Universities are more than just their professors: Understanding organizational transformation through staff changes

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PhD Dissertation

Table of Contents

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Universities are fascinating organizations full of inspiring people. That is the reason why I have enjoyed writing this dissertation so much. The process has been nothing like the folk tale of self-reliant scientists working in solitude. So many people have readily contributed to the making of this dissertation that I cannot possibly acknowledge all of them here. I am deeply grateful for everything I have learned and for all of the inspiring people I have met in the process. There have been many ups and downs and twists and turns, but it has always been educational.

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Chapter 1.
Introduction:
a new view on universities

The landscape of professional employment in higher education has fundamentally changed in the last few decades, as universities have changed.
– Gary Rhoades (2017, p. 214)

1.1. Universities are more than just their professors

The vast expansion of universities is one of the defining features of the late 20th and early 21st centuries (Meyer et al. 2007; Schofer and Meyer 2005). When imagining the inner workings of universities, the first thing that springs to mind is usually professors. It has been common to celebrate the role of the individual genius in scientific discovery, persons such as Newton and Einstein, which is evident in the tendency to equate great ideas with particular names, such as the Euclidean geometry, Nash equilibrium, and Kantian ethics (Muthukrishna and Henrich 2016; Wuchty et al. 2007). Science awards (e.g., the Nobel Prize), performance metrics (e.g., bibliometrics), and person-centered research grants (e.g., ERC Consolidator Grants) continue to shine the spotlight on the professors.

At one time, universities were in fact dominated numerically, symbolically, and sometimes in practice by largely self-reliant professors. They were the principal, if not sole, professionals involved in teaching, research, and service activities. And this historical supremacy of professors continues to shape the public and scientific perception of universities (Rhoades 2017). In the minds of many people, the other university staff blurs into an undifferentiated residual that is necessary for recruitment, labor, and administration. Similarly, the scientific literature has focused on how changing conditions impact academic faculty, academic outputs, and academic excellence. Important as these are, however, they are merely one dimension in the change that has occurred within universities. In comparison, other underlying yet significant dimensions of contemporary universities have remained curiously under-researched. Thus far, changes beyond the realm of professors have escaped a research focus corresponding to their (increasing) importance. If serious

about understanding present-day universities, one cannot ignore the majority of employees.

Fortunately, an emerging international body of studies and theories (with few Danish contributions) has started to explore how other staff categories have also changed, acknowledging that *universities are more than just their professors*. Convincing empirical research has uncovered some of the fundamental changes in the employment landscape at universities in recent decades (e.g., Amaral et al. 2003; Baltaru 2018; Fumasoli et al. 2015; Gornitzka et al. 2009; Gornitzka and Larsen 2004; Krücken et al. 2013; Milojevic et al. 2019; Rhoades and Sporn 2002; Whitchurch 2013). This literature makes clear that other staff categories than just professors increasingly shape the core activities of universities. Rhoades (2017, p. 214) argues that our language, data, and theories about universities continue to be overly embedded in the past even though the days when the professors were the only important staff category in the university world have long passed.

> The language of higher education does not fit the sector's current landscape in the structure of professional employment. That landscape is not only in the process of changing within and across nations; it has already changed significantly in the last thirty years. Scholarship, policy discourse, and managerial practice that overwhelmingly focus on professors' productivity and job security overlook substantial shifts in employment (Rhoades 2017, p. 204).

In a seminal cross-country study, Rhoades and Sporn (2002) observed a general shift toward a "matrix mode of production" in which academic production is less a function of the work of isolated professors than of the interrelated work of multiple professors, junior academics, administrators, and managerial professionals. This increasing mutual dependence among multiple staff categories has been described in the literature as an organizational turn in which universities as communities of professors have been transforming into more fully-fledged organizations (Bleiklie and Kogan 2007; de Boer, Enders and Leisyte 2007; Krücken and Meier 2006; Marginson and Considine 2000; Whitley and Gläser 2014; Woelert 2019). Two main characteristics of this transformation are the *delegation* and *formalization* of tasks previously conducted informally as integrated elements in academic culture. The whole notion of a transformation implies that contemporary universities are significantly different organizations than earlier; not just displaying superficial changes intended to please external stakeholders (Meyer and Rowan 1977), but fundamental changes that are affecting core structures and activities throughout the organization (de Boer, Enders and Leisyte 2007). It is the assertion of a transformation away from a traditional organizational model of European universities toward a new one.

How far this transformation has proceeded and what it actually covers continue to be poorly understood in Denmark (as in most other countries), resulting in a lot of "talk" about contemporary universities as if they were still organized as the traditional ones (e.g., the continued crude use of the academic/non-academic staff categories). The often-romanticized view of universities as communities of professors may have fitted the small academies of yesteryear but not today's huge, multi-purpose university organizations. Nonetheless, most actors can hardly be blamed, as tangible knowledge about Danish universities as organizations is scarce (if not absent). The "best" university-wide information relates to funding figures, performance indicators, and formal policies. Most internal and external stakeholders do not have an adequate overview of basic organizational components, such as personnel. This dissertation provides a coherent overview of Danish universities through the lens of staff changes, zooming in and out on changes that become visible at multiple levels of resolution.

