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Published online: 16 Apr 2022.

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Visible organisational boundaries and the invisible boundaries of the scholarly profession

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ABSTRACT

The role of universities in knowledge production has changed. Although most higher learning still takes place in universities, knowledge is increasingly produced in collaborative networks comprising partners from different sectors (Välimaa, J., V. Papatsiba, and D. M. Hoffman. 2016. "Higher Education in Networked Knowledge Societies." In *Re-becoming Universities, The Changing Academy – The Changing Academic Profession in International Comparative Perspective*. Vol. 15, edited by D. M. Hoffman and J. Välimaa, 13–39. Dordrecht: Springer). In addition, the focus of universities' personnel policies has shifted from supporting professional inclusion and exclusion towards supporting the national development of talent and human capital. New kinds of networks and collaborative arrangements have emerged to facilitate the mobility of academics between universities and other sectors. This paper draws upon survey data collected in 2017 from PhD graduates working in universities and the private and public sector in Finland, in order to explore their perceptions related to the relevance of their work, and their commitment to the organisation and the scientific community. We found some differences between the private sector, and the public sector and universities, and between disciplines. Between public sector and universities only small differences occurred. The results indicate that the research work between sectors is rather similar according to the indicators that were used, in some cases the differences might be more significant between disciplines.

Introduction: organisational boundaries and scholarly work and career

Over the last three decades, debates on the role of universities as institutions and their boundaries as organisations have been heated. The idea of universities as closed ivory towers has been challenged by scholars and conceptual approaches. For instance, the idea of an entrepreneurial university expands the university to the development periphery (Clark 1998). Discussions on the triple helix (Leydesdorff and Etzkowitz 1998), and later, the quadruple helix (Carayannis and Campbell 2009), and the quintuple helix

(Carayannis, Barth, and Campbell 2012) have also challenged the boundaries of knowledge production. There is also ongoing discussion about the borders or borderlessness of universities' core activities. The first mission: education, has expanded from degree education towards lifelong learning and continuous learning. The second mission: research, has been discussed in the context of relevance and impact, new forms of knowledge formation, co-production of knowledge, and citizens' science (Mehari et al. 2021). These activities are sometimes called public engagement (Burchell 2015), services or entrepreneurial activities and, thus, they are occasionally discussed as new approaches to teaching and research, and sometimes distinguished as a 'third' mission (Pinheiro, Langa, and Pausits 2015). Also, terms such as responsible and sustainable science, research, and universities, expand the role of universities and open them towards the wider society (Geschwind et al. 2019).

In each of these conceptual approaches, universities are seen as bridging organisations or intermediate spaces that facilitate the societal collaboration and the production and dissemination of knowledge between different organisations and sectors. Related to the 'borderless role of universities', universities and their staff are commonly considered to be knowledge pools for society (Kogan 1994). According to Lam (2010), the idea of an exchange of knowledge between society and universities, as well as the fluidity of borders of academic work and the academic profession, have been seen as linear development processes in which collaboration is increasing and the logic of traditional academic science has been placed under attack. Furthermore, the global trend of an Academic capitalism (Slaughter and Leslie 1997), which is a trend where universities have introduced many market-like behaviours in their activities, has had an impact on our perceptions on what research is 'valuable', as the 'basic research' is confronted by 'applied'. The applied research is currently considered to be more valuable due to its revenue generation (Rhoades 2014), and since it offers more opportunities for collaboration with other sectors. In the new environment of universities, where entrepreneurial activities are being highlighted and valued, academics have been called more as 'entrepreneurial scientists' than 'ivory-tower traditionalists' (Lam 2010).

All of the abovementioned concepts and research traditions reconceptualise the role of universities, either from the perspective of universities themselves, or from that of the wider innovation system. This should not come as a surprise given that studies of organisations tend to provide somewhat inward-looking perspectives that define an entity by its boundaries, and focus on the organisation rather than its environment (Hernes 2003, 35). Only a few studies have explored organisational boundaries and scholarly careers from the perspectives of other sectors in society; especially scarce are studies that focus on the individual perspective.

Our article will explore this research gap. We are interested in the idea of a borderless university, and, in particular, borderless research work from the perspective of those academics who are not working at a university but are employed in public offices or the private sector. For this reason, we have surveyed academics who hold a PhD degree and have worked in university after their graduation but currently work in other employment sectors. They are considered members of the scholarly profession as they participate in knowledge production (Light 1974). We compare their commitment to the scientific community and organisation as well as their attitudes towards the societal impact (relevance) of their research to their colleagues working within universities, in order to understand

whether these are altered by their organisational context or defined by their membership in the scholarly profession or their professional identity. Thus, we ask:

### Does organisational context influence scholars' perceptions of their work?

In Figure 1, we illustrate our approach to boundaries. Many scholars have studied the borders of university and academic careers in relation to their environment (A) by discussing, for example, entrepreneurial universities and careers, boundary spanners and hybrids, as well as the blurring of boundaries through the use of temporary workforces and fixed-term staff. In addition, while a common research topic is the blending of boundaries and the third space between boundaries of different occupational groups, such as managers, administrators and academics (B), few studies have studied the fluidity of professional boundaries for those in the scholarly profession by asking: what is the role of employment organisations for scholarly work, thus placing universities on equal footing with other private and public sector organisations. It is this latter point on which our article is focused.

