373	393	757	474	456	33.1
UNMdP	712	62	100	199	186	165	23.2
UNAM	241	7	24	71	67	72	17.6

Source: SPU (2005) 2005 yearbook on University Statistics. University Policy Secretary (SPU_ Secretaría de Políticas Universitarias), Ministry of Education, Science and Technology

and scientific production – quoted and published articles – with our without CONICET's support.

Analysis were also undertaken of the full-time and past-time employment of staff, the scientific production – quoted and published articles – and the incentives granted to teachers and researchers. Available information shows that 10 % of the UBA teachers and 50 % of the full-time amongst them got an incentive in 2004, while 65 % of UNMdP teachers and 17 % of UNaM teachers got an incentive.

Undoubtedly, similar differences exist regarding the categories of academic staff: 33.1 % of UBA's teachers rank at the top two categories, while only 23.2 % of UNMdP's teachers and 17.6 % of UNaM's teachers do so (see Table 13.5).

The public sector funds most to the Science and Technology projects; according to 2003 statistics, the State funded 68.9 % of the investment, an amount that was increased to 74.7 % by 2010. With regards to research and teaching investment "the national government was the number one investor, by supplying 64 % of the total funding from the public sector" (Ministry of Science, Technology and Productive innovation, Science and Technology Indicators 2010).

In examining we identified four main university functions: research (R), teaching (T), extension (E) and transfer (Tr). According to the institutional background, the main aspects and consolidation of their work fields and their organizational configuration with respect to the social and productive demands of their local, regional or even national scopes functions is carried out by their academic units to different extent. The segmentation or typology of the assessment on the behaviors of the interviewed groups matches the functions carried out by the different university groups; teaching (T) being one aspect that stands out from the rest. According to the interviews undertaken, teaching (T) stands out from the rest. All the interviewed groups carry out teaching tasks (which involve between 20 % and 30 % of their total workload); however, most of them do not consider teaching as their main activity, neither as the most important nor the most time-consuming. UBA respondents consider research (R), extension (E) or a combination of both (R+E) as their core activities. Respondents at UNaM, in contrast, organize their activities around teaching.

Transfer (Tr), surprisingly, is not named at all, because it is linked to the extension function. Making a distinction between these two functions would have

therefore been arbitrary. Obviously, the two categories are usually confused by the actors.

An in-depth analysis of the use and misuse of the extension and transfer concepts amongst university staff (Riquelme and Langer 2008a) and the consequences they draw from their activities enabled us to conclude that transfer entails sales, while extension is viewed as an assistance process; transfer is understood as innovation with no input from the final users (either companies or social organizations), and as also involving interaction with the object and may evolve from active participation of the society and/or other involved groups. On the other hand, extension means assisting research, which can lead to assistance or even moderate perspectives on knowledge distribution aiming at improved social appropriation; transfer is usually understood as entailing technical assistance or on-demand services; last but not least, transfer can also be understood as applied knowledge or technical assistance. The wide range of meanings suggested a lack of clear-cut guidelines from university policies and institutions.

Amongst the groups observed at UBA and UNMdP some of them carry out extension (E) activities exclusively in situations where teachers-researchers deploy their management activities at the university administrative areas. A larger proportion of T+E groups can be found at UNMdP and UNAM, basically funded by the university and usually focused on extension activities.

While teaching activities dominate in UNAM groups, the UBA and UNMdP groups mainly undertake R+E or merely R activities. An aspect common to the three institutions is the fact that there are rather few groups addressing technology transfer activities.

A look at differences by discipline shows, for example, that most of the UBA Natural and exact sciences faculty groups focus on research, while UNAM and UNMdP groups belonging to the same faculty do not. UNMdP groups focused on research are those from the Agronomy, Architecture and Economics fields, which at UBA would address R+E activities. UNAM groups are mainly focused on teaching (T) activities even in such fields as Natural and Exact Sciences and Chemistry. Another contrasting situation is that of the UBA Human sciences faculties which carry out lots of extension activities, as opposed to other nodes.

13.2 Knowledge Production and Circulation in Teachers and Researchers Groups Practices

13.2.1 Key Areas of Analysis

As previously mentioned our research work revealed a fragmentation amongst the groups according to political-academic orientations, which remain at times unacknowledged by the group members. Furthermore, conflicting logics are reproduced through differential access to no-longer scarce resources.

Another main finding is that most university members tend to link research to its application as well as the training of their students to their possible insertion in the labor market. In this framework we pay attention to the relationship between research and extension-transfer (R+E) and between teaching and extension (T+E). We assume that changing scopes would derive from a growing concern on economic-social structure amongst university researchers. However, the resulting outcomes may be diverse:

> on the one hand it could be argued that a deeper concern in regional productive problems would be likely to reduce costs and therefore improve economical competitiveness. On the other hand, researchers would hence serve at reproducing the economical-social structure instead of at transforming it. (Riquelme and Langer 2008b, p. 477)

There is little debate and awareness of these changes amongst university groups. Therefore some of the functions may be confused and overlapping (R+E, T+E) or bound to be detached (R/T), given the changing logics amongst the university groups. This section intends to systematize the diverse transformations and their implications on university's social role according to the views of the actors.

Focus was put on aspects that drive the practices of university groups: whether they are driven by economic-social pressure within the inner logics of their fields. This controversy is old while some suggest a homogeneous development for all academic fields is possible, others perceive steep differences, both in terms of disciplines and social and geographical development.

13.2.2 The Transformation on the Activities of the University Groups and the New Social Role of Public University

In this section we analyze and systematize the transformation of the production and circulation of knowledge logics amongst university groups. The key issues as well as their deriving problems will the outlined.

A key issue hardly ever is made explicit in the discussions on university policies: which should be the relationship between the public university and society? Rather, attention is paid to extension and transfer activities. It is necessary, though, to discuss the traditional definition of these concepts and their links to other institutional activities.

> Hence "extension may include cultural tasks, university-companies activities, service sales, transfer to underprivileged sectors as well as the social diffusion of knowledge. There is a hidden debate between different universities and even at the core of one university, amongst its different faculties." (Riquelme and Langer 2008b, p. 478)

The prevailing practices and the problems implied might be characterized as follows:

(a) *Extension, transfer and the new social role of university*: There is an underlying idea that the university should hypothetically respond to regional and provincial

needs instead of considering society as a whole. Other sectors – especially those from Exact sciences – consider that science should mainly address the production of knowledge instead of any social problems; while groups from Social and Human sciences consider that university should be actively involved in extension and activities and therefore develop alternative and more definite ways to apply its knowledge.

(b) *Extension, transfer and production and circulation of knowledge*: The logics of Exact sciences prevail and therefore knowledge is hardly linked to human sciences. Basic sciences – as understood nowadays – are unrelated to a holistic understanding and therefore become highly specialized. The university focuses on responding to direct social demands (either from companies or other institutions) and therefore research and extension activities are overlapping and distorted. In teaching and research activities, the growing focus on specific productive sectors has transformed its logic and autonomy as regards the creation of knowledge

(c) *Proliferation of R+E groups*: Both academic language and research are strongly directed to their application. There is hardly any difference between a new scientific development and its technological application, as social demands have gained priority amongst university tasks. This had reinforced the proliferation of R+E groups.