Such a nuanced overview is particularly relevant for future decision-making, if Krücken is correct in assuming that "the next decade will be shaped not necessarily by the large and ambitious initiatives that characterized [university-]reforms over the last two decades, but rather by efforts aiming at reforming the reforms, re-regulating or recalibrating the significant changes brought about during the last two decades" (2014, p. 1440). Adequate strategies and policies for the coming decade can only be carefully thought through if the effects that have become visible of the past decades' comprehensive university transformations are taken into account. As this dissertation will show, the long-term transformations have had organizational consequences that go beyond the ingrained perception of universities as communities of professors. As renowned higher education scholar Gary Rhoades argues, "it is a new [university] landscape, requiring not just new research, but also new language, policies, and practices to fit the new pattern of employment" (Rhoades 2017, p. 207).

1.2. External expectations and internal change

While the preceding section argued that the view on the internal structures of Danish universities is old-fashioned, this section argues that the opposite is the case regarding the view of their public service responsibilities. The view on the role of universities in society and on how to govern them has been anything but old-fashioned; it has become incredibly progressive in recent decades.

Sociological institutional theory has long acknowledged that internal organizational change usually follows change in the institutional environment within which universities operate, extending far beyond national borders (e.g.,

Ramirez and Christensen 2013). While a later section will unfold this theoretical framework in greater detail, this section provides the contextual backdrop upon which the transformation of Danish universities should be understood. Many eventful and uneventful developments have obviously occurred in the global field of universities in recent decades, which have in concert contributed to the transformation of universities.

However, this dissertation adopts the sociological neo-institutionalist assumption that there is no straight causal line from clearly identifiable micro-level decisions to institutional or organizational changes (Gornitzka and Maassen 2017, p. 4; Maassen and Olsen 2007, p. 190). The institutional university environment of universities is assumed to be "highly discursive and shaped by a variety of very different actors" (Krücken 2014, p. 1440). Within the international literature, there is much more agreement about the core characteristics of the transformative discourses within the environment than about their actual consequences within the universities. This section describes two major, long-run discourses that the literature highlights as major drivers of organizational change: the knowledge economy discourse and the New Public Management discourse.

1.2.1. The rise of the Knowledge Economy discourse

The institutional environment of European universities has been characterized by a strong discourse about a long-term societal concern: that European countries are losing out on innovation to old and new competitors globally. This discourse has promoted a strong belief in universities as key engines of economic and social progress in an increasingly competitive global knowledge economy (Etzkowitz and Leydesdorff 2000; Gibbons 1994; Nonaka and Takeuchi 1995). Consequently, policymakers and elites have called upon universities to play a key role in securing economic and social well-being as the suppliers of both knowledge and graduates, the raw materials of this new economy (Slaughter and Rhoades 2004, p. 17). The expectations regarding the contribution of universities to "knowledge societies" have undoubtedly proliferated in recent decades (Clark 1998).

As frankly stated by the European Commission, "[g]iven that they are situated at the crossroads of research, education, and innovation, universities in many respects hold the key to the knowledge economy and society" (2003, p. 31), and "Europe must strengthen the three poles of its knowledge triangle: Education, research, and innovation. Universities are essential in all three" (2005, p. 152). Other telling examples include the European Union's Lisbon Strategy and Horizon 2020, a large-scale research program, which have considerably intensified the explicit expectations to the societal contributions

made by universities. The social demand placed on universities has never been so high or so widely publicly formulated. As Enders and de Boer write, "modern societies and their sub-systems all seek new innovations and expect the universities to deliver these goods" (Enders and de Boer 2009, p. 159).

Scholars argue that this rise of the knowledge economy discourse has led to an "enormous demand overload" (Clark 1998, p. 129) or "mission overload" for universities (Jongbloed et al. 2008), which has been "not easily integrated into traditional work roles and practices" (Enders and de Boer 2009, p. 162), forcing them to transform organizationally. As Burton Clark argues:

> National systems of higher education can neither count on returning to any earlier steady state nor of achieving a new state of equilibrium. As principal actors within these systems, public and private universities have entered an age of turmoil for which there is no end in sight. Disjuncture is rooted in a simple fact: *demands on universities outrun their capacities to respond*. From all sides, inescapable broad streams of demands rain upon the higher education system and derivatively upon specific universities within it (1998, p. 129, my emphasis).