Our article is structured as follows. In the first section, we define the main concepts used for analysis; namely, (organisational) border, scholarly profession and borderless career, and the role of organisation for the professional group. In the second section, we map the policy context of Finnish academic (researchers') careers. In the third section, we illustrate the data and methods used. In the fourth section, we analyse the data and present our empirical findings. Finally, we discuss our findings and present our conclusions.

Conceptual backdrop

Organisational boundaries for the scholarly profession

As illustrated in Figure 1, we are interested in crossing organisational boundaries from the perspective of a scholarly profession. Organisational boundaries have been discussed increasingly in both organisational and work-life studies. There are several explanations as to why the topic has been intensely discussed over the last two decades. Firstly, technological advancement has diminished the role of physical borders. Secondly, the
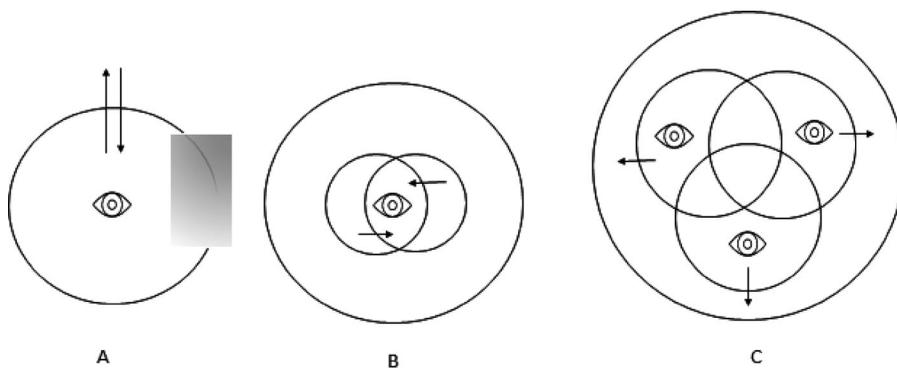
Figure 1. Different approaches to study the boundaries defining work and organisation.

globalisation of markets has lessened the importance of national and regional borders. Thirdly, production has transformed from mass-production towards individualised production, which require seamless manufacturing systems that transcend organisational borders. Fourthly, several political trends have challenged the role of borders; for instance, active citizen participation calls for more open public institutions; the fragmentation of public services and complexity of public issues ask for more tailored solutions and organisations; the diminishing role of hierarchies, the added complexity of multilevel governance, and the concept of networks calls for new types of thinking about organisations; and the new conceptualisation of a career frames it as an 'individual project' (Hernes and Paulsen 2003). Also related is the rise of global challenges, such as environmental issues and global warming.

Because of the abovementioned changes in the private sector, as well as the public sector, changes in organisational borders have been frequently discussed. Several concepts have been used to describe these changes; many of these are used to describe changes in organisational structures. Schreyögg and Sydow (2010) have listed different structural attempts to understand the new formation of organisations; these already established conceptual approaches include, temporary organisation, latent organisation, modular organisation, project-based enterprise, virtual organisation, boundaryless organisation, cellular form, and hierarchy. A common denominator of these new organisational types is a change of the dominant metaphor (as already described by societal philosophers in the 1980s) of organisation from arborescence, tree-like, hierarchies towards more horizontal and uncentered metaphors (Marshall 2003), such as network, platform, or interphases.

Terms typically used to describe the alteration of borders and organisational structure and interorganisational relations are boundary spanning, fluidity, and blurring. These terms are sometimes used interchangeably but they are often used to emphasise one or another dimension of boundary conditions. Boundary spanning emphasises the role of boundary spanners working as fixers, bridges, brokers, and innovators between organisations. Fluidity emphasises the fading of organisational borders and highlights adaptability, knowledge and capacity absorption, and creation of new knowledge (Laihonen and Huhtamäki 2020). Blurring of boundaries refers to the fragmentation of work, including outsourcing, temporary work, externalised employment, self-employment, and other forms of employment, blurring the borders of employer organisation and work organisation (Grimshaw et al. 2005).

