Chapter 4
The Academic Profession in the Knowledge-Based Society (APIKS): Evolution of a Major Comparative Research Project

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Abstract This chapter argues for the importance of a comparative perspective on the academic profession, as higher education globally assumes an increasingly central role in the knowledge society and economy. We begin with an overview of the surge in empirical research on the academic profession over the past three decades and culminate with an introduction to the APIKS project: the Academic Profession in the Knowledge-Based Society. The project, involving research teams from 22 countries across 5 continents, designed and executed surveys of the academic profession in 2019–2020, including their role, working conditions, career trajectories and prospects, and the changing pressures and expectations for contributing to economic growth and social betterment through research, teaching, and external activities. Sampling and survey processes, including planning and design and datafile management, are described. The chapter concludes with a discussion of the challenges of conducting a large-scale comparative survey and considers the project's likely future directions.

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T. Aarrevaara et al. (eds.), *Universities in the Knowledge Society*, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 22, https://doi.org/10.1007/978-3-030-76579-8_4

Keywords Academic profession · Knowledge-based society · Carnegie Survey · Changing Academic Profession (CAP) · Formative years · Data management

Introduction

In this chapter we provide an overview of the development of the Academic Profession in the Knowledge-Based Society (APIKS) project, an enormous, international comparative research project, in which teams from different jurisdictions, working in collaboration, have administered a common survey questionnaire. The project currently includes 22 research teams. In this chapter we identify the importance of a comparative perspective on the academic profession, present the main purpose of the project regarding the knowledge society and its impacts on the nature of academic work, and describe survey processes like planning, framework design, and data management. We also identify the challenges of conducting a large-scale comparative survey and describe the project's likely future directions.

Scholarship on the Academic Profession

Institutions of higher education fulfil an extremely important role within society. They are responsible for educating highly skilled professionals, knowledge workers, critical professionals, and citizens in almost every realm of contemporary society, from healthcare, law, technology, and business, to philosophy and fine arts. They are increasingly asked to play key roles in knowledge creation and dissemination, to add to existing knowledge through research and reflection, and in doing so, to contribute to human, social, and economic development. These core roles in teaching, research, and service do not take place in the office of university administrators or the board rooms of governance; they are the work of the academic profession and take place in the heartland of higher education—the classrooms, laboratories, and academic workplaces of the professoriate. In order to understand higher education, we need to understand the academic professionals who fulfil its core functions; we need to understand who they are, what they do, and the context in which their work takes place.

Biographies and institutional histories have long focused attention on the life, work, and accomplishments of renowned individual scholars; however, the systematic study of academic work and the academic profession received surprisingly little attention until the mid-twentieth century and largely paralleled the increasing interest in research on higher education in the context of what Martin Trow termed the transition from elite to mass—and universal—higher education. As national systems of higher education were expanded and transformed, there was an increasing interest in understanding issues of supply and demand within national academic

labour markets and the shifting conditions and challenges of academic work. There was also an increasing interest in understanding differences within the academic profession, in exploring discipline differences within the 'academic tribes and territories', and differences related to issues of gender and other forms of inequity, in hiring, working conditions, and advancement (Jones, 2020).

One recent development has been the increased blurring of the lines, distinguishing academic staff employed full time in institutions of higher education and engaged in more than one of the historic components of the academic role (teaching, research, and service), from a broader array of knowledge workers who are engaged in research and development. These knowledge workers may collaborate closely with university-based academic staff but are housed outside university walls in organisations such as national academies of science (China, Russia, France), government entities such as national laboratories including Los Alamos, Fermi, and Livermore in the United States (USA), as well as government bureaucracies such as the FDA or NIH in the USA; that also does not include the large number of scientists conducting full-time research in business and industrial settings. There are two points to pay attention to: (1) the number of non-university R&D staff may actually exceed the number of full-time, university-based academic staff in the USA and (2) such non-university staff are increasingly working with university staff and lines of demarcation are becoming increasingly fuzzier. We see such boundary crossing (spanning) increasingly in the French (Musselin, 2019) and Russian systems (Yudkevich, 2019); in the USA, it has long been common for scholars to shuttle back and forth between university and government settings, even when individual scholars are officially listed in university staff rosters (although they may be paid entirely with non-university funds). Most recently, institutions in the USA such as MIT and Caltech have developed strong and consistent exchange relations between academe and industry with scientists and doctoral students moving freely across settings. While the APIKS project explicitly recognises the increasing blurring of lines across higher education, government, and industry, our focus has explicitly targeted the university-based academic staff in the interests of manageability. Indeed, a decade earlier, the Changing Academic Profession (CAP) survey had sought in its initial sampling frame to target government and industrial researchers and found it necessary, in light of the very different national systems, to abandon that approach. Academic staff in Japan and Germany at the time were government civil servants, albeit university based. There was surprisingly little comparative/international scholarship on the academic profession until the last few decades of the twentieth century. The dramatic reforms in higher education policy, funding, and governance within many national systems led to an increasing scholarly interest in understanding both common trends and important national differences. Higher education had become increasing international in scope, but also increasingly subject to the external pressures of global competition, international rankings, and in at least some jurisdictions, an increasingly international academic labour market.