(d) *The lack of planning and clear rules on tasks implementation*: University groups require autonomy in terms of the definition of their activities (research, teaching, extension) and implementation, lacking an integrated planning towards a specific social goal. The dilemma posed to university groups would no longer be how to respond to social demands but how to identify them. Especially, when there is no planning to drive the application of the knowledge produced by universities. Undoubtedly, the policies of the 1990s resulted in a diversity of ideas on what extension and transfer should be, which connections with research and teaching make it even harder to come up with properly defined activities.

(e) *The mutations in public universities' activities at private R-T laboratories*: The public sector is supposed to manage its accounts as if it was a company, so that application tasks become profitable. The R+E groups at the Natural sciences and Technology faculties tend to work with highly developed companies on product design and technological problems. Moreover, financing groups make explicit demands and take advantage of the services that universities can provide them.

13.2.3 New Logics on the Response to Social and Productive Demands

Since the 1918 reform, the Argentine university has been nourished from Humboldtian principles, which focus on autonomy in the development of knowledge. As a consequence, such autonomy has always been defended by university

centers as a key to generate original and critical knowledge. A shocking result from the interviews is the progressive change in this traditional logic, involving the attempt to break through isolation and respond to social demands.

The changing logic reflects not only on the words of university staff words but also on their activities. This urge to respond to social and/or productive demands has transformed groups into R+E groups, whose objects and capacities vary notably. This in turn impacts on their research lines, their tasks, and the ways in which teachers-researcher interact with their environment.

(a) *On the thesis of university isolation*: Most of the scientists interviewed confirmed that the university should step out of its crystal box or ivory tower, in which it has apparently been confined so far. Those maintaining this thesis usually make an analogy between the development of basic science and the failure to fulfil the social role of the public university, understanding technological development as an obligation for the public university. It is worth highlighting that especially in the areas working on applied science any group which fails to respond to explicit social demands lacks legitimacy.

(b) *R+E groups*, *different purposes and abilities*: The Social and Human sciences are considered the core fields of university, the research activities carried out in these fields are different from those carried out by Exact and Natural Science fields as well as in those faculties that are strongly connected to the development of productive technologies (such as Agronomy, Chemistry and Veterinary). Extension takes over research to such an extent in R+E groups that it transforms it; while, in the Social and Human sciences professors tend to have groups that prioritize the research-extension activities (R+E), which work directly on social problems usually disconnected from any economic problem regarding the creation of products and merely address the organization of production processes.

(c) *Influence on Research Criteria and the Routinization of the Tasks of the Researchers*: The widely accepted idea that universities produced knowledge that should be used to satisfy companies or other groups' social demands has also modified the perspectives of researchers and teachers on their work as well as their tasks. According to their statements, research themes come from personal motivations, and sometimes, they take advantage of tenders or bids provided by research organizations. However, they also refer to how specific demands (from whichever sector) have altered their line of work. The more involved in productive projects the university is, the less original may be its achievements in technological development. There are very few truly innovative companies in the country which usually demand scientific and technical development.

(d) *Interventionism in social demands*: Extension activities have often been many regarded as non-essential and not necessarily connected to the university's assigned tasks. Those engaged in activities related to companies have many times been judged as acting on their own behalf; a direct and straightforward ideological dispute. Some groups cooperate with others in routine extension activities therefore postponing research activities.

13.2.4 Financing, Competences Logics and Their Impact on the Lines of Work

There was no need for an in-depth research on universities' struggles for financing. Even though the university budget has increased over the recent decade, so have the economical-financial problems at universities. The inconvenience posed by this scenario ranges from the material reproduction of teachers-researchers to the impossibility of carrying out research projects due to the lack of material and equipment, or basic infrastructure.

This lack in financing has led

> university staff to a dead-end puzzle where they were forced to obtain their own resources to avoid periling. Hence, over the last ten years, universities have implemented multiple activities to increase their income, that go from charging students for paperwork to selling technical services, creating postgraduate courses, renting space or signing research exchange agreements with foreign universities. (Riquelme and Langer 2008b: 506)

University staff strive to survive by developing (market) competent strategies, which lead to a differentiation process at universities, faculties and groups, according to their ability to obtain alternative resources. In turn, this dependency on alternative resources has proven to determine not only their lines of work but also their researches' outcomes. Hence the reason for dealing with the financing and the groups lines of work are two sides of the same problem.

(a) *Financing and dependency form external sources*: All sciences and all universities must deal with dependency as their research groups must resort to financial assistance (subsidies) from foundations, companies or government agencies, while smaller universities and younger researchers' working plans tend to be the most determined.
(b) "*Competitiveness*" *as a new entry in the scientific dictionary*: Words such as "fashion", "boom" and others similarly were used by the interviewed staff to refer to the elements that influence their choices. This particular way to define lines of work, together with others such as competence and the possible sale of the realized product, has led researchers to high levels of specialization in their areas of interest. The choice of a certain issue sometimes merely involves finding a financing niche, which may enhance the group's visibility and possible growth; a perspective deriving from the economic concept of "competitiveness".
(c) *The director's skills*: *from academic fellow-researcher to manager-administrator*: The director of the group tends to develop a manager-administrator profile as sustaining a research program involves working with adequate equipment, infrastructure and human resources which must be obtained from multiple sources. Particularly at faculties of applied sciences, transfer activities are planned and managed as in technology companies. This calls for a researcher-manager profile to cope with such transformations.
(d) *Context influence on the working themes*: Even though the research traditions on specific themes and their orientation is still of relevance, they have been transformed along the country's structural change process. Local demands tend

to be associated with more immediate and efficient response. However, responding to social demands is merely an excuse at times disguising the search for extra funds to sustain the groups work.

(e) *Financial privatization = knowledge privatization*?: Beyond being at risk of privatizing research results, as they in the end belong to whichever institution provides financing, there is a differentiation outcome in terms of competitive advantages between those that access resources and those that do not. Even the definition of each member of the group's tasks is settled by the financing organization. Some positions are directly financed by companies paying students or researchers to carry out research activities at the university, which will in turn be transferred directly or as service sale to the company.

13.2.5 Articulation Between Research, Extension and Teaching Groups

The relationship between the research, extension and teaching groups addressing social and productive demands has been thoroughly studied all along our project. But our aim was at enhancing the focus not only on their search to respond to (explicit or implicit) social demands but also on how it impacted daily teaching and research routines.

(a) *Articulation differentiation according to the group's main line of activity*: Most of the articulation activities performed by the groups are connected to their research activities. In this respect, R+E groups have the most extended articulation activities. Undoubtedly, the informality that those links can sometimes have makes it impossible to generalize over a sustainable network.

(b) *Internal articulation* (*within the country*) versus *external articulation* (*with other countries*): We have found competence results in rivalry between proximate groups. Hence, articulation is more likely to happen with more remote groups. The external articulation usually entails conditions, as many times the groups enter international networks not only with a fixed agenda but also with specific tasks assigned within a specific field. Such restrictions surely become more flexible as the groups grow in status, power and social capital.

(c) *Articulation with public institutions*: The national public sector and the Buenos Aires city government are the most frequent clients of UBA's services. However, such services usually consist of routine tasks and internships intended to reduce labor costs. UNaM and UNMdP are usually more connected to local government and organizations. Especially in the case of Mar del Plata, where local resources finance research work, university groups frequently address local issues (as opposed to UBA, which usually deals with more universal issues).