Changes in the world of work within organisations in the private and public sector are undeniable. However, universities are peculiar organisations (Musselin 2007). Sometimes, as we talk about the university 'organisation' we actually mean the university 'institution'. They are not the same as the functions of the university institution have remained rather the same, as the functions of the university organisations have changed under the external pressures. This tension between the institution and the organisation constantly exists in universities (Välimaa 2019; see also Clark 1983.) In here, we can explore the universities as single organisations, as 'enterprises', which each have their own organisational boundaries. Universities have been converging to the private organisations with many ways (Hüther and Krücken 2016). We can also regard universities more as an institution, where academics can change university, but changing the sector is more challenging. However, it is more possible to leave than return, since in university

recruitments, academic merits and 'potential' related to them is highlighted (Vellamo et al. 2022).

In academia, the borders are permeable and fuzzy by definition, and frequent blurring takes place as the roles of students and employees are sometimes interchangeable and the use of external experts is a common practise. The role of an academic is often that of a boundary spanner and one of the tasks of universities is to increase fluidity by producing and disseminating knowledge. Many academics act as consultants as their side-work and constantly cross sectoral boundaries; their expertise is needed increasingly outside of the universities as well (Gunter and Mills 2017). Thus, concepts related to organisational boundaries, or better, the diminishing role of boundaries, are also useful in the university context. However, these concepts do not capture the special role of the scholarly profession in universities and science in general. Regardless of the overall emphasis of the change from hierarchies to networks, these concepts are organisationally driven; they assume that organisations are the basic building blocks of the world of work. However, the scientific community does not, by definition, follow an organisational logic but a logic of science. In universities, the discipline forms the central way of organising academic work as the universities are organised by them into the faculties and departments. In addition, academics are committed to their disciplines rather than to their organisations, and the central source of the academic identity is the discipline. They occur as small 'worlds' inside universities with their own cultures and ways of working (Becher 1989; Clark 1983).

The scholarly profession is classically defined as 'an occupation with the attributes of a profession whose core activity is the advancement of knowledge' (Light 1974). The academic profession, in turn, is a subset of this profession, namely the members of the scholarly profession working in academia (Light 1974; Carvalho 2017). Consequently, we are interested in whether there is a professional border that does not follow the organisational border; how this border is constructed in private, public, and university organisations; and the implications of borderless organisations and flexible careers for the scholarly profession.

Organisational boundaries form social categories, such as departments, work units, levels of hierarchy, functional roles, professional identities, employment status and informal arrangements (Paulsen 2003). Dividing boundaries can be physical, i.e. material (walls, buildings, and knowledge infrastructures), or regulative (laws, rules, and regulations). Boundaries can be also social (divisions between otherness and sameness [Bauman 2004]). These boundaries are part of social power structures and can be part of organisational structures or span across formal organisations. The boundaries can be also mental, linked directly to cognitive processes, and thus formed by shared language or skills (Hernes 2003). The identity is structured in the social processes and in the academic work, it is related to work roles and understandings of what it means to be an academic (Henkel 2005; Ylijoki and Ursin 2015). If we consider the organisational identity, it is the self-definition of the members of the organisation or their understanding of themselves (Whetten 2006). The identities of the groups make distinctions between them; the difference between 'us' and 'them' is the most significant segregations between groups of people, as it is not just referring to two different groups of people, but two totally different kinds of attitudes, and a difference between trust and distrust and cooperation and combativeness, for example (Bauman 2004). In the end, boundaries

are inevitable conditions for defining identities, since attributions of self and other are inescapably bound with the construction of boundaries, i.e. making distinctions (Marshall 2003).

However, as boundaries are significant for the identities of individuals and scholars, the careers have transformed to be more as boundaryless. As early as 1994, Arthur wrote that 'boundaryless careers are particularly associated with variation, and with social interaction that promotes or constrains the flow of information across firms' (304). In 2004, Baruch and Hall suggested that the academic career model could also be a model for future careers in other sectors. While the academic and corporate model were different, they noticed signs that the career models had changed in both sectors. The corporate model was moving towards the academic model – to be as more boundaryless and emphasising an individual's own responsibility for their career success – and the academic model was becoming similar to the corporate model – more bounded to one organisation. This shift was influenced by the managerial ways of governance in universities. The academic career system builds on high level of autonomy and networking within organisations and across them. In addition, academic careers are not bound to one single organisation; they seek individual career progression, which can be offered by many universities.[1] Furthermore, national as well as global labour markets for academics encourage them to compete in national and global arenas for the best posts with the highest prestige (Baruch and Hall 2004). In the context of career and work, terms like flexibility, employability, and lifelong learning are used to capture the current reality of the labour market (Garsten 2003, 244).