Comparative studies of the academic profession allow us to understand the implications of these multiple pressures, reforms, and challenges on those who fulfil the core functions of higher education, to understand the ways in which broader

shifts and trends influence the work taking place in the classrooms and laboratories. It helps us understand differences in academic work and careers both within and between jurisdictions and illuminates the pressures and challenges of the academic profession in global, regional, and national terms.

Moreover, the ubiquitous presence of the Internet has allowed a new model for such comparative research to emerge, what we have called the radically decentralised, networked model. The CAP project was originally conceived as a 10-year follow-up to the 1991–1992 Carnegie Foundation for the Advancement of Teaching International Survey of the Academic Profession led by Ernest Boyer and Philip Altbach (Altbach, 1996). That earlier model had been sponsored and led by a single, private corporate entity, the Carnegie Foundation. It was an informal group of alumni of that Carnegie survey who brought themselves together as a collegium to explore the feasibility of launching the 2007 follow-up survey. A basic principle of this collaborative effort was that each participating team would seek to secure its own sources of funding for their national survey. A total of 19 jurisdictions managed to secure external funding, typically from their central government directly or through a national social science competitive grant programme. In cases in which national funding could not be attracted—such as in the USA—self-appointed principal investigators (national team leaders) managed to self-fund (often with modest support from their home institutions and doctoral student assistance) online surveys. It was the radically decentralised, network model of CAP that provided the foundation for the APIKS project; many current team members either worked on CAP or were recruited by former CAP researchers (Teichler, 2017).

International Comparative Studies on the Academic Profession: From the 1990s to the Early 2010s

Since understanding the academic workforce has become an important issue in global higher education, a number of research projects have been undertaken since the early 1990s to study the academic profession in comparative perspective. This comparative approach was essential in exploring common challenges that academics experience across the world, even though they are situated in different traditions and deal with varied higher education policies. Moreover, as academics have been more actively engaged in international communication and research collaboration, comparisons between higher education systems have become more relevant and feasible. The academic labour market has also become increasingly international; the great brain race has become a global phenomenon.

The first international comparative survey on the academic profession was the Carnegie Foundation Survey of the Academic Profession, which took place from 1991 to 1993. The project was designed to examine the academic profession in different higher education systems in terms of demographic composition, employment and working conditions, teaching and research demands, and perceptions of

university governance and management. Fifteen teams from around the world joined in the project, representing Australia, Brazil, Chile, Egypt, Germany, Hong Kong, Israel, Japan, Mexico, the Netherlands, Russia, South Korea, Sweden, the UK, and the USA. Based on 19,000 survey responses, the project team identified similar values, attitudes, and behaviours of academics in different regions, even as they found differences in employment structure, working conditions, and priorities of the professoriate (Altbach & Lewis, 1996). The survey design and findings of the first Carnegie project had significant impact on subsequent studies of the academic profession.