(d) *Articulation with the productive sector and technical adaptations*: Especially in the case of UNaM's Chemistry, Exact, Natural and Technology Sciences

faculties, groups are closely integrated to the productive sector. Most of their research work is directly connected to the main regional economic activities. This is also the case at the Medicine, Engineering, Architecture, Agronomy and Veterinary faculties of UBA. Their deeper relationship is settled with big national and transnational companies, however, some of the interviewed staff stated they also had contact with small companies at a much smaller scale and non-systematically.

The UNMdP and UBA's Social and human sciences faculties articulate with recovered companies, micro-companies and other social organizations implementing productive projects (we have also noticed some cases in other faculties, although we were not able to keep track of them). We highlight that these companies and organizations are usually the object of research as well and that the activities they carry out rarely result in real productive benefits.

13.3 Pedagogic Synergy as a Possible Integrated Notion of University Functions

These final paragraphs aim at introducing and discussing some observations on the limitations of the pedagogic synergy concept. Pedagogic synergy entails the relationships between teaching, research, extension and transfer at mutual exchanges that influence activities carried out by teachers and researchers groups. There would be synergy when the goals or results achieved by such mutual exchanges are larger than those reached by each of the parts involved.

From a pedagogic standpoint, we wanted to highlight the interactions and mutual influences produced between teaching, research, extension and transfer activities. More specifically, when approaching the teaching activities we focused on the integration of the institutional and the environmental demands to the curriculum. Integration amongst university functions is very weak and there is much confusion between different roles, which contributes to undermining teaching and research functions already lacking in knowledge production and autonomy, whenever one of them becomes the core activity of a university or faculty.

A review of the notion of synergy verified that the concept derives from a Greek term meaning cooperation and joint work. The Spanish Real Academy Language Dictionary defines synergy as "active and agreed joint work of several organs to carry out a certain function". The term gained importance after the 1925s works of the German biologist Ludwig von Bertalanffy's general theory of systems, which was later on followed by different authors in diverse scientific areas (Riquelme, 2008).

The limits of usage of this term would lay on the fact that teachers and researchers are in fact the same individuals as very few people carry out research activities exclusively. Mutual interdependence would therefore be natural. However, this is not usually so, and hence the challenges or our work.

Both synergy and recursion are systems properties, the question should therefore be whether we might think of the university as a system. Synergy entails that by studying a part of the whole we cannot make inferences for the whole system, as the whole system's properties are larger or different to those of each of its parts. Synergy would therefore occur when the whole system would reach further results or goals than the addition of its parts. We may also speak of synergy when the results of the analysis of a part of the system cannot predict the behaviour of the whole system.

Hence synergy is the property that explains that kind of behaviour in systems. As the system's parts cannot be parted, the first researches on systems observed that a new phenomenon emerged, which could only be assessed as the "whole" system was working, but would disappear when only the parts where observed. The phenomenon was called synergy.

As the teaching, research, transfer and extension activities are carried out by the same individuals, the limits between them are sometimes blurry and would reinforce the systems synergy. However, these activities may also be carried out by different groups and hence enter contradictions which would work against synergy.

Other authors have concluded that the complexity of the university organization results in and from: (a) the multiple goods and services it produces, which entail a wide range of objectives within the same organization and its role in society and its economy; and (b) the decision making process which involves multiple actors, inside and outside the organization, whose relative power depends on their function within the internal structure of government in agreement with the state's or the market's coordination (García de Fanelli 2005).

Pedagogic synergy would therefore be a relative concept to speak of the degrees of conflict – or even their existence or weakness – and its emerging properties and interpretations, which would explain the ideological and the working logics of each institution, following the behaviour pattern of their "academic tribes".

Our research on the inter-university network project took the teaching-research groups of each university as our main analysis units and there we explored pedagogic synergy (Riquelme, 2008). Our direct or indirect findings were related to:

- the degree of integration of their functions;
- the haziness prevailing on the roles of the university;
- the teaching function's lack of status by not being considered as knowledge productive;
- the independence of the teaching function when central to any university.

Teaching and research activities at UBA are usually integrated by using research results and publications in class, or by including students' thesis in departments' research projects. However, we have also found some negative comments on such activities, which would unveil a certain lack of integration amongst teaching and research in the short term or would happen in some specific instances which promote students' participation.

The integration of extension activities is even less frequent and more vague, as there is less consensus amongst the actors on what extension activities actually are. Extension activities at UBA appear to be underdeveloped. Our interviewed actors find it difficult to spot the integration between extension and teaching, which is more easily connected to research, always through the participation in departments and conducted by teachers.

The integration between teaching and research and/or extension activities has had little impact, according to the interviews carried out over our research, in terms of formal changes to the curriculum and in spite of the use of research material and results in class. Changes are rather connected to the environment's demands, but hardly ever related to the integration of the three functions.

UNMdP's more flexible curricula could enhance the introduction of knowledge and practices from research, extension and/or transfer activities, producing synergy amongst them. Synergy results in updated contents and the introduction of seminars and non-compulsory courses on research results. However, there were no systematic curriculum updates.

There always seems to be some integration between teaching and research activities, according to the interviewed actors, but it would also be diverse according to the groups' profiles, their faculties' traditions and their research paths and history.

Our research results on UNaM are highly relevant to understand the heterogeneity of the development of research practices amongst teachers. Research activities are firmly consolidated in the Faculties of Chemistry and Human and Forest sciences and are less common in the Arts, Engineering and Economics faculties, where they have been recently developed through the incentives policies. Furthermore, teaching is core to all these faculties, and in those with stronger research history (Chemistry and Human sciences) it is diverse, as not all groups carry out the same type of research activities.

Hence, teachers with strong participation in research practices intensively promote research teaching and practice in their classes, as well as the interaction between theoretical contents and their application. Researchers with extensive teaching activities tend to bring about the knowledge produced into their classrooms, therefore resulting in more innovative teaching experiences. Teachers, which articulate research, extension and reaching transpose the knowledge produced in their research activities into their classroom lessons, hence producing curricular synergy as well.

Back at the beginning of our research design phase we set two main guidelines:

- A centre–periphery relationship between our country's universities, in terms of the tensions deriving from the production and circulation of knowledge in the metropolitan environment combined with the potential and differentiation deriving from the varied styles at provincial and local environments as well as the articulation, exchange and communication possibilities between groups from different universities, faculties and work fields.
- The other main idea that guided our work had to do with a traditional gap between teaching and research activities which is rooted in the history of universities as it

applies, recreates and improves university work by differentiating "tribes" no longer split by their work field as interpreted by Becher (2001), but by their activities in "teaching tribes" and "research tribes".

It was and still is our intention to acknowledge the power of the difference between these two functions on behalf of the university and hence we considered the notion of pedagogic synergy to highlight the situations in which this overlapping (from a physical standpoint) or the "positive bond" between the production or knowledge (minimum to non-existent) and its practice – the teaching activity – results in new opportunities to create knowledge, its application and transfer and it may even sometimes lead teachers themselves to pose new questions to enrich the research process. Such mutual implications are at times neither evident not even registered by the actors, but they certainly exist.

Our main concern evolved around the teachers-researchers groups' ability to contribute to the production of knowledge in an increased or lessened way in connection with social and productive demands; according to the profiles of those answers (whether they were adaptative or autonomous); the degree to which – from a critical or reproductivist perspective – the universities and their groups enhance their research, teaching, extension or transfer functions; and the degree of integration or sliding or mutation from the university's goals either towards extension activities or service sales.