In relation to careers and professions, boundaries are important. Traditionally, career management and tenure have been closely connected to organisation. Authority over the employee and continuity of the working contract have been the cornerstones of careers, as envisioned by the ideals of Weberian bureaucracy. However, globalisation of the workforce and knowledge, as well as modularisation of work have decreased the role and importance of organisational knowledge and power in managing employee relations (Morris, Shenkar, and Mackey 2019). Consequently, in the 1990s, psychological contracts and employability gained importance in discussions on career development. Both of these concepts highlight the importance of an individual rather than organisation. An individual's employability in the job market was considered to be a replacement for job security within organisation, and the psychological contract between an individual and employer, a replacement of official tenure. Continuous learning and acquisition of skills were considered to be ways of creating job opportunities, rather than opportunities within organisation. Thus, the boundaryless career is measured by skills and competencies, job satisfaction, and family stability, rather than by a promotion or a new position in a hierarchy (Smith and Sheridan 2006).

Boundary crossing in the work of the scholarly profession

In the research of professions, it is being highlighted that the professional groups have rather clear boundaries, which they protect. Noordegraaf (2020) have argued that this kind of 'protective professionalism' is becoming, however, outdated. 'The protective shields are breaking down, against the background of changing interactions between professions, states, markets, and social life' (Noordegraaf 2020, 207). The professional work

remains to be as 'professional', but it has new ways and forms. It becomes 'connective', as they will start to handle more complex cases, their decision-processes are becoming shared and the clients and stakeholders will join in their processes, for example (Noordegraaf 2020.) The boundaries of the old professional groups are being shaken, and the new professional groups are being emerged. For example, in the academic work, the projectification of the science, causalisation of the academic employment and precarious working conditions of the academics, the 'Uberisation' (see Carvalho & Diogo in this special issue) of the academic work has created a new, invisible group of academics. It can be even considered as a new professional group, where its members have only little hope to acquire the stabile tenure-position in the academia, and where they constantly look for better job opportunities outside of the universities as well.

Multitudes of different concepts have been introduced to describe and analyse current academic work and careers. They have been influenced by the changes in their operational environment; related to policies, global trends and decreasing public funding. Lack of funding has made academic careers more insecure and has forced academics to act as entrepreneurs and seek their own research funding (see also Slaughter and Leslie 1997). Changes have also occurred in the university organisations themselves, as they pursue to be 'complete organisations' (Hüther and Krücken 2016), and thus converge to the private organisations in many ways. Managerialism and New Public Management (NPM), which use the principles and procedures of the private sector, are aiming to make public organisations to be more efficient and develop their inner management (Evetts 2009; Deem 2004; Deem and Brehony 2005; Santiago and Carvalho 2008; Siekkinen 2019). These trends have had an impact to the academic work and careers; as they tie the performance of the individuals more tightly to the goals of the organisation. Simultaneously, while universities are under the influence of managerialism and NPM, more recently universities can also be seen to have entered a 'post-new public management' age with emphasis on network governance and co-creation of public value, and blending governance arrangements of hierarchies and exchange, cooperation and competition, and citizenship- and customer orientation (Kanniainen, Pekkola, and Kivistö 2021).

Pekkola et al. (2021) describe the nature of the hybrid universities and the hybrid academic positions, and how the hybridity exist as nested in different levels in universities. This hybridity is also visible in the diffusion of boundaries between administrative and academic work, such as, third-space professionals, cross-boundary professionals, unbounded professionals, and blended professionals (Whitchurch 2009; Veles, Carter, and Boon 2019; Whitchurch 2008), as well as higher education professionals (Teichler 2005). There are also a variety of typologies and categorisations that describe new types of academic careers; these include, entrepreneurial academics (Duberley, Cohen, and Leeson 2007), hybrids (Jain, George, and Maltarich 2009), chick hybrids (Kuoppakangas et al. 2021), and connected academic profession (Noordegraaf 2020; Siekkinen 2019), among others. In addition, new administrative categories and positions have been formed that respond to the changes in knowledge landscapes; these include, professors of practice, industry professors, and others (see, e.g. Etzkowitz and Dzisah 2007), which operate in the interface of the academic and the private/public.

Professional boundaries have always been distinguished from organisational boundaries. Paradoxically, while the discussion on organisations and careers has highlighted

the diminishing role of organisational boundaries, the discussion on profession has moved in the other direction. Since the seminal work of Brint (1994), the discussion on markets and organisations has become increasingly important for the study of professions. Because of the increased role of managerialism in public organisations, in which many professionals work, organisational practises have become more important, and the quality of professional work is more often defined by managers and organisational policies. Evetts (2009, 2011) describes how the changes in professionalism have been influenced by new public management, and organisational and managerial practises have replaced occupational practises. Recent reviews of the sociological literature on professions (Adams 2015; Brock and Saks 2016; Saks 2016), emphasise the role of organisations as important platforms for professions. For the academic profession, as Musselin (2013) has argued, universities have always played a significant role as academics have performed their work in the university context.