In 2007–2008, higher education scholars from several countries initiated a second comparative project on the academic profession: the CAP initiative. The scale of this project was larger than its predecessor. It was administered in 19 higher education systems: Argentina, Australia, Brazil, Canada, China, Finland, Germany, Hong Kong SAR, Italy, Japan, Malaysia, Mexico, the Netherlands, Norway, Portugal, South Africa, South Korea, the UK, and the USA. Based on the reflections from the first survey, the project team leaders were more cautious in designing the survey and clearly defining the project's main themes. For example, it was critical to design a survey that would reflect the new realities in the academic environment while still allowing for comparisons across time for teams participating in both surveys (Höhle & Teichler, 2013). Approximately half the survey items from the 1991–1993 questionnaire were retained, but there were many new items to explore the emerging realities and changing nature of academic work. In particular, the CAP project focused on new trends in academia, such as higher expectations of relevance for academic work, growing internationalisation, and the increase of managerial power in universities (Teichler et al., 2013).

The CAP survey received more than 23,000 responses from 19 teams, and the findings were substantial in showing changes in the views and activities of academics through a comparison with the earlier survey findings and demonstrated significant variations in the realities of different higher education systems around the world. Certain broad trends were common, including demographic changes (i.e. the increasing number of female academics, non-tenure track academics, and internationally mobile academics), a greater emphasis on research, increased research productivity, and powerful performance-based management climates in universities.

Building on the successful implementation of this comparative survey, spin-off studies were undertaken at the regional level. In Europe, the Academic Profession in Europe—Responses to Societal Challenges (EUROAC) took place from 2009 to 2012, with scholars from six additional European countries (Austria, Croatia, Ireland, Poland, Romania, and Switzerland, with Finland and Germany) joining the studies on academic profession (Höhle & Teichler, 2013). In addition to conducting a survey, EUROAC also collected extensive interview data in eight countries. In Asia, the Academic Profession in Asia (APA, 2011) study was launched, with new teams joining the survey on the academic profession from Cambodia, Taiwan, and Vietnam.

These projects had significant achievements in the study of the academic profession. They provided a rich portrait of the profession and made it possible to compare

academics' work situations, career, and attitudes on core tasks and management on a global scale. On a scholarly level, a large number of books and journal articles based on the survey data were published from a comparative perspective or focusing on individual countries; approximately 700 scholarly publications had emerged from these projects by 2018. Most importantly, the projects have united a broad community of scholars for nearly 10 years, with colleagues who participated in an active network of international collaboration on subsequent projects.

Academic Profession in the Knowledge-Based Society (APIKS): From 2014 to 2019

After the successful completion of the CAP survey, the scholars who led it took the initiative in 2014 to create a new comparative survey on the academic profession. With reflections on previous projects, the project leaders and active participants organised workshops and seminars to discuss the major directions of the project and the survey framework, design the survey, build strategies of survey implementation and data management, and share the preliminary findings. Table 4.1 summarises the workshops held from 2014 to 2019 in connection with the APIKS project. Dialogue among participating teams will continue in the years to come.

Planning Phase

At the very first stage of the project, ten teams (Brazil, Canada, Finland, Germany, Japan, South Korea, Mexico, Norway, Portugal, and the USA) from the previous CAP survey agreed to participate in the new survey. To plan the project in a more structured way, the members launched an organising consortium. With a goal of implementing the survey in 2017 (10 years after the CAP survey), the consortium emphasised maintaining a strong collaborative network, empowering an efficient decision-making body, and ensuring ongoing dialogue among team members. The first workshop discussed the changes that had taken place in the various higher education systems since 2007–2008. These changes were related to structural reforms, regulation, massification, and enlargement of higher education systems, for example. A mode of governance for the APIKS project was established, comprised of three bodies: core group, coordination group, and advisory group. The team leaders constituted the core group as a key decision-making body. The coordination group acted as the body responsible for membership and issues related to survey implementation; it was also in charge of providing a platform for participating teams with coordination decisions and managing the international data. The first co-ordinator group members for 2013–2017 were Timo Aarrevaara (chair), Elizabeth Balbashevsky, Leo Goedegebuure, and Jung Cheol Shin. The second group, from