Although we acknowledge the limitations of this notion we also consider it contributes to the discussion on the possibilities of integration of the university's functions, its difficulties, the competing roles and conflict arenas which university life entails.

We hitherto pose some questions.

First: *Is it feasible to speak of* "*teacher tribes*" *and* "*researcher tribes*"?

The "academic profession" notion would vindicate the existence of university's teacher-researchers as a specific category different to that of the researchers. We would therefore expect the staff carrying out not only knowledge production activities but also teaching graduate and post-graduate students would have an enriched experience by (a):

- the access to updated knowledge in each field; and (b)
- the definition of new research themes and designs to be added to the department and curricula.

However, observing how teaching influences research is not clearly defined for every work field. It may be more clearly observed in some areas – such as Education or Pedagogy, Dental studies or Medicine. In depth studies on these cases would be enlightening and would contribute to reducing prejudices.

Second: *Would the prejudices and the distance between teachers carrying out researcher activities and researchers carrying out teaching activities disappear if they acknowledge their own logics*?

The gap between research and teaching, or teaching and research entails mutually influential and interdependent activities in most of the constituted academic units. The indirect replies we obtained from the teacher-researchers on teaching may derive from our design and the type of questions posed which entailed a certain "miss-value of teaching and its results". However, teachers themselves have acknowledged the fact that teaching has lost its value as a source of legitimacy and status as a result of the policies prevailing in the 1990s. Under such pedagogic scope, the gap between research and teaching may be observed in actors that "experience the absence of joint forces around goals and projects and describe their daily life as undermined by rivalry, jealousy and mistrust".

Third: *Could synergy between research, transfer and teaching activities be understood as an intervention phase in the production of knowledge*?

Beyond the many differences in the logics of research and teaching, the search for common ground that improved exchanges and mutual synergy would undoubtedly enhance the organizational quality of the academic units. Worth mentioning is the fact that the undervalued teaching activities and the work of teachers at universities disregards the complexity and autonomy of such functions amongst professional and academic staff, and responds to teachers and researchers' prejudices who pond one function or the other as their most important activity. It should be highlighted that such controversy derives from the original gap between teaching and research, which is certainly unproductive for both the production and circulation of knowledge and the training of the future professional and academic staff.

Fourth: *Do heterogeneity and differentiation within the university system – inter and intra-universities – enable generalizations*?

We have simplified some of our research findings on behaviour patterns in terms of roles and functions mutations. On the one hand, we have come across (i) traditional institutions that resist mutation and keep up their programs and knowledge critical logics. On the other hand, we have also found (ii) academic units with high levels of functions mutating in connection with university policies and their tight or lose orientation towards social policies. Finally, we have also encountered (iii) institutions, which have transformed their roles specifically in response to productive and companies demands.

We should therefore make a brief statement of the specific qualities of each of the three universities as they may be generalized back to other Argentine institutions:

- (i) a recently created university which staff mainly works in teaching and there are only some scattered research groups and some of them may be classified as excellency groups;
- (ii) a less recently – more consolidated university, where teaching, research and extension activities take place but which must resource to traditional institutions at times;
- And (iii) a university with a long tradition in the production of knowledge and the training of professional, academic and scientific staff.

Within university teacher-researchers groups, there are different degrees of dedication to each of these activities and different behaviours with respect to their fields. We dedicated a first part of our research report (volume 1) to such situations and it became of reference to this third part of our work (volume 3) as an interpretation framework for pedagogic synergy.

We ended up with more doubts than certainties: is the university the best place for the production of knowledge? Can the university be the place for professional and academic staff without also driving knowledge production? And – this was one of our main concerns in the beginning of our works – if teachers-researchers groups are oriented towards production as a result of the incentives set a decade ago, can the centre-periphery gaps in the production and circulation of knowledge be filled?

In this sense we also wonder whether the networks between the different knowledge fields in our country, within the university and non-university institutions and other scientific and technological research work spaces could be strengthened. Financing and evaluation logics do not seem to add up to integration instead they seem to reinforce fragmentation, overlapping and a deepened complexity amongst academic groups. Our own networking has been a valid experience aligned with the production of knowledge by multidisciplinary groups and discussion was opened to the research-teachers colleagues who participated in the interviews and other phases of our work.

Some issues may be recurrent, complementary, excluding or polemic. Although we may not always agree and may not always find interesting or moving what we read, we have tried to portray our contradictory life as academic intellectuals, workers for Argentine science and teachers. Our perspective on public universities is rooted in the fact that they are still the source of training for the new generations of professional and academic staff and the production of endogenous and alternative knowledge for the construction of society with improved levels of development and accumulation, better social accord and distribution for citizens' social rights to education, feeding, health, housing and work.

References

Becher, T. (2001). *Tribus y territorios académicos: la indagación intelectual y las culturas de las disciplinas*. Barcelona: Gedisa.

García de Fanelli, A. M. (2005). *Universidad, organización e incentivo*. Buenos Aires: OSDE Foundation-Miño and Dávila editores.

Riquelme, G. C. (2008). Acerca de la producción y circulación de conocimiento y de la sinergia pedagógica en las funciones de docencia, investigación, transferencia y extensión. In G. C. Riquelme (Ed.), *Las universidades frente a las demandas sociales y productivas: capacidades de los grupos de docencia e investigación en la producción y circulación de conocimiento*. Buenos Aires: Miño and Dávila editores.

Riquelme, G. C., & Langer, A. (2008a). Las capacidades de los grupos universitarios frente a las demandas sociales y productivas: perspectiva de los investigadores-docentes sobre las lógicas

de producción y circulación del conocimiento. In G. C. Riquelme (Ed.), *Las universidades frente a las demandas sociales y productivas: capacidades de los grupos de docencia e investigación en la producción y circulación de conocimiento*. Buenos Aires: Miño and Dávila editores.

Riquelme, G. C., & Langer, A. (2008b). Perfiles, articulaciones y comportamientos de los grupos de la Universidad de Buenos Aires. In G. C. Riquelme (Ed.), *Las universidades frente a las demandas sociales y productivas: capacidades de los grupos de docencia e investigación en la producción y circulación de conocimiento*. Buenos Aires: Miño and Dávila editores.

Chapter 14
The Latin American University Model and the Challenges Posed by the Reforms: Perspectives from the Academics

Elizabeth Balbachevsky

14.1 Introduction

Universities have existed in the Latin American region for 470 years. The oldest ones date to the colonial era and were created by the Catholic Church and the Spanish Crown, and were based on the old medieval model of universities. Independence, in the first half of the nineteenth century, created the first opportunity for the countries in the region to expand and reshape universities. In this first wave of reforms, universities were created[1] or transformed as part of the local efforts for building up modern nation-states from the colonial heritage.

The university model adopted by all countries was the Napoleonic model, with universities in charge of both training and certifying students for the learned professions. At the core of this model is the principle that in granting degrees, higher education institutions act on behalf of the state, extending legally binding professional credentials. This perception entailed a strong tradition of strict supervision from the State. All universities created in the nineteenth century (and in the first decades of the twentieth century) were public, created, funded, and strictly controlled by the newly formed States. All universities also adopted the organizational format of professional chairs grouped into faculties or schools, each of them defined according to the professional degree they were in charge of. Thus,

[1] Brazil is an exception in this picture. The first high learning institutions were founded only after 1808, when the Portuguese Royal family came to Brazil escaping from the Napoleonic invasion. At that time, and until the 1930s, the only institutional model known in Brazil was the Professional Schools, each of them in charge of training for a recognized profession, such as medicine, law, engineering, and so on.