Academic careers and organisational borders – policies and actions

In Finland, as in many other countries, policymakers have aimed to increase the mobility of PhD graduates across sectors. In the framework of the knowledge-society (Välimaa et al. 2016), knowledge transfer between heterogeneous partners creates heterogeneous knowledge and thus new innovations (Pulkkinen and Hautamäki 2019; Rajalo and Vadi 2017). Particularly, universities are encouraged to be more involved in a transdisciplinary collaboration, i.e. collaboration across disciplines and sectors, since new knowledge can create change and organisational improvement (Inkpen and Tsang 2005, 149). Knowledge-transfer between universities and other sectors relies mainly on mobile individuals (Fernandez-Zubieta, Geuna, and Lawson 2015), since PhD graduates not only have the knowledge, especially tacit knowledge (Nonaka 1994), and the potential to create new knowledge, but also access to networks where the knowledge is produced.

To be successful in this, universities' career structures have been revised in Finland and in Europe (the implementation of the four-stage career model) in order to make them clearer, also outside of universities in order to support the mobility between sectors (Ministry of Education and Culture 2008; LERU 2010). In many countries, the mobility of PhD graduates is weak, and policymakers aim to support their cross-sectoral mobility to support the knowledge transfer between sectors, raise the educational level outside of universities, and provide more employment opportunities for PhD graduates outside the academic context. Previously, only industry was thought to recruit PhD graduates from universities; however, new evidence shows that PhD graduates, e.g. in social sciences (including economics, political science, sociology, geography, business studies, and law), contribute significantly to innovations in service sectors and in the ICT-sector (OECD 2019).

After the regulative reforms in Finland, Finnish universities were granted autonomous positions outside the state budget and the status of university staff was changed from civil servants to employees. Finnish universities became independent employers and started to develop independent human resource management (HRM) policies and practices, including the transformation to strategic recruitment (Siekkinen, Pekkola, and Kivistö 2016). Consequently, universities started to restructure their career models. In addition to the new career models, doctoral training has been developed in Finland, with a

stronger aim to provide better working-life skills for PhD graduates. The Finnish framework is closely related to the European one (Kivistö, Pekkola, and Siekkinen 2017).

Universities, on the first stage of the four-stage model, aim to increase movement between sectors and internationally, which is also an overarching goal of the whole model. The basic premise in operationalising the model is to promote policy work through other institutions, such as research institutions and funding institutions, human resources management, and management of research activities, e.g. doctoral schools, in higher education institutions. The steering model for higher education institutions is also included in the described policy goals as one method of implementing the model (Ministry of Education and Culture 2008). From a broader perspective, the introduction of the four-stage research career model in Finland can be connected to discourses that aim to increase societal engagement of higher education institutions and research. Additionally, the introduction of the model can be associated with changes in the research sector and the emergence of an information society, in general (Kuoppala et al. 2015, 23–33).

Data and analysis

In this article, we use survey data from the project *Exiting Academics in Networked Knowledge Societies* (EANKS 2016 – 2020, University of Jyväskylä and Tampere University) to explore whether there are differences between experiences of researchers working in different sectors, particularly related to their commitment to their scientific communities and organisations. In addition, we examine how they perceive the relevance of their research. The three aggregated variables are examined by sector and discipline in order identify whether their organisation or disciplinary home are defining aspects of their experiences. These three themes were included in the survey, which was exploring the work of the exit-academics (PhDs who have left universities in Finland).

The survey was conducted in 2018. The population of the survey was defined based on the information provided by nine of thirteen Finnish universities. We were provided with lists of employees who hold a PhD degree and whose working contract ended at some point between 2010 and 2015. Overall, the number of respondents was 1,226; however, in this paper, we have only included those whose work tasks are related to research (N = 518) and who work in the university, private sector, or the public sector. The survey was targeted at PhD graduates who had worked in universities, but their contract had ended. While most of the respondents had already returned to the university to continue their work there, many were working outside of the university (Table 1).

In this paper, we examined the significance of the organisational and disciplinary context to the experiences of researchers working in different sectors in Finland: universities, private sector and the public sector. To assess this, we identified three different aggregated variables from the survey questions. Aggregated variables were used to minimise the effects of errors in the data and to examine one operationalised aspect within several questions. The Cronbach's Alpha was used to describe the validity of the indicator.

The first aggregated variable analysed the commitment of the respondents to the scientific community, while the second assessed their commitment to the organisation. These aspects were used to divide researchers working in different sectors, since for

Table 1. Age, gender, and discipline (the field of the first PhD degree) of the survey respondents.