Table 4.1 APIKS workshops from 2014 to 2019

Time	Location	Title	Main agenda
September 2014	Helsinki, Finland	Planning and designing the survey	Launch the consortium for a new survey.
			Plan upcoming workshops.
			Discuss strategies for ensuring a sustainable collaborative research network.
			Discuss project timeline .
April 2015	Campinas, Brazil	The academic profession in the knowledge-based society	Discuss the major theme of the survey.
			Define the survey framework .
			Decide on the target group for the survey .
			Discuss sample size, sampling procedure, and data storage procedures; draft survey themes .
			Discuss the possibility of launching two separate surveys .
September 2015	Aveiro, Portugal	The project conceptual and methodological definition	Confirm the major theme of the survey.
			Discuss the sample and construction of the instrument.
			Discuss the pros and cons of implementing separate surveys.
April 2016	Seoul, Korea	Academic profession in knowledge-based society	Determine the core survey areas.
			Develop the questionnaire, adding new questions.
			Finalise the conditions for consortium membership.
			Decide on the principle of two tracks in one survey .
March 2017	Hiroshima, Japan	Status of the survey	Finalise the questionnaire.
			Prepare survey implementation.
			Establish definitive guidelines for data management, data storage, and access to survey database.
March 2019	Hiroshima, Japan	Academics' teaching and research activities in the knowledge society: Main findings from national surveys	Update the progress of each team in the project.
			Share major findings focusing on teaching and research activities from the survey.

(continued)

Table 4.1 (continued)

Time	Location	Title	Main agenda
August 2019	Kassel, Germany	Analysis of engagement/ knowledge and technology transfer	Share major findings and explore potential collaborative work across higher education systems .
			Conduct onsite data analysis and discussion for collaborative publications.

2017 onwards, were Timo Aarrevaara and Monica Marquina. Senior scholars who participated in the first Carnegie survey and led the second CAP project—Akira Arimoto, William Cummings, and Ulrich Teichler—remained in the project as an advisory group chaired by Teichler, to provide ongoing support and share their valuable experience to ensure successful implementation of the APIKS survey.

The tasks of the methods group as a sub-committee were also important; its role was to assess data from individual teams to ensure that it met the criteria of the international dataset and to decide when it was necessary to reduce the number of datasets. This sub-committee controlled the minimum standards for comparative data and made recommendations about key result tables for use in analysis. Six other sub-committees were organised: questionnaire coordination, survey coordination, data coordination, conference coordination, ethical committee, and publication coordination.

Participating Teams

As the project evolved, the number of participating teams grew, with more than 20 joining the project, although the project status was slightly different between teams. For the coordinating group, it was important to manage the participating teams efficiently in terms of qualifications, quality of work, and active participation and meaningful contributions to the project. The consortium decided that team leaders should participate in at least one workshop as a prerequisite for participation in the consortium. This principle ensured that members would play a role in establishing the rules and adapting them during the implementation phase of the survey. In 2016, it was decided that new members should host a national workshop that would examine survey implementation and the consortium's rules in detail. The new teams would invite an expert nominated by the APIKS coordinating committee to monitor the survey process, with transparency required in that process and in all decision-making.

It was also necessary to keep the door open to those teams that were not able to participate in a workshop but still had strong potential to contribute to the project. Many scholars in higher education from different countries approached the project leaders and expressed their interest in joining the project, and new members were

brought into the project until very recently. However, three teams unfortunately had to withdraw from participating in the project even though their contributions at the initial stages were significant. This was mainly due to difficulties in securing the research funding needed to carry out the project or changes in research project priorities at their institutions. By the end of 2019 there were 22 teams involved with the survey located in Europe, Africa, the Americas, and Asia. An additional four teams had been interested in completing the survey at a later stage. Seven teams participated in the planning phase but didn't make it to the survey stage.

Survey Framework: Theme and Target Group

As the project's first step, the major theme of the survey was discussed. Throughout the ongoing dialogue between team members in 2014 and 2015, it became clear that the core of the APIKS project would be about understanding how the emergence of new realities created by the knowledge society was affecting academics' work and values. Two features of the knowledge society were highlighted. First, innovation was deemed to be the main driver of today's economy, bringing with it a heavy emphasis on research and development across higher education systems. Second, large proportions of employment and gross national product are related to the knowledge activities of academics.

The new survey was formally named (the Academic Profession in the Knowledge-Based Society) and the survey framework was discussed. In the process of building the survey framework, there were intense discussions about determining the target group of the survey. In particular, there were several debates about whether the survey should target only academics from science, technology, engineering, and mathematics (STEM) fields or academics from across all fields. The starting point was a narrower and more easily implemented survey targeting only STEM sectors. The idea was to identify comparative data, policies, and programmes of STEM from the early 1990s (Freeman et al., 2015). Based on this, the aim was to carry out a flexible sample design through which each team could define the academic profession in the STEM disciplines according to the specifics of each university system. This approach was expected to allow teams to manage the survey with fewer resources.