E. Balbachevsky (✉)
Universidade de São Paulo, São Paulo, Brazil
e-mail: balbasky@usp.br

W.K. Cummings, U. Teichler (eds.), *The Relevance of Academic Work in Comparative Perspective*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 13,
DOI 10.1007/978-3-319-11767-6_14

Latin American university governance, from the beginning, could be described as a loosely connected federation of faculties or schools, governed by a university senate, where the channels linking individual faculties (or even chairs) with the government were much more relevant than the channels connecting different parts of the same institution.

It was only in 1918 that this model experienced a major challenge with the Cordoba Movement, a student movement starting at the University of Cordoba, Argentina, that quickly spread throughout the country, and later influenced universities around the entire region. The Cordoba Movement advocated for greater university autonomy and also for democratic governance, stressing the principle that the decision-making process inside the university should include representatives from students, professors and alumni. It also proposed tuition free education, then perceived as the best way to assure enlarged access to university education. The Movement also redefined the university's core mission as the search for solutions to the social, economic and political problems faced by the nation. The traditional idea of the university in Latin America traces its root to the combined heritages of the Napoleonic tradition and the ideals of the Cordoba Movement. An institution oriented toward bachelor program training certified by established and highly prestigious professions.[2] It is organized into a loosely connected federation of schools and faculties with a decision-making process that provides strong channels for the voices of all main internal stakeholders, including the students. It is funded by public resources but sustains a strong autonomy vis-à-vis government, while, at the same time, maintaining a strong commitment to the country's political and economic life.

Since the 1960s, two separate trends affected this old university model. First, there was the first wave of massification. Since mid-1960s, with industrialization and the growth of cities, an increasing number of people in all Latin American countries managed to qualify for admission to universities. Some of them were youngsters coming from the enlarged middle-class sectors. Others, the majority, in fact, were older people, women and poorer persons that managed to finish secondary education late in life and decided to demand for access to university education. In some countries these new clienteles were absorbed by the traditional public universities, which grew up to become mega-universities enrolling hundreds of thousands of students at the bachelor level. In other countries their demands were also absorbed by new private institutions that the governments allowed in order to alleviate the public sector from the worst of the pressures for access (Schwartzman 1993). The quick expansion of both public and private sectors led to the hiring of a large number of new academic staff. The new staff started lecturing at the universities early in their professional life. Most of them had shaking academic and professional credentials. The new academic profile was at the same time dependent on the salaries paid by the universities and unable to establish a personal reputation as an academic.

[2] Since professional education was so central that the idea of a full-time academic has no place in this model. The Chair holder should also be an established and well reputed professional that could provide real professional guidance for the students.

They quickly become organized into strong unions, pressing for better salaries, conditions for employment, and career perspectives.

The process of expansion was extremely rapid. In a matter of few years, the number of students more than doubled and the number of enrolments increased for at least the entire decade of the 1970s. The academic and administrative staff grew at a very quick pace, and public universities became a prominent item in all of the Latin American countries' public budgets. As a response to this situation, most of the Latin American governments tried to curb the universities financial autonomy by imposing uniform wage policies and creating channels of direct contact between the government and the universities' unions, thus bypassing university authorities and, in some cases, even bypassing the Ministry of Education.

Second, there were the pressures posed by the first generation of PhD holders in the region, trained abroad and with a clear vision of what a modern university should be: An institution organized along disciplinary lines, through departments and institutes, committed to research and graduate education, with full time contracts and lower teaching loads that would enable an academic career dedicated to research and scholarly performance. Even though these young scholars shared some perspectives with the lecturers' movement, notably the demands for higher salaries and full-time employment, the university model that inspired these two stakeholders could not be more distant.

14.2 Models of University: The Relevance of Ideas for Understanding the Dynamics of Change

Before advancing in our empirical analysis, a word is needed about the meaning of the concept of a university model, as used in this chapter. Bernasconi (2007), analyzing the fate of the Latin American University in recent years, calls attention to the centrality of this ideational construct for understanding the relevant social dynamics that shape the real life of universities. As posed by this author:

> A model of the university is a stylized representation of reality. It distills the variety of actual forms of the university in an abstract and general construct, a concept of the university as it exists in the minds of faculty, students, administrators, and other constituencies and is expressed in their discourse about the university. At the same time, a model is a set of instructions for action, a patterned way of doing things. In this case it refers to going about organizing, governing, and operating a university and being an administrator, a professor, or a student. (p. 29)

In this sense, the model of a university is, at the same time, shaped by the realities of the university in its daily life; and, in turn, it shapes the actual institution, sustaining the actors' expectations regarding the way the university should be organized and how it should be related to the government and the society. Posed in this way, it is easy to see how central this culturally embedded set of ideas is for understanding the institutional dynamics of real universities. As stated by Maassen and Olsen (2007), universities should be understood as complex institutional structures with

characteristic patterns of behavior, meanings and resources (ibid., pp. 310–315). In such an environment, change is strongly dependent on institutional identities (ibid., pp. 320–324); which, in turn, are dependent on the model or paradigm of the university that is shared (or not) by different internal and external actors.

This paper analyses the characteristics of the university model sustained by academics in Latin America. Bernasconi (2007) when discussing how the idea of the university has changed in Latin America argues that an "an overarching model for the post-independence Latin American university existed during the nineteenth and most of the twentieth centuries" (ibid., 2007, p. 30). Nevertheless "In more recent times, for reasons having to do with the knowledge economy, globalization, financial restrictions, loss of legitimacy, and mission shifts, the grip of the model on public universities has also weakened" (ibid., p. 30). In his reasoning, the American model of Research University is the one that is becoming dominant in the public sector. Our findings, presented in this work, are not so reassuring. When looking at the profiles as well as the values and attitudes sustained by different parts of the Latin-American professoriate, one perceives how difficult it is to observe this convergence. In fact, our analysis finds support for the idea that, while the old model is being undermined by the dynamics of the region, a more realistic picture is one where conflicting values and goals are evident inside the universities. Thus competing models are being advocated, and these disputes weaken the real capacity for universities to agree on strategic action.

In their work, Olsen and Maassen propose that the "actors' institutional belonging, positions and roles are significant factors explaining the modes of thought and behavior" (Maassen and Olsen 2007, p. 315). Our findings support this assertion. Latin American academic profession is not unified either from the point of view of the roles academics fulfill in their daily life, either from the values they sustain towards the academic life. Accordingly, different academic profiles and positions are associated with the diverse attitudes and values that fuel the disputes inside Latin American universities.

The study presented in this chapter uses data collected in the framework of the Changing Academic Profession (CAP) project for the countries of Argentina, Brazil, and Mexico. In these three countries, only the academics working in the public sector were considered.

14.3 The Academics in Latin America: A Layered Profession

Initially, we will analyze the main traits of differentiation inside the Latin American academic profession and how these differences influence the way academics think a university should be organized, governed and operated.