	Age		Gender		Discipline	
University	<34	N = 9, 3%	Woman	N = 199, 56%	Natural sciences	N = 99, 29%
	35–44	N = 163, 46%	Men	N = 151, 42%	Engineering and technology	N = 25, 7%
	45–54	N = 109, 31%	Other/I don't want to say	N = 7, 2%	Medical and health sciences	N = 36, 11%
	31	N = 67, 18%			Social sciences	N = 101, 30%
	55–64	N = 9, 2,5%			Humanities	N = 78, 23%
	65<					
Private sector	<34	N = 3, 5%	Woman	N = 23, 33%	Natural sciences	N = 30, 48%
	35–44	N = 40, 60%	Men	N = 44, 64%	Engineering and technology	N = 14, 22%
	45–54	N = 17, 25%	Other/I don't want to say	N = 2, 3%	Medical and health sciences	N = 9, 14%
	55–64	N = 7, 10%			Social sciences	N = 7, 11%
	65<	–			Humanities	N = 3, 5%
Public sector	<34	N = 3, 3,4%	Woman	N = 48, 54%	Natural sciences	N = 37, 44%
	35–44	N = 39, 44%	Men	N = 40, 45%	Engineering and technology	N = 7, 8%
	45–54	N = 25, 28%	Other/I don't want to say	N = 1, 2%	Medical and health sciences	N = 21, 25%
	55–64	N = 19, 21%		–	Social sciences	N = 17, 20%
	65<	N = 3, 3%			Humanities	N = 2, 2%

the academic profession, the scientific community, i.e. the disciplinary community, is considered to be a more significant source of identity than the organisation. The disciplines forms 'small worlds' in universities; they form the way academics think, what questions they ask, and how they try to find solutions to them. Disciplines construct universities to faculties and departments, and therefore it still forms the basic structure of the university. The academics have commonly a very active collaboration outside of their own universities with colleagues from the same disciplines (Clark 1983 see also Ylijoki 2004.)

For the scholars working in the other sectors, the disciplinary commitment does not have such a strong base to emerge, since their organisations are not often organised by disciplines (in some research institutes, they can be). Additionally, their work doesn't include many tasks related to serving their disciplinary community, e.g. reviewing articles, or their work is not evaluated by the publishing activity, by definition. In their work, they collaborate more within their organisation than across organisations. These two aspects possibly will give us an important information on how scholars' commitment is targeting in different sectors.

The third aggregated variable was used to assess the relevance of the current research work of the PhD graduates. Universities, at the moment, increasingly meet multiple requirements from society to increase the relevance of the research work. However, this is strongly dependent on the discipline, as in the applied fields, such as technology and medicine, it is high by the definition, but in more theoretical fields, such as sociology and history, the relevance of the research is not easily verified (Becher 1989; Muhonen, Benneworth, and Olmos-Peñuela 2018). Outside universities, the work is often more applied by its nature, the relevance is clearer, and the roles of the clients and stakeholders

is more significant (however, increasingly inside the universities, as well [see, e.g. Geschwind et al. 2019]) (Table 2).

We conducted an analysis of variance (ANOVA) using the SPSS programme to analyse differences between groups in our data. In the first phase, we analysed three aggregated variables according to the respondents' working sectors: university, private sector, and public sector (see Table 3).

Regarding the scientific commitment of the researchers, there were significant differences between groups. Naturally, researchers who were working in the context of universities, felt strong commitment to their scientific community, i.e. their disciplinary home. In universities, the existence of the scientific community is concrete and part of everyday work, as researchers work often with colleagues from the same disciplinary backgrounds, and teach and supervise students in their departments, which are organised in universities by disciplines. Participation in conferences and other academic events is also part of their work, which strengthens their sense of commitment to their disciplinary community. Furthermore, publishing is a requirement in universities and being emphasised in performance evaluations of individuals' work.

Researchers in public and private sectors might be active in publishing or participating in the academic events, however, the scientific community is not necessarily a concrete part of their work, and publishing activity may not be part of their performance evaluation. Public organisations are closely related to universities, and therefore, the significant difference was between private sector and other two: university and the public sector.

Table 2. Aggregated variables.

Aggregated variable	Variables included	Cronbach's alpha
Commitment to the scientific community	– I feel being part of the academic community (even if you worked outside the university). – In my current job I aim to accumulate academic merit, for example through scientific publications. – I want to participate in academic events (e.g. conferences and seminars) to stay up-to-date on the latest discussions and research knowledge of my own field / research area.	0.801
Organisational commitment	– I would be very happy if I could work for my current employer until I retire. – I do not feel a particular attachment towards my current employer. – Being part of my current employer organisation means a lot to me personally. – My values are very similar to the values of my employer. – I would rather work somewhere else. – When I'm working I want to feel I'm not only doing my best for my own sake but also for my employer's sake. – I work in order to feel a sense of fulfilment. – I plan to voluntarily change jobs within the next two years. – If an opportunity came up, I would leave my current employer organisation and go work somewhere else.	0.856
The relevance of the research	– In my work I aim to increase the scientific understanding of certain phenomena that have practical relevance or are current. – In my work I aim to find new evidence or scientific viewpoints that renew existing practices or understanding. – In my work I aim to solve problems that have practical implications or to serve certain practical needs.	0.634

Table 3. Differences in scientific commitment, organisational commitment and relevance of research by employment sector (ANOVA).