The scope of STEM fields is understood differently in different national contexts. For example, some teams could include broader science- and technology-focused fields, like agrarian science and the health sciences, while others would exclude them. In addition, there were concerns of missing the voices of academics from non-STEM fields, so it was decided that the survey population should be extended to academics from across all fields, unless certain teams had a specific rationale for narrowing their survey target groups to focus only on STEM. This narrower option did not take place, because the teams that implemented the survey had a wider interest in knowledge of societies and the role of disciplines in knowledge production. Another important reason for the broader sample design was the interest in a comprehensive comparison of Carnegie, CAP, and APIKS surveys. Over time,

teams were able to access the research funding needed for the implementation of a wider survey of all disciplines in higher education.

Emerged Theme: Two Tracks Under One Survey

While developing the survey framework, another theme emerged that focused on the academic career and its formative years. The career aspects of academic life were always an important issue in earlier projects on the academic profession. The results from CAP and its successor projects demonstrated a substantial gap in the working conditions between senior and junior academic staff across some higher education systems. This refers to a small core of senior academics with secure working conditions, on the one hand, and casual workers with an emphasis on heavy teaching duties, short-term projects, and low levels of institutional influence who were mostly early career and junior academics, on the other (Altbach, 2000; Höhle & Teichler, 2013; Santiago et al., 2015). Several team members expressed keen interest in conducting an extended APIKS survey called the formative years, with a greater focus on academics' career-related issues. The formative years were defined in the sample as final-year doctoral candidates and subsequent years as researchers or post-doctoral appointments.

It was expected that about half of the teams would conduct this extended formative years survey, primarily because they believed that the extended survey would include the broader range of academics among survey respondents, regardless of their formal employment status. In particular, some European teams were deeply interested in this extended survey because doctoral students are called 'researchers' or 'junior academics' in some European contexts and are actively involved in knowledge production functions; however, they were not included in previous surveys, where they were classified as students rather than academics.

There were ongoing discussions about whether to conduct two separate surveys or merge the two into one. Conducting a separate, extended survey with doctoral students would lead to results that were richer in describing academics' work at different career stages and in comparing higher education systems. However, resource limits meant that it was not realistic for many teams to implement two full-fledged surveys. The ideas were advanced and defined in 2015 and 2016, and the survey framework was clearly shaped with the idea of two tracks within one survey. Combining the knowledge society and formative years surveys made it possible to cover a wider range of respondents and offered individual teams the choice of whether to include both tracks. At that point APIKS was envisioned as dividing into two parts: the CAP II Knowledge Society (CAP-KS) and the CAP II Formative Years (CAP-FY) surveys.

These discussions raised the issue of balance between the level of standardisation and survey flexibility in the comparative project, as it was obvious that each team had a slightly different focus and interpretation of the survey as a whole. It was important to proceed with the survey only after all consortium members had a clear

understanding of the target group, sampling strategy, and survey instrument. These ideas were actively discussed in workshops until the team members agreed to allow a certain level of flexibility for individual teams. For example, each team was permitted to include additional survey items as long as they kept the main part of the survey in a standardised format for comparative purposes. After the major theme was defined and target groups identified, in-depth discussions followed regarding sample size, sampling procedure, data storage procedures, and a draft questionnaire. The implementation of two separate surveys had its pros and cons as it would have produced inconsistent data because these data would not have been comparable to previous survey results. Thus, one APIKS survey was formed from the two surveys made.

Designing the Questionnaire

The questionnaire became more concrete after the third round of workshops in 2016. Seven areas of questions were identified: career and professional situation, general work situation and activities, management and governance, internationalisation, personal background and personal characteristics, academics in the knowledge society, and formative academics. To ensure effective survey design and implementation, team members were divided into seven groups, each with a coordinator, as Table 4.2 shows.