The common belief in society has been that contemporary universities must be run differently than traditional universities in order to keep up with the spiraling demands of the knowledge economy (Clark 1998; Paradeise et al. 2009). While it has been widely documented that universities in most (if not all) countries have stretched their missions and expanded their activities, the perception remains that the environment has changed more and faster than the universities are able or willing to reshape themselves (Bleiklie, Enders, et al. 2017; Maassen and Olsen 2007). External actors of all sorts have therefore devoted increasing attention and oriented new demands to how universities work (Enders and de Boer 2009; Frank and Meyer 2007; Maassen and 2007). The obvious appreciation of academic outputs has been accompanied by critical questions about academic organization from knowledge economy proponents: Who is "in charge" of the expanding activities of universities? Is the endowed money spent "efficiently"? Are academics responsive to the needs of their "customers"? Are the academic "products" actually of high quality?

This knowledge economy discourse has been clear and persistent about *what* was wanted but not *how* to achieve it (Aagaard and Mejlgaard 2012, p. 19). In this view, universities should be turned into "socially responsible," "efficient," and "multi-purpose" organizations that contribute to nearly all economic and social agendas in society (Fumasoli et al. 2015; Krücken et al. 2007; Ramirez 2006); but the associated ideas about how to organize, manage, and finance such universities have remained abstract (e.g., "the entrepreneurial university," "the triple helix," "mode-2 research," and "the third mission"). This vagueness enabled the other parallel development in the environment of

universities to pick up on the momentum for change created by the knowledge economy discourse.

1.2.2. The rise of the New Public Management discourse

The institutional environment of European universities has been characterized by a strong faith in a generic solution to boost public service delivery: New Public Management (NPM). This discourse about how to run public service organizations gained widespread popularity in several European countries in the 1990s. In contrast to the discourse on the knowledge economy, NPM was conceived and put to use as a normative approach prescribing quite specific (although somewhat conflicting) principles of *how* to organize, manage, and finance public service organizations (de Boer, Enders and Schimank 2007, p. 3). It has been described as a generic "solution looking for problems" (Maassen and Olsen 2007, p. 4), and similarly, *how* to tune universities to the knowledge economy was "a problem looking for a solution". So although the NPM and knowledge economy discourses developed rather separately (e.g., in the public administration literature and the innovation literature), they have been matched in many instances by "problem-solvers," such as policymakers and managers (Aagaard and Mejlgaard 2012, p. 19–20).

The NPM discourse did not question the public services *per se*, aiming instead to rationalize the modes of managing, controlling, and accounting for the actual production of such services in order to increase their efficiency and orient their services more to the expectations of their "users" (Brunsson and Sahlin-Andersson 2000; Hood 1995). It posits that public and non-public organizations providing dissimilar services can be governed by the same core principles. Public organizations, such as universities, are perceived to face similar kinds of *organizational problems* as any other organization and are therefore in need of *organizational solutions* proven efficient in seemingly more productive organizational settings (Drori et al. 2006; Krücken et al. 2007). In this light, public organizations have had to become more "business-like" and emulate private-sector management models (Hood 1995). This should free them from bureaucratic state control and transform them into more *"real organizations"* (Brunsson and Sahlin-Andersson 2000).

The NPM discourse promotes the following core principles: 1) Organizational autonomy: the state should withdraw from direct control of the inner workings of public organizations and be primarily concerned with holding them accountable to stated goals; 2) Competition: good and bad performers should be either rewarded or disciplined using market-like mechanisms, such as competitive funding or performance contracts; 3) Accountability: a move

away from input control toward output control, such as performance evaluations and audits; 4) Strategic leadership: managers at each organizational level should have reasonable room to maneuver and the right to manage; 5) Efficiency: public service professionals (including academics) should focus on core tasks, not collegial management; 6) Responsiveness: political guidance and stakeholder involvement should guide the progress of core activities (de Boer, Enders and Schimank 2007; Ferlie et al. 2008; Pollitt et al. 2007).

Although some of these principles are somewhat conflicting, they should *not* be understood as a bundle of loosely coupled principles. NPM represents instead a rather comprehensive approach aiming to redirect the entire public sector in countries with various political-administrative traditions (de Boer, Enders and Schimank 2007). In recent decades, NPM has been applied in most sectors in most European countries, albeit with large variations in implementation. The ideas behind it have been pervasive in all forums dealing with almost any aspect of public administration. The interaction between the knowledge economy discourse and the NPM discourse represents the most important institutional backdrop upon which the organizational transformation of the traditional Danish universities has taken place; however, how it has impacted the internal structures of universities in concrete terms remains a contested issue.

1.3. The aim and structure of the dissertation

This dissertation is about understanding and illuminating how Danish universities have developed as organizations over time. There is currently an imbalance between the general view of the internal structures of Danish universities and their public service responsibilities. The former view has not followed suit when the latter changed considerably in light of the knowledge economy and NPM discourses. In recent decades, the view on the responsibilities of universities has been incredibly "progressive", whereas the view on their internal structures has remained numbingly "old-fashioned". This imbalance has not been due to any neglect of the transformative character of the new responsibilities (e.g., Aagaard and de Boer 2017; Aagaard and Mejlgaard 2012; Degn 2014; Ejersbo et al. 2019; Faye and Pedersen 2012; Lind 2019; Paldam 2015); rather, it has owed to a slim empirical basis that can ground conceptual views of university transformations.