Contrary to the experience of many mature higher education systems, academics in Latin America are not a unified profession, where all members share a similar mode of socialization (the doctoral training) and at least some core values. On the contrary, one could say, borrowing the expression from Olle Edqvist (2003), that the

academic profession in Latin America is a layered profession, where different professional profiles are superimposed, each of them with roots in different phases of Latin America's higher education history. What is more interesting, all these profiles have their own ways to reproduce themselves, and, in doing so, these processes perpetuate the shattered profile of the academic profession in Latin America.

In order to identify the most relevant traits of these different profiles we propose a typology that takes into account two different aspects of the academic profile:

– the degree of congruence between academic rank and academic credentials;
– the degree of engagement with research

As I have observed in a prior publication (Balbachevsky 2011), Latin American universities, as in Brazil, have always been plagued by shortcomings derived from the small pool of competent academics available to recruit as faculty for their higher education institutions. The massification of access to higher education and the consequent growth of the number and size of institutions (both in public and private sectors) have only worsened this problem. While all countries in the region have tried to circumvent this situation by establishing programs for sending scholars abroad to attend graduate education, and by supporting the domestic efforts to build a graduate layer, these alternatives were never enough, and, most important, have never been enthusiastically supported by the majority of academics. While some scholars were in fact attracted to the new perspectives offered by graduate education, this profile was never dominant. For most universities and academics, the easier path was (and still is) to weaken the relationship between academic credentials (achieved by successfully finishing a post-graduate program) and the rank ladder inside the institutions. Since their beginning, academic unions inside the public sector have successfully pushed for bypasses that would allow an academic to climb the institutional ladder without going through the pains of attending a doctoral education.[3] The negative side effect of this process is, of course, that not all academics with doctorates are able to find a senior position inside their university.

Up to the present, however, holding a doctoral degree is far from the norm among the senior academics. Actually, the survey of academics in Argentina, Brazil and Mexico shows that 39 % of academics (equivalent to associate and full professors) are doctoral degree holders. The smaller proportion among academics in junior positions, i.e. 33 %, reflects the fact that some are still in process of working on their PhD.

As said before, another relevant dimension for understanding the way the academic profession is organized in Latin America is to consider their commitment to research. To fulfill their role as researcher, academics should be able to share their

[3] This dynamic is still very relevant in Latin American higher education. As an example, one can cite the new law approved by the Brazilian government last December (Law no. 12.772, from December 26th, 2012), which imposes that all new academics at the Federal Universities are to be hired as teaching assistants, regardless their academic credentials. The approval of this law followed a long lasting strike in the Federal universities, and was enthusiastically received by the unions' representatives of the academics in the public sector in Brazil.

research findings with a wider audience, which, means usually to publish these findings (Fulton and Trow 1975). Considering also that most of the Latin American universities are devoted to undergraduate (bachelor) instruction,[4] the degree of internal support for research is usually very small. Thus, in all Latin American countries, researchers should also have the skills and experience to compete for external support for their research activities. Finally, the last dimension to be mentioned is the degree of success of the academics in establishing connections with peers abroad, either by collaborating in research projects with colleagues from abroad, or publishing in co-authorship with international colleagues.

When analyzing indicators for these three dimensions in the CAP data for the three countries, one finds a very interesting pattern of association: Most of the academics are totally inactive in these dimensions. That is, they do not publish, have no access to external funds for research and play no active role in international collaboration. On the other hand, a number of academics reported some publishing activity, but no other research-related relevant activity. A minority reported success in publishing, access to research funds but no external collaboration. Finally, a small proportion reported positively in the three dimensions: they publish, reported access to external resources for research support and have active collaboration with peers from abroad, some – a minority – collaborate and publish in co-authorship with colleagues from abroad, while others reported collaboration but no publishing with colleagues from abroad. The pattern of association between these answers is depicted in Fig. 14.1.

Thus, while 13 % of the sample are full-fledged researchers with international collaboration and co-authorship, another 18 % have an active profile as researcher with international collaboration, 14 % reported publishing with access to external funding but without access to international networks, 34 % reported some publishing activity but no access to external funding or any contact with international networks. Finally, 21 % of the sample are not active as researcher.

Thus, if we take together the information regarding the degree of congruence between institutional rank and academic credentials and the degree of commitment with research, it is possible to produce an insightful typology of academic profiles present in Latin American universities.

First, there is the *internationalized academic elite*, with good academic credentials and well positioned inside the institution's career, with a permanent involvement with research and knowledge production and showing strong links with the international community.

Then, there is the *domestic elite*, composed by academics with good academic credentials, well positioned in the institution's rank, and strong commitment to research and knowledge creation, but without strong links with the international community.

[4] Even in Brazil, where graduate education is better institutionalized and has been a focus for public support since middle 1960s, a major commitment to graduate education is seldom found. Only a few public universities and a handful catholic universities could be classified as graduate oriented institutions, with more than 30 % of their enrollments at the graduate level (master's and doctoral programs). For more details, see Balbachevsky 2013.

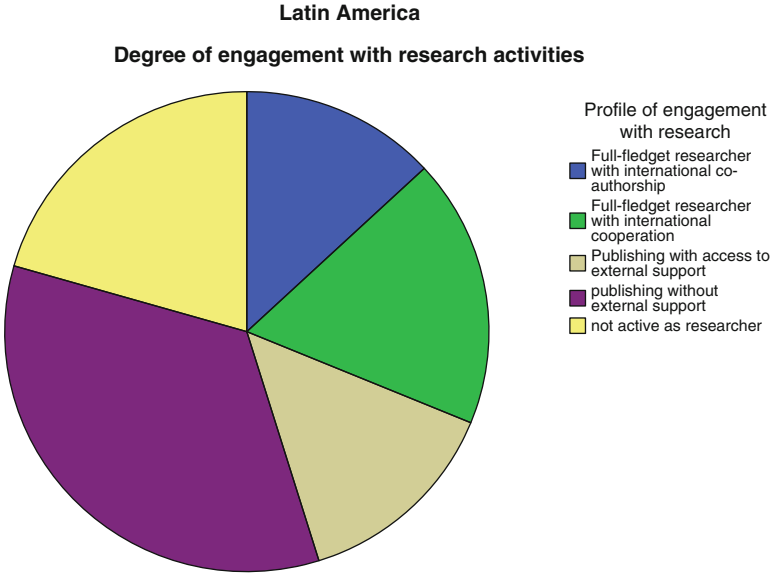

Fig. 14.1 Degree of academic engagement within research – academics in Argentina, Brazil and Mexico 2007 (percentage) (*Source*: Changing Academic Profession survey)

The old *institutional oligarchy* is composed of academics with shaky academic credentials, but who have reached positions of authority inside the institution. Some of them correspond to the traditional professor as was earlier understood in Latin America, a professional distinguished in his profession and occupying the higher ranks in the faculty of a professional school. Others are academics with no particular professional identity, but with large experience in navigating the universities internal bureaucratic rules.

The *young scholars* correspond to scholars with good academic credentials and a strong commitment to research and knowledge creation but positioned in the lower ranks inside the universities. For diverse reasons, in these cases, research and commitment to academic life have not been translated into institutional recognition.

Finally, for the majority of *lecturers* in Latin America, the lack of academic credentials and small or negligible commitment to research produces a profile that is more similar to a secondary level teacher than an academic scholar. They are almost entirely disconnected from the national and international community of peers. Their professional identity is based on their affiliation with their institution and the small group of colleagues with whom they share quotidian life. In a sense, they tend to have a semi-professional identity, as depicted by Etzioni and collaborators (1969): they tend to emphasize intrinsic rewards – such as the personal satisfaction of being a good teacher – as opposed to the extrinsic ones, achieved by scholarly performance.