Through 2017, there were follow-up workshops and communication between team members to finalise the questionnaire. The external activities and formative years sections were new and had not been included in the CAP survey. In addition, each section included new questions. Although the questionnaire evolved significantly based on productive discussions among team members, it was premature to implement the survey in 2017 due to the length of the questionnaire and level of flexibility that would allow for each team to add its own questions. The coordinating group members agreed to shorten the questionnaire so that it would not take longer than 20 minutes and allowed each team to add higher education system-specific questions within that time limit. As the length of the survey form affects the response rate, and given the addition of new questions, some items also had to be left out. The APIKS questionnaire does not cover some topics as comprehensively as the CAP project, such as the respondents' income, residence, and support services, and some governance questions were asked in different ways.

Career and professional situation asked views on professionally active respondents' degrees, career paths, and current work situation. *General work situation and activities* included respondents' work hours according to several tasks and attitude-to-work conditions. *Teaching* refers to the current academic year or the previous one for those who had not taught during the current academic year. *Research* referred to the current academic year or the previous one if a respondent was active in research. External activities asked for views on how external activities to a respondent's institution contribute to society. *Governance and management* mapped the respondents'

Table 4.2 Survey areas

Survey areas	Coordinator	Participating members
Career and professional situation	Agneta Vabø (Norway)	Maria Yudichevich and Ilya Prakhov (Russia), Peter Bentley (Australia), Marek Kwiek (Poland), Robin Chen and Sophia Ho (Taiwan), Hui Guo (China)
General work situation and activities	Timo Aarrevaara (Finland)	Hong Shen (China), li-fang Zhang (Hong Kong SAR), Tsukasa Daizen (Japan)
Management/governance	Lynn Meek (Australia)	Maria Yudichevich and Ilya Prakhov (Russia), Hanying Li(China), Norzaini Azman (Malaysia)
Internationalisation	Futao Huang (Japan)	Laura Valkeasuo (Finland), Fatma Nevra Seggie (Turkey), Eric James Iversen (Norway), Li Yu (China)
Personal background and personal characteristics	Jung Cheol Shin (South Korea)	Glen Jones (Canada), Yan Zhang (China)
Academics in knowledge society	Christian Schneijderberg (Germany)	Baris Uslu and Fatma Nevra Seggie (Turkey), Lars Geschwind (Sweden)
Formative academics	Leo Goedegebuure (Australia)	Peter Bentley (Australia), Lars Geschwind (Sweden), Barbara Kehm (UK), Eric James Iversen (Norway), Maria Yudichevich and Ilya Prakhov (Russia), Norzaini Azman (Malaysia), Teresa Carvalho (Portugal), Juhani Saari (Finland), Yaging Lin and Jin Lin (China)

influence and attitudes to governance and management phenomena. *Academics in formative stages* were questions for junior respondents, excluding full professors, associate professors, or similar ranks.

Creating the International Dataset

During 2018 and 2019, most teams implemented the survey, with system-level data collected at the individual team level. Once most teams had completed data collection, it was essential to establish definitive guidelines for data management, data storage, and access to the international database. There were important questions to be answered, such as: (1) how long to store the data, (2) whether data would be available to the public, (3) the extent to which data management should be centralised and what level of flexibility should be given to individual teams for data correction, and (4) what specific steps would follow after data creation, sharing, and access.

In the planning phase of the project, an important decision was made to store the data securely for 12 years after the APIKS survey had been implemented. This approach ensures that there will be no problems with consent, fabrication, or

falsification of data after team members publish their work individually or in collaborative efforts.

Whether the data should be available to the public was a sensitive issue. For some teams, open data was an essential condition of financial support from national funding agencies, while it was simply not possible for other teams to allow open data. As a principle, it was agreed that raw data would not be available to the public; however, there are plans to develop an online system that would enable the public to make statistical queries from the database under certain conditions and obtain the resulting information. Of course, access would apply only to the data from those teams that accepted the open access conditions. If some teams decide to take further steps and publish their data in an open-source format, they will be permitted to do so, provided that they do not share other teams' data without consent. It is also critical that the survey participants be notified in advance if their material is to be used in open data applications.

Another issue regarding data management was the extent to which data collection should be standardised and centralised. Although it was assumed that the implementation would be based on a highly standardised questionnaire and that data collection would follow centralised procedures, some teams revised some questions according to their context and added their own questions to the survey. The basic recommendation for each team was to store its data in accordance with the consortium guidelines, even if they did not need to submit the data from higher education system-specific questions to the international dataset. In addition, each team was advised to consult with the co-ordination group about the number of team-specific questions before survey implementation.