		Mean	SD	F(df)	Sig. *	Post Hoc Tukey (at level <.05)
Scientific commitment	University N = 353	4.2	0.81	43.1(2)	***	• In universities, significantly higher than private sector.
	Private N = 68	3.1	1.28			• In private sector, significantly lower than universities and public sector.
	Public N = 88	4	0.87			• In public sector, significantly higher than private sector.
Organisational commitment	University N = 250	3.5	0.71	0.972(2)		No significant differences between groups.
	Private N = 55	3.7	0.87			
	Public N = 69	3.7	0.72			
Relevance of research	University N = 352	4.1	0.86	2,4(2)		No significant differences between groups.
	Private N = 69	4.1	0.8			
	Public N = 87	4.3	0.49			

There were no significant differences in the organisational commitment of researchers by sector. However, those working in universities reported less commitment to the organisation (mean 3.5) than those in the public and the private sectors (mean 3.7). This supports the idea that the academic profession is more committed to their discipline than to their organisation (Clark 1983; 1987), at least at some level.

Surprisingly, there were no significant differences related to the relevance of the research perceived by the researchers working in different sectors. This is probably influenced by the disciplinary fields, as a significant share of the researchers in universities were working in the applied fields: engineering and technology (7%), medical and health sciences (11%) and social sciences (including business and law, that have strong relevance, 30%). However, it may be that the researchers in universities emphasise the applied themes in general, or they seek applications to their research themes. As research relevance is highlighted in the policy discourse, it could also impact the research activities inside universities.

In the second phase, we considered the differences between the three aggregated variables: scientific commitment, organisational commitment, and the relevance of the research by disciplinary backgrounds of the respondents (Table 4). This analysis allowed us to compare differences in these variables by sectors or by disciplines and determine which is a stronger determining factor.

Regarding commitment to the scientific community, we found significant differences between disciplines; in engineering and technology, the commitment to the scientific community was the weakest (mean 3.7) and in the medical and health sciences and humanities, it was the strongest (mean in both 4.3). It is common knowledge that medical doctors experience a strong commitment to their field; their career path is intense, and their education takes many years. Their profession enjoys high prestige, and it is regarded as a vocation (Heikkilä et al. 2015). The humanities, in turn, represent the traditional theoretical-driven field where history, traditions and collegiality are being

Table 4. Differences in scientific commitment, organisational commitment and relevance of research by field of science (ANOVA).

		Mean	SD	F(df)	Sig. *	Post Hoc Tukey (at level <.05)
Scientific commitment	Natural sciences N = 272 Engineering and technology N = 68 Medical and health sciences N = 95 Social sciences N = 190 Humanities N = 106	3.9 3,7 4.3 4.1 4.3	1.03 1.12 0.72 0.95 0.82	6.3(4)	***	• In natural sciences, significantly lower than in medical and health sciences and humanities. • In engineering and technology, significantly lower than medical and health sciences, social sciences and humanities. • In medical and health sciences, significantly higher than natural sciences and engineering and technology. • In social sciences, significantly higher than in engineering and technology. • In humanities, significantly higher than in natural sciences and engineering and technology.
Organisational commitment	Natural sciences N = 172 Engineering and technology N = 41 Medical and health sciences N = 61 Social sciences N = 120 Humanities N = 67	3.5 3.7 3.5 3.6 3.6	0.80 0.74 0.79 0.75 0.80	0.5(4)		No significant differences between groups.
Relevance of research	Natural sciences N = 267 Engineering and technology N = 66 Medical and health sciences N = 95 Social sciences N = 189 Humanities N = 105	3.9 4.3 4.3 4.3 3.8	0.86 0.64 0.6 0.73 1.06	14,1 (4)	***	• In natural sciences, significantly lower than in engineering and technology, medical and health sciences, and social sciences. • In engineering and technology, significantly higher than in natural sciences and humanities. • In medical and health sciences, significantly higher than in natural sciences and humanities. • In social sciences, significantly higher than in natural sciences and humanities.

emphasised. When analysing organisational commitment, we found that there were no significant differences between disciplines and only minor ones if we focus on the variable mean.