> It is relatively easy to demonstrate that the notion of a move is valid if one looks at ideologies, beliefs, and values as they are expressed by policymakers, higher education leaders, and other interested parties. Changing beliefs and ideals do not necessarily lead to new practices. In order to understand the extent of change beyond the initial ideological shift, one must observe actual structures and

behavior at various levels *within* higher education institutions (Bleiklie and Kogan 2007, p. 478).

1.3.1. Research question and embedded articles

This dissertation addresses the need for empirical research into the organizational consequences of long-term pressures on universities, the lack of which stands in contrast to the magnitude of change that has occurred. Not only do we know little about how and to what extent universities have changed as organizations, we also lack knowledge about the concrete factors that drive the transformation. This dissertation therefore seeks to answer the following research question:

– How far have Danish universities transformed from a professor-dominated model to a more diverse staffing model?

This research question sets the overarching direction of the dissertation. It will be answered by exploring the following three sub-questions, which target explorative, comparative, and explanatory aspects, respectively.

– How has the composition of different staff categories at Danish universities developed during the last two decades?
– How does the transformation of Danish universities compare to the pace and scale of developments in other countries?
– Which factors have influenced the transformation of how Danish universities are now organized?

These questions are addressed in an integrated-article format (also called a compilation thesis), altogether consisting of nine chapters, including four self-contained scholarly articles (see table 1). The first four chapters provide the foundation upon which the articles later complement each other in answering the overall research question by investigating the sub-questions separately. The final chapter brings the contributions together and concludes the dissertation.

Table 1. The four embedded articles of the dissertation

No.	Title	Aim	Status	Data type(s)	Author(s)
1	Danish universities under transformation: Developments in staff categories as indicator of organizational change	Explorative	Published in *Higher Education*	Payroll	Stage & Aagaard
2	Changing managerial roles in Danish Universities	Explorative (and partly explanatory)	Published in *Science and Public Policy*	Payroll and interviews	Hansen, Lind & Stage
3	Are national university systems becoming more alike? Long-term developments in staff composition across five countries	Comparative	Published in *Policy Review in Higher Education*	Staff data from five countries	Stage
4	Policy reforms as drivers of organizational change in universities: The case of Denmark	Explanatory	Resubmitted to *Quantitative Science Studies*	Payroll, funding and policy aims	Stage & Aagaard

1.3.2. The overall approach

This dissertation departs from conceptual claims in the literature about an emerging organizational university model that competes with a resilient traditional model (e.g., Clark 1998; Krücken and Meier 2006; Marginson and Considine 2000). While the literature agrees on the core characteristics of the traditional model, it disagrees on the actual character, pace, and drivers of the new model's emergence. The traditional model represents an important backdrop for the dissertation because it clearly continues to matter, but the four embedded articles focus mainly on seizing the characteristics of the new model empirically. This dissertation argues that important contours of the new model become visible when the spotlight is thoroughly turned from the professors to the totality of university employees. This dissertation primarily focuses on Danish universities, but the comparative article was written because national and international developments are linked.

The dissertation's main indicator of organizational change is the relative development of different staff categories in terms of full-time equivalents (FTEs), salary, and contract type (e.g., fixed-term or manager contracts). This indicator is tangible and reasonably comparable across universities, countries, and time because most job positions relate to broadly institutionalized roles (e.g., professions, hierarchies, and common parlance). Although only a partial indicator of organizational change, staff composition is an important dimension, as human resources are the primary means of production in universities (Rhoades and Frye 2015) and a division of labor between staff categories is at the heart of the very idea of an "organization" (Brunsson and Sahlin-

Andersson 2000). Staff changes are a tangible empirical basis for assessing the character, pace, and drivers of organizational change in Danish universities.

The empirical foundation is mainly a multi-tiered staff categorization that has been built bottom-up from detailed payroll data and complementary inquires. It covers 256,320 individuals who received a salary payment from a Danish university at least once from January 1999 to December 2017. The payroll data provides a fine-grained, consistent picture of staff changes, and the multi-tiered approach enables me to zoom in and out on changes at multiple levels of resolution, depending on the questions examined in the respective articles. The payroll data is complemented in separate articles with staff data from other countries, university funding data, and interview data with managers. Combining types of data illuminate some of the drivers and consequences of the observed staff changes.

The dissertation draws on core theoretical assumptions of the sociological and historical strands of neo-institutionalism. Scholarship within these traditions has convincingly shown that contemporary universities are characterized by both *change* and *continuity* and shaped by both *local* and *global* forces (e.g., Ramirez and Christensen 2013). The framework posits that changed external perceptions of how universities "ought to be organized and managed" impinge on their internal structures, but also that actual impact is moderated by resilient, long-term perceptions about "what it means to be an academic" and by local path-dependencies. This theoretical framework motivates longitudinal and multi-level empirical approaches to organizational change. The dual rise of the knowledge economy and NPM discourses clearly changed the social perception of universities' responsibilities as public service organizations, but the actual way, extent, and pace at which it impinged on the internal structures of allegedly resilient universities is the real issue at question.