Table 14.1 Hours spent on various academic activities by academics of different profiles in Argentina, Brazil and Mexico 2007

Mean hours per week spent on					
Academic profile		Teaching	Research	Administration	All academic activities
International elite	Mean	15.8	17.1	6.2	44.1
	Std. deviation	9.1	11.0	6.9	15.1
Domestic elite	Mean	18.7	12.0	6.8	43.7
	Std. deviation	10.3	9.1	8.7	16.6
Academic oligarchy	Mean	22.5	5.0	8.0	41.0
	Std. deviation	11.9	6.7	10.4	17.8
Young scholars	Mean	13.5	17.8	3.8	39.6
	Std. deviation	7.7	11.3	5.9	14.7
Lecturers	Mean	15.9	11.0	3.4	35.0
	Std. deviation	10.1	9.6	6.6	16.6

Source: CAP survey
Eta2 -Teaching: 0.09; research: 0.24; administration: 0.04, total: 0.03

Table 14.1 shows how the academics of the various types organize their daily life. Accordingly, young scholars and the international elite share the same intensity of commitment to research. On the other hand, compared to young scholars, members of the international elite reported a substantial amount of time devoted to administrative tasks, which may be related with their position as research team leaders, and to teaching. Young scholars tend to report less time consumed with both activities.

Members of the old oligarchy reported the strongest commitment to teaching of the whole sample. Teaching related activities, and not research and knowledge production, is the activity that compromises most of the time of these academics. On average, members of this group reported spending only 5 h per week with research related activities. Among this group, the involvement with administrative tasks is also the largest in the sample, which may be related to their particular source of prestige: the control of the bureaucratic channels of governance inside the university.

The domestic elite is an intermediary profile: Compared to the international elite (and the young scholars) they report on average, less time committed to research, but compared to the old oligarchy, they spend more time in research related activities. They also report more time dedicated to teaching than the international elite and the young scholars, but less than the amount of time reported by the old oligarchy, and the time reported for administrative tasks is not significantly different from the time reported by the members of the international elite.

Finally, the lecturers, as expected, tend to report less time devoted to research related activities, and more time devoted to teaching. They are also the group less involved with the activities related to administration. Among all academics, this is

Table 14.2 Highest level of teaching responsibilities by academics of the various profiles in Argentina, Brazil and Mexico 2007 (percentage)

Highest level of teaching	Academic profile					Total
	International elite	Domestic elite	Academic oligarchy	Young scholars	Lecturer	
Doctorate	46.8 %	14.5 %	0.6 %	30.3 %	2.3 %	16.5 %
Master	27.1 %	27.7 %	14.9 %	14.3 %	10.2 %	19.2 %
Undergraduate	26.1 %	57.8 %	84.5 %	55.4 %	87.6 %	64.3 %

Source: CAP Survey
Chi square test: 1012.3, df:8, sig. 0.000

the group that also reported the shortest academic week: on average, the academic activities (teaching, services, research and administrative responsibilities) occupy only 35 h per week; compared to 44 h among the academic elite and the domestic elite, 41 h among the members of the academic oligarchy, and 40 h among the young scholars.

The various types of academics also differ regarding their teaching assignment. Table 14.2 shows which is the highest level of teaching reported by the various types of academics.

Forty-seven percent of the members of the international elite reported teaching responsibilities at the doctoral level, and 27 % teach at least in the master's programs. On the other hand, only 1 % of the members of the academic oligarchy reported teaching responsibilities in doctoral programs, while 84 % of these academics are solely devoted to teaching in bachelor programs. Among the young scholars, 30 % have responsibilities at the doctoral level, and another 14 % have teaching responsibilities at the master's programs. Among the lecturers, 88 % have their teaching responsibilities confined to bachelor programs.

As one might expect, the types differ in the extent to which they appreciate teaching and research activities. When asked how they balance their preferences between teaching and research, their responses differ similarly, as Table 14.3 shows, as those reported above.

While 83 % of the member of the international elite reported their interest was either in research solely, or at least leaning towards research, among the members of the academic oligarchy the proportion of similar answers was only 22 %. While only 23 % of the young scholars declared to lean towards teaching, 61 % of the lecturers gave the same answer. Thus, far from there being a shared idealized model of the university, it seems that the values and characteristics that are usually attributed to the American research university are at the centre of the disputes inside the academic profession in Latin America. Most of the academics in the region, among senior and junior staff, still see teaching as their primary role. As we will see in the next section, the typology described above also uncovers relevant dissents in other areas, among the academics from public universities in Latin America.

Table 14.3 Preferences in research and teaching by academics of the various profiles in Argentina, Brazil and Mexico 2007 (percentage)

	Academic profile					
Preferences	International elite	Domestic elite	Academic oligarchy	Young scholars	Lecturers	Total
Primarily in teaching	0.9 %	6.5 %	29.4 %	1.1 %	13.6 %	13.9 %
In both, but leaning towards teaching	16.0 %	39.0 %	48.2 %	22.0 %	47.9 %	36.7 %
In both, but leaning towards research	67.2 %	48.3 %	20.4 %	63.4 %	33.6 %	41.9 %
Primarily in research	16.0 %	6.2 %	2.0 %	13.4 %	4.9 %	7.4 %
Total	701	600	1,173	350		3,271

Source: CAP survey
Question: Do your interests lie primarily in teaching or in research?
Chi square test: 939.5, df:12, sig. 0.000

14.4 Values Toward the Academic Profession and Attitudes Toward the Reforms and New Social Dynamics of Higher Education in the Region

In the last few decades, Latin American universities have been shattered by the same winds of change that have been present in other regions. Globalization, massification are global trends, all present in the region. And, as the general social environment has changed, so also has the general regulatory frameworks under which these universities operate changed. Since about 1990, public higher education in almost all the countries of Latin America has had to deal with a much more intrusive central government, sustained an external agenda of reforms that usually includes the enforcement of quality assurance programs, experienced a radical expansion of undergraduate enrolments, and finally the science policies have tended to become more competitive with a stronger emphasis on the social and economic relevance of the research outputs.

As one would expect, the ways Latin-American academics assess the overall environment of their institutions vary to some extent according to their profile. As Table 14.4. shows, the members of the academic oligarchy seem to be the most comfortable with the internal governance. When asked if they perceive a strong emphasis in the institution's mission, academics in junior positions tend to show more distrust than those in higher ranks, but among the academics of higher rank, it is the academic oligarchy that seems more confident with the way their institutions are conducted. Also, it is among these academics where one finds the highest

Table 14.4 Perception of their institution's environment by academics of the various profiles in Argentina, Brazil and Mexico 2007 (arithmetic mean[a])

Academic profile		A strong emphasis on the institution's mission	A cumbersome administrative process	A supportive attitude of administrative staff towards teaching activities
International elite	Mean	2.4	2.5	3.1
	Std. deviation	1.3	1.28	1.2
Domestic elite	Mean	2.3	2.5	3.0
	Std. deviation	1.1	1.3	1.2
Academic oligarchy	Mean	2.2	3.0	2.8
	Std. deviation	1.2	1.3	1.3
Young scholars	Mean	2.7	2.3	3.1
	Std. deviation	1.3	1.1	1.2
Lecturers	Mean	2.6	2.5	3.0
	Std. deviation	1.3	1.2	1.2

Source: CAP survey
ANOVA test indicates differences significant for $\alpha < 0.000$
[a]On a scale from 1 = Very much present to 5 = Not at all present

proportion of disagreement with the statement that the university has "a cumbersome administrative process". Of the total, 18 % of the members of the academic oligarchy strongly disagree with this statement, and only 19 % totally agree, compared to 8 % and 28 % respectively, for the other groups.