In examining the differences between disciplines by relevance of the research, we noted that there were significant differences between groups, which was expected (see, e.g. Muhonen, Benneworth, and Olmos-Peñuela 2018). In humanities, respondents perceived that their research had less relevance (mean 3.7) than those in engineering and technology, medical and health sciences, and the social sciences (mean in all 4.3). In humanities the relevance of the research is not easily verified, and not straightforward compared to the applied fields such as engineering and technology, and medical and health sciences. In law and business, that are included in the social sciences, the relevance of the research is rather clear, which might be the case in other fields of social sciences as well as.

Conclusions

We were interested in the crossing of visible and invisible boundaries of organisations, and the research work and careers from the perspective of the scholarly profession. Based on literature on flexible organisations and borderless careers (e.g. Arthur 1994; Laihonen and Huhtamäki 2020), and diffusing boundaries in the academic work and hybrid universities (Lam 2010; Pekkola et al. 2021; Whitchurch 2009), as well as current policy developments related to researchers' careers in Finland as in Europe (Välimaa et al. 2016; LERU 2010) and the changing knowledge production (Carayannis, Barth, and Campbell 2012; Välimaa, Papatsiba, and Hoffman 2016), one would assume that the organisation does not play a central role in developing career and professional commitment to work.

Based on the empirical analysis, we found out some results that support the diminishing role of organisational boundaries. The perception of researchers regarding organisational commitment of researchers was rather similar across sectors. Thus, it seems that university researchers' commitment to the university is not any higher than it is to any other organisation, regardless of their higher commitment to the scholarly community. This supports the idea of the borderless careers of scholars in all organisational sectors (Arthur 1994). Furthermore, the responses related to the relevance of research were rather similar in all sectors, which can indicate that the researchers across sectors have been emphasising it in their research work. Currently, it is probable that all organisations highlight relevance in their activities. Universities face expectations from the society to be 'responsible' and have extensive impact on their environments; they are required to contribute to the development of societies and produce new knowledge, for example (Geschwind et al. 2019).

For universities emphasising impact is problematic. It is related to the trend of academic capitalism (Slaughter & Leslie 1997) where universities are introducing many market-like behaviours in their activities, which can decrease their autonomy in research. In addition, it has had an impact on our perceptions on what research is 'valuable' since entrepreneurial activities and research with clear societal relevance are emphasised over more theoretical ones. In such environments, many academics have become more as 'entrepreneurial scientists' (Lam 2010) or consultants (Gunter and Mills 2017) than traditional researchers with an academic focus on research and teaching.

On the other hand, many trends exist which connect scholars more with their organisations and thus strengthen the organisational boundaries. Literature on professions highlights the growing role of organisational control mechanisms and definitions of professional work (e.g. Saks 2016). Academic work and careers are being connected more strongly to the organisational goals as the performance of academics is strictly managed by universities and new career models are also means to universities to implement their strategies (Kallio et al. 2015; Pietilä 2015). The trends that aim to develop public management; NPM and managerialism, have influenced universities in a way that they are converging to the organisations of the private sectors. They emphasise strong and centralised management, control of the employees and efficiency of activities (Deem and Brehony 2005; Evetts 2009; Siekkinen, Pekkola, and Carvalho 2019). Related to this, universities have become 'complete organisations' (Hüther and Krücken 2016) and they have gained more organisational autonomy and have a right to implement

their own human resource management (HRM) practices and policies (Siekkinen, Pekkola, and Kivistö 2016).

Based on our empirical analysis, the organisational differences existed with regard to the scientific commitment of the researchers. It was not surprising, that university researchers were more committed to their disciplines than researchers working in other sectors. The disciplines are central for constructing and expressing the identities of university researchers; they define how they work and what methods they apply in their work, for example (Becher 1989; Ylijoki and Ursin 2015). In addition, universities are organised by disciplines (Clark 1983).

Regarding to the differences and similarities of different knowledge-producing organisations, it is significant to acknowledge the peculiar nature of the universities and particularly of the academic work and careers (Musselin 2007), where academic merits, and the individuals' academic 'potential' related to them, have a significant role in the recruitments and career progression (Vellamo et al. 2022). That is the significant difference in the research work between sectors, and a significant obstacle when we consider the mobility of PhDs across sectors. The doors of the universities open commonly only to the one direction, that is, outwards. The peculiar nature of universities is something that explains differences between sectors, and at the same time, it is something that has a significant value for the society.

The work and networks of connected academic professionals (Noordegraaf 2020; see also Siekkinen 2019) in hybrid universities (Pekkola et al. 2021) are not solely limited to universities. In order to foster new innovations in our society, mobility and networking across sectors and transdisciplinary research are something that should be supported. However, in order to maintain the academic autonomy of university research and support their high quality, it is significant to value the disciplinary variety and theoretical approaches that emerge particularly in the research work done in the university context.

Note

1. Increasingly PhDs graduates are encouraged to move towards working outside universities.

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