The core group of team leaders, with support from Ville Tenhunen as data coordinator, decided the specific step-by-step guidelines for data management, from collection to storage and sharing. This process included data storing at CSC, the IT Center for Science owned by Finnish higher education institutions. The system features four phases of operations. First, individual teams collected the data using their own tools. Each team uploaded its questionnaire results to the centralised repository, with due consideration for technical harmonisation and national regulations on data protection. Only the team leader and administrator had access to the data during this phase. Second, raw datasets were saved in the centralised database, which the team leader and administrators could examine, review, and clean when necessary. A centralised system offered an interface to the data and researchers so that they could use their preferred tools to clean and correct the data. Only those with access to the data were responsible for data correction and cleaning. Third, after data cleaning, the corrected versions of the datasets would be stored by team leaders as data for analysis. With these data, researchers can create final-version datasets, which are the basis for research and publications. The operations are run according to the ethical code of the consortium. Only team members have access to the data during all these phases. Each team is responsible for data manipulation. Fourth, a centralised system offers an interface for publishing datasets based on researcher consent, and the open data will demand metadata management techniques.

Data management and governance are particularly important in the changing environment of international standards regarding data regulation. Over the last 10 years, data regulations in most countries in which the APIKS survey was conducted have undergone significant changes, and the international transfer of data now requires a common understanding between all teams. In Europe, for example, the General Data Protection Regulations (GDPR) have come into force, while legislation in many other countries is even more complex. Many universities follow standards such as the FAIR principles and CC BY 4.0, and scholars use ORCID to validate trusted datasets. Data security requires that the consortium enforce strict rules and rely on a trust-based approach for data storage and usage practices.

It was necessary to find a common understanding of the principles for using the APIKS international dataset. Thus, approval of the memorandum of understanding was a prerequisite for data sharing, and a document was needed for the forthcoming publication phase. Each team received the rights to their own data, but restrictions apply to situations in which the material collected by other teams is involved. The eventual goal of the APIKS survey is to make available a dataset that can be credibly reported in a range of publication forms in the future; this aim was shared by all team members.

In short, there are three key principles to which each team had to commit. First, the memorandum of understanding confirmed the governance model adopted at the earlier core group meetings. Second, each team was provided with a clear understanding of the definitions of the matters covered by the memorandum of understanding, and transferring data from the international dataset to anyone other than APIKS partners that have signed that memorandum is not permitted. Third, the memorandum of understanding also introduced the FAIR principles for the APIKS international dataset, with the goal of ensuring findable, accessible, interoperable, and re-useable data.

APIKS: Looking at the 2020s

Despite the challenges that emerged as the project moved along, team members have retained a collegial atmosphere in dialogues to resolve issues and make productive adjustments to the rules. The APIKS international dataset represents a unique database for comparative studies. In particular, the data collected in the APIKS survey are based on a strong foundation, as the survey was implemented by knowledgeable and experienced team leaders who have produced widely distributed reports from previous surveys. The APIKS project has a voluntary, highly decentralised, loosely coordinated structure, and this is how it reflects the knowledge society as a new kind of structure for conducting comparative research.

Some teams will have the opportunity to produce time series studies dating back to the 1992 Carnegie survey and/or the 2008 CAP survey results, along with successor projects like EUROAC and APA. International publications in a range of languages will be produced to report on valuable research. The project will proceed in

a comparative and collaborative way through forthcoming conferences, and the major findings from each team will be shared in scholarly reports, including journal articles and the Springer book series, *The Changing Academy—The Changing Academic Profession in International Comparative Perspective*.

As the first of the APIKS book series, this volume aims to provide the necessary information for the context of higher education systems in the countries participating in APIKS. In particular, the volume explores the knowledge society and academic profession in the context of each participating team. Subsequent volumes will discuss the concepts, methodology, and results of the APIKS survey and provide comparative results. Those themes will include universities and the knowledge society, the teaching-research nexus, research, external activities, career and professional situation, internationalisation, general work situation and activities, and academics in formative stages.

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