When asked additionally, if they feel that they are kept informed about what is going on in their universities, the higher ranks tend to give more positive answers, but among the lower ranks it is among the young scholars that the negative evaluations are more frequent. Academics in lower ranks tend also to be more critical regarding the degree of support academic freedom receives from the university's administration. Finally, the young scholars and the international elite are more skeptical about opening more space for student participation in the university's governance than the other academics (see Table 14.5). This is a relevant pattern of opposition, if one considers the widespread experience with democratic governance in Latin America, where students have an active role in electing the universities' high administrative officers.

One can thus describe the Latin American academic profession as a layered profession, where old profiles compatible with different university models are crammed together with new profiles that are generating the recent changes in university dynamics. Different professional profiles, with diverse commitments over what should be the core of the academic responsibility and values, share the same institution and are ruled by the same institutional regulations. But they don't share the same professional trajectory or the same aspirations. They compete over what is to be understood as a good scholar.

Table 14.5 Various views of their institution's governance by academics of the various profiles in Argentina, Brazil and Mexico 2007 (arithmetic mean[a])

Academic profile		I am kept informed about what is going on at this institution	The administration supports academic freedom	Students should have a stronger voice in determining policy that affects them
International elite	Mean	3.0	2.1	3.1
	Std. deviation	1.2	1.1	1.2
Domestic elite	Mean	2.8	2.0	2.9
	Std. deviation	1.3	1.1	1.2
Academic olicarchy	Mean	3.0	1.9	2.8
	Std. deviation	1.3	1.1	1.2
Young Scholars	Mean	2.4	2.3	3.2
	Std. deviation	1.1	1.1	1.2
Teachers	Mean	2.6	2.5	2.9
	Std. deviation	1.2	1.1	1.2

Source: CAP survey
ANOVA test indicates differences significant for $\alpha < 0.000$
[a]On a scale from 1 = Strongly agree to 5 = Strongly disagree

This situation is an important clue for understanding the strength and longevity of the old-fashioned formulas regarding university governance in Latin America. It is probable that a weak central administration and strong autonomy for the faculties and institutes is necessary in order to accommodate the tensions arising from these differences in profiles and values. For the academics with a stronger commitment to research, the strong politicization of the university's environment could be a source of considerable strain. It is not because of the strong isolation in which research oriented micro-environments are kept. In another study focusing on academics from the most active research centers in Latin America (Schwartzman 2008), it is possible to see that a characteristic common to all research groups affiliated to large universities is the construction of barriers which isolate the group from the larger institution, giving them a large margin of autonomy against the regulations and decisions emanating from the central authority. For these academics, typically, the university appears as an external entity, frequently an obstacle and, sometimes, even a threat to the group's survival and work. It is the institute or center which constitutes the basic institutional reference for these academics. For the academics interviewed on that occasion, it was these centers, laboratories or institutes that were the focus of their academic life and, at the same time, were an institutional space accessible for collegiate participation. These qualities are intensely appreciated by the researchers. They create powerful incentives for the academics adhering to a common project to preserve these micro-environments. In some measure, the existence of these semi-autonomous micro-environments cushions the research-oriented academics and their teams from any dis-functionality present in the larger university. As explained by one of the respondents:

> Yes, I have to speak very well of the institute… if you noticed, it was even difficult for me to find problems within UNAM (National University of Mexico). Apart from the structural inconveniences, it was difficult to define the problematic areas. Largely it is because I am at the Institute of Biotechnology. (cited by Balbachevsky 2008, p. 38)

But if this is true for the more research oriented academics, it is also true for the academics holding less commitment to research. For them, a university composed by loosely coupled schools and institutes creates a pattern of governance that tends to diffuse pressures for better performance both in teaching and research, coming from the government and other regulatory bodies. In a word, this old fashioned pattern of governance is comfortable for all types of academics and tends to be strongly supported by relevant constituencies inside the university.

Probably this is the reason for the strong limits faced by all reforms in higher education and science policies in Latin America. Research policy instruments have usually changed from the classic blind-delegation format toward the contract mode (Braun 2003, p. 315),[5] with the adoption of new instruments directed to increase social and economic relevance of science. The reforms in science policy have always averted any stronger interaction with the universities as a whole, shying away from any sustained effort to "change the 'institutional embeddedness' of scientists in order to avoid moral hazards and to increase the social responsiveness of scientists". The issue that arises from the present situation is how long it is still possible to preserve the shaky contract that until the present has preserved the Latin-America university without jeopardizing its capabilities for answering the new roles all universities are called to play in the knowledge society.

References

Balbachevsky, E. (2008). Incentives and obstacles to academic entrepreneurship. In S. Schwartzman (Ed.), *University and development in Latin America: Successful experiences of research centers* (pp. 23–42). Rotterdam: Sense Publishers.

Balbachevsky, E. (2011). Academic careers in Brazil: The legacy of the past. *Journal of Professoriate, 5*(2), 95–121.

Balbachevsky, E. (2013). Academic research and advanced training: Building up research universities in Brazil. In J. Balan (Ed.), *Latin's America's new knowledge economy: Higher education, government and international collaboration* (pp. 113–133). New York: AIFS Foundation and Institute of International Education.

Bernasconi, A. (2007). Is there a Latin American model of the university? *Comparative Education Review, 52*(1), 27–52.

[5] For Braun (2003) blind delegation occurs when all property rights (to decide, to act, to control) are delegated to scientists. In this way, scientists are required to do what they will do anyway, that is, basic research to promote their scientific career. The incentive mode of funding exercises pressure on scientists and attempts to increase responsiveness by using directed funding. In his work, he identifies also two other modes of delegation in contemporary research policies: delegation by contract and delegation to networks. But, in my understanding, even when adopting some instruments typical from these more advanced modes, science policy in Latin America is still balancing between the blind delegation mode and the incentive mode.

Braun, D. (2003). Lasting tensions in research policy-making – A delegation problem. *Science and Public Policy, 30*(5), 309–321.

Edqvist, O. (2003). Layered science and science policies. *Minerva, 41*(3), 207–221.

Etzioni, A. (1969). *The semi-professions and their organization: Teachers nurses, and social-workers*. New York: The Free Press/Collier MacMillan Publishers.

Fulton, O., & Trow, M. (1975). Research activity in American higher education. In M. Trow (Ed.), *Teachers and students: Aspects of American higher education* (pp. 39–63). New York: McGraw-Hill.

Maassen, P., & Olsen, J. P. (2007). European debates on the knowledge institution: The modernization of the university at European level. In P. Maassen & J. P. Olsen (Eds.), *University dynamics and European integration*. Dordrecht: Springer.

Schwartzman, S. (1993). Policies for higher education in Latin America; the context. *Higher Education, 25*(1), 9–20.

Schwartzman, S. (2008). *University and development in Latin America: Successful experiences of research centers*. Rotterdam: Sense Publishers.