1.3.3. Dissertation outline

Figure 1 visualizes the structure of the dissertation. Chapter 1 has described the need to turn the spotlight from the professors to the totality of employees and the broader contextual backdrop upon which the transformation of Danish universities can be understood. Chapter 2 accounts for a set of theoretical assumptions from two strands of neo-institutionalism that constitute the theoretical framework employed throughout the dissertation. Chapter 3 elaborates on the traditional university model by introducing and synthesizing three core theories from the international literature and describing how scholars have portrayed the traditional Danish universities and the context behind their historical development. Chapter 4 describes how the formalization and

delegation of tasks have made certain staff categories less clearly subordinated to the professors, calling for a holistic organizational approach. It further describes the main method by which it has been investigated through a bottom-up, multi-tiered categorization of the totality of university employees.

Chapter 5 presents a multiple-level exploration of how various staff categories have changed rather dramatically in Danish universities in terms of FTEs and salary profiles over the last two decades. Chapter 6 explores and explains how managerial roles have changed slowly, steadily, and substantially since a comprehensive management reform in 2003, resulting in extensively changed practices. Chapter 7 compares corresponding staff developments in the United States, the United Kingdom, Germany, Norway, and Denmark, casting light on how Danish universities have, in many respects, changed the most in the last two decades. Chapter 8 shows how a consistent string of policy reforms has had a profound impact on the staff composition across organizational realms, challenging common views on universities as reform-resistant. Finally, Chapter 9 concludes by drawing together the central findings of the articles and discusses how they illuminate the overall research question. Furthermore, the final chapter reflects on pressing questions arising from the findings and points to interesting avenues for future research.

Figure 1. Dissertation outline
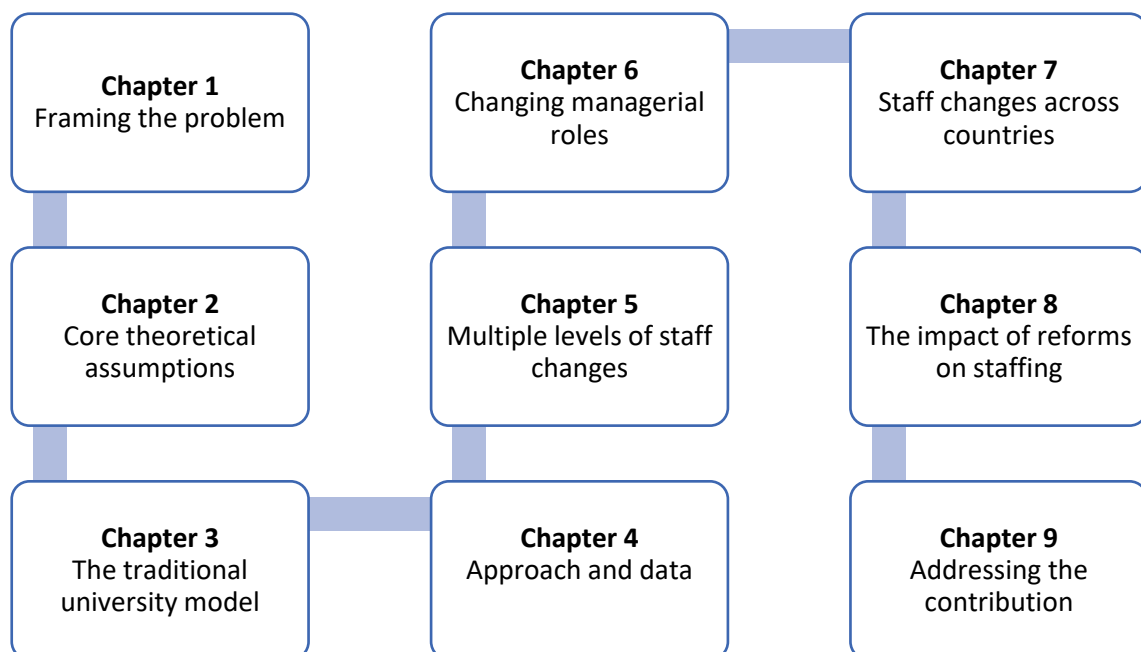
Chapter 2.
The theoretical foundation: Sociological neo-institutionalism

The international literature on organizational change in universities almost unanimously draws on neo-institutional theory. This is a theoretical framework that rejects reductionism and stresses the interplay among coinciding processes on multiple levels. Scholars have convincingly shown how contemporary universities are characterized by both *change* and *continuity* and shaped by both *local* and *global* fields. This dissertation focuses on the character, pace, and drivers of change in university staffing, but it adopts the neo-institutional framework to include how change may relate to stable and/or broader processes that might not be readily observable in the empirical material at hand (Esmark et al. 2005, p. 11).

Neo-institutionalism is a broad paradigm encompassing several different strands, which have grown out of different research fields and have partly overlapping, partly differing assumptions. The common denominator is the assumption that "institutions affect action by structuring expectations about what others will do" (Hall and Taylor 1996, p. 955), which creates greater regularities in social actions than would be otherwise found (Scott 2008, p. 48). It is thus assumed that one can achieve greater analytical leverage on organizational change by beginning with global and local institutions rather than with individual actors. The sociological strand is chosen because it focuses on social legitimacy in light of ambiguity and on rationality as a culturally constructed ideal. This strand provides insights into understanding university transformation as part of global rationalization processes. Moreover, the historical strand is drawn in because it conceptualizes a widespread understanding of universities as rather stable and change-resistant, arguing that change tends to be a relatively slow and gradual process. It also highlights how the transition from a traditional to a new organizational model does not necessarily mean dismantling the former.

2.1. Institutional conformity

According to sociological neo-institutional theory, the key to understanding organizational *change* at universities should not be found inside them, but mainly outside them in their institutional environment. It assumes that or-

ganizations are strongly influenced by the environment within which they operate. From this perspective, university organizations are open rather than closed systems.

A perspective that neo-institutionalism initially shared with other concurrent organizational perspectives (e.g., structural-contingency theory, resource-dependence theory, and the behavioral theory of the firm) was that internal change reflected adaptation to external change. However, these other perspectives largely portrayed organizations as agentic actors responding rationally to changing circumstances. Senior managers steered organizations to greater efficiency by responding to market and performance signals, albeit within notions of bounded rationality (Greenwood et al. 2008, p. 3). In contrast, neo-institutionalism argues that organizational change not only reflects efficiency concerns but also – and sometimes mainly – legitimacy concerns.

The theory opposes the view that actors maximize individual utility by weighing the benefits and costs of alternative actions. Instead, it finds that which solution would be most efficient for an actor to adopt is usually highly ambiguous. Actors are therefore perceived to lean toward "collective and authoritative models for appropriate social practice" in order to maintain social legitimacy, even when doing so may run against efficiency (Meyer and Rowan 1977). Action is here not a "choice among unlimited possibilities but rather among a narrowly defined set of legitimate options" (Wooten and Hoffman 2017, p. 130). Models of appropriate action can, for instance, arise from formal or legal standards (e.g., reforms, prohibitions, or requirements), from what other similar actors do (e.g., comparisons or success-stories), or from the discourse generated by experts on how "best" to be an actor in modern societies (e.g., academic theories or management styles). However, the key assumption is that regardless of the degree of formalization, institutions promote conformity (DiMaggio and Powell 1983).

This institutional conformity operates, firstly, at the individual level (Lawrence and Suddaby 2006), but sociological neo-institutionalism argues that it also increasingly structures organizations (DiMaggio and Powell 1983; Meyer et al. 1997; Meyer and Rowan 1977). Meyer and colleagues argue that contemporary societies are increasingly characterized by pervasive institutions about how organizations "ought to be" (Meyer and Bromley 2013). In this view, organizations gain legitimacy by adopting widely valued models of organizing and managing, which tend to be highly rationalized, politicized, and globalized. "Such models facilitate and direct local organizing, and local situations gain meaning, authority, and legitimacy by conforming" (Meyer et al. 2007, p. 8).

Organizations are pressured by their environments to look more like each other, especially with respect to formal structures (DiMaggio and Powell 1983;

Ramirez and Christensen 2013, p. 696). This is a radical proposition given the world's enormous variation in social, cultural, and economic conditions. Most other branches of sociological theory embrace variation across settings, but sociological neo-institutionalism stands out by claiming that organizations converge toward shared models (Meyer et al. 2007, p. 9). March and Olsen (1989) argue that this is especially the case for organizations with unclear means-ends technologies and diffuse goals, such as universities since it has become harder to establish legitimacy for unconventional practices (even in cases of *de facto* efficiency).

> If a local business gains stability by organizing according to standard legal and professional models, it is even truer that a local university—lacking production or profit as guide—lives and dies by its conformity to wider rules (Meyer et al. 2007, p. 8).

2.2. Change

According to sociological neo-institutionalism, changed practices follow from changed social perceptions of how organizations "ought to behave". Processes of rationalization are perceived to change models of how to organize and manage, which is an ongoing source of change for organizations. These models usually prompt the conversion of unclear technologies into "objective knowledge" (e.g., by developing standards, defining criteria, and evaluating in terms of efficiency and effectiveness) that can then be organized and managed accordingly (Brunsson 2009; Kehm 2015a). On a general level, Meyer and colleagues find that this development is resulting in an intensification of the following three dimensions in organizations at large:

1. Formalized planning: Methodical and schematized approaches to organizational action. This is evidenced by the expansion of strategic planning and the formal and explicit depiction of overall goals, means, and resources.
2. Rationalized personnel arrangements: These explicate role specification, the elaboration of professionalized credentials, and training. They are suggested by the rise of human resources divisions, standardized managerial titles (e.g., chief executive officer), and the formalization of role articulation.
3. Rationalized structures: Articulated differentiation and justification of production and control processes through systematizing core tasks and regularizing quality control. These are evidenced by the proliferation of organizational charts, elaborated goal statements, definitions of tasks, as

well as procedures and metrics for assessing quality (Drori et al. 2009, p. 27; see also Meyer and Bromley 2013).

Brunsson and Sahlin-Andersson (2000) argue that the rise of NPM represents an influential way in which new models of organizing and managing have impacted public service organizations, such as universities. As described in the introductory chapter, the interplay between NPM and the knowledge economy discourse changed the social perception of universities considerably, sparking a wave of new formal and informal expectations toward universities in terms of their societal contributions, efficiency, and governance; however, practically fulfilling these intensified expectations has been highly ambiguous due to few clear means-ends technologies for producing and distributing scientific knowledge (Enders and de Boer 2009). According to sociological neo-institutionalism, this heightened ambiguity compels universities to adopt rationalized organizational structures. This means embracing models such as those set forth by the NPM discourse, policy reforms, or promoters of "best practices of world-class universities". This tendency is very likely to drive organizational change because models currently valued by the environment tend to be at odds with earlier and more historically grounded university practices (Ramirez and Christensen 2013).

2.3. Continuity

While institutions are a source of change, as argued above, they are also an important source of continuity. One of the defining characteristics of an institution is its ability to reproduce social order over time and space (Greenwood et al. 2008, p. 4). Scott writes that institutions provide stability and constitute the more enduring features of societies (Scott 2008, p. 48). This continuity arises from the condition that "institutions are not simple reflections of current exogenous forces or micro-level behavior and motives. They embed historical experience into rules, routines, and forms that persist beyond the historical moment and condition" (Olsen and March 1989, p. 167). Certain institutions are deeply entrenched in culture and materiality, and their continuation tends to be taken for granted. Historical neo-institutionalism therefore posits that institutions are characterized by a substantial degree of robustness and resilience, and change tends to be mainly in the form of incremental and evolutionary adjustments.

Historical neo-institutionalism thus downplays the impact of changing social expectations on actual processes within organizations that are highly institutionalized, such as universities. In the higher education literature, institutions usually denote common and stable perceptions of what it means to be

an academic and how academic activities ought to be performed and managed. Academic socialization involves, for example, getting acquainted with classic works of one's discipline and undergoing struggles similar to those of one's predecessors. Meyer et al. (2007, p. 4) argue that the basic meaning of categories such as student, professor, seminar, syllabus, experiment, and conference—or of topics such as physics, sociology, or law—have been enacted with clear uniform traits across historical time and space. Historical neo-institutionalism thereby stresses that introduced models promoted by the environment are likely to co-exist or slightly mix with resilient academic institutions on what it means to be an academic (Aagaard 2017; Kleimann 2018; Kraatz and Block 2008).

2.4. Local and global fields

Not every institution matters for any given organization; only those that are part of their field do. The field concept "connotes the existence of a community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside of the field" (Scott 1994, p. 207–208). The field of a specific organization may comprise competitors, collaborators, government, and public administration, funding sources, professional associations, and stakeholders.

Although sociological neo-institutionalism claims that the fields of similar organizations increasingly overlap, the theory emphasizes that the change invoked by it still depends on the non-shared sub-fields. Non-shared sub-fields prompt differentiation while shared sub-fields simultaneously prompt similarity (Hüther and Krücken 2016). Hence, a path-dependent interplay between sub-fields is assumed to influence the practices in individual organizations (Gornitzka and Maassen 2014; Marginson and Rhoades 2002; Robertson 1995).

> To understand the changing routes universities follow, one needs to take into account both the worldwide changing rules of the game that impinge on the universities due to facing common models as well as their historical roots and path dependencies (Ramirez and Christensen 2013, p. 696).

Universities are frequently highlighted as institutionalized organizations that are strongly embedded in global and local fields (Meyer et al. 2007; Ramirez and Christensen 2013). New pressures from a globalized environment (e.g., the NPM and knowledge economy discourses) should therefore be understood against the backdrop of specific local university fields and path-dependencies.

Comparative research finds, for instance, that national higher education systems continue to have different formal frameworks (Bleiklie, Enders, et al. 2017; Clark 1986; Paradeise et al. 2009) and that individual universities continue to have different organizational structures, even within the same field and under the same formal framework (Kodeih and Greenwood 2013; Lounsbury 2001; Paradeise and Thoenig 2013). While these scholars do not refute the ever-greater influence of global fields on universities, they do place emphasis on the path-dependent interplay with strong local fields.

The local field: universities are mandated a large part of their organizational setup and activities by national laws and decrees. They are first and foremost publicly funded and formally regulated as a public good. They draw vital legitimacy and resources from solving problems of national or regional interest. Different national and regional policies have historically favored certain models at the expense of others in different contexts (Bleiklie, Enders, et al. 2017; Paradeise et al. 2009). In particular, long-term variation in the formal and informal relationships of individual universities to "their" state and market has resulted in widely different historical pathways and traditions (Clark 1986, 1998). In most cases, universities and academics have had a level of organizational and individual leeway to continue pathways and practices that are valued locally. Not all universities "want to nor can imitate the model of the US research university" (Hüther and Krücken 2016, p. 69).

The global field: universities' organizational members (e.g., academics, students, administrators) and stakeholders (e.g., policymakers) orient themselves toward values, questions, and solutions cultivated in international networks; especially in global scientific communities, where the competition for academic reputation takes place, and in expanding university governance networks comprising "a surprisingly large number of intermediary organizations" (Sahlin et al. 2015, p. 418), such as intergovernmental organizations; academic associations; consultancy firms; evaluation, ranking, and accreditation agencies; think tanks; umbrella organizations by/for universities; and associations of industry, student, and professional interests (King 2009; Maassen and Olsen 2007; Sauder and Espeland 2009). These international networks "shape and disseminate ideas and conceptualizations, establish and strengthen institutions, and they are important meeting places and boundary spanners of the field" (Sahlin et al. 2015, p. 410).

Long-term variation in the field embeddings of universities has led to path-dependencies in the form of distinct local cultures, arrangements, and policies, which shape how they internalize new institutional pressures (Clark 1986; Hüther and Krücken 2016; Ramirez and Christensen 2013). Distinct historical characteristics are therefore perceived to buffer homogenizing pressures. Krücken et al. (2007, p. 8) argue that widely valued models "may appear

standard, but they are never standardized in their effects, as they are adapted, incorporated, or resisted by universities that are ultimately rooted in particular times and places". In this view, do organizations mainly incorporate models that fit existing local cultures and pathways already in place and decouple the rest from actual work practices (Bromley and Powell 2012; Brunsson 2009). They select, translate, and edit institutional pressures on the basis of their own traditions and pathways (Czarniawska and Joerges 1996; Lawrence and Suddaby 2006).

However, a tension prevails within neo-institutionalism concerning the balance between change and continuity, and the relative importance of local and global fields (Greenwood et al. 2008; Ramirez and Christensen 2013). It raises important questions about how directly and uniformly change in the institutional environment impinge on organizations. The historical strand of neo-institutionalism posits, for instance, that individual universities are resilient and change less uniformly and less dramatically than implied by the sociological strand that places greater emphasis on the apparently considerable institutional change in sub-fields that many universities share. To throw light on the interplay between the different dimensions, Suddaby and Greenwood (Suddaby and Greenwood 2009) call for holistic, multi-level empirical approaches to the relationship between institutional and organizational change.

Chapter 3.
The traditional university model: internationally and nationally

This dissertation investigates a broadly claimed emergence of a new organizational model that competes with a resilient traditional university model. There is generally greater agreement in the higher education literature about the characteristics of the traditional model than of the new model. In the Danish case, this is partly because the internal structure of universities was rather simple and stable for most of the 19th century (Pedersen 1982). Although most scholars agree that organizational change has taken place, surprisingly few studies have investigated the processes and their outcomes. The four articles embedded in this dissertation therefore focus on uncovering the characteristics of the new model. As the neo-institutional framework highlighted, however, the organizational transformation is unlikely to have been clear-cut, dismantling the traditional model entirely. Aagaard and Degn have previously shown how vibrant features of the traditional model persist in being consequential at Danish universities (Aagaard 2011; Degn 2015a, 2015b). The dissertation therefore assumes that the traditional and new models have been co-existing and mixing over a long period (Kleimann 2018). It is therefore important for a balanced understanding to consider both the traditional and new models. Since the articles are preoccupied with sizing the new model, the following sections will describe the traditional model and the historical context of its transformation in Denmark.

The first subsection describes the traditional university model according to core theories of universities as organizations drawn from the international literature. These theories have been highly esteemed and influential within and beyond the higher education literature. In fact, some of the insights at the core of the sociological neo-institutionalism paradigm owe their origins to studies that used traditional universities as cases (e.g., Brunsson and Sahlin-Andersson 2000; Cohen et al. 1972; Meyer et al. 1978; Weick 1976). The second subsection then describes how Danish scholars have portrayed the traditional Danish university model. Although few empirical studies exist of how the traditional Danish universities were internally organized in the past, there is broad agreement about the main organizational characteristics.

3.1. The international literature on traditional universities

The international literature on universities assumes that different forms of "loose couplings" are inherent traits of the traditional organizational model. In contrast, most classic theories about organizations find "tight coupling" a defining feature of "ordinary" organizations (Scott 2003). Early scholars of higher education have therefore strained to make people think of universities as something different from any other organization. To highlight the peculiarities of universities as incomplete or specific kinds of organizations (Musselin 2007; Whitley 2008b), scholars have forwarded alternative concepts such as "arenas," "communities," "hollow organizations," "cultural institutions," "loosely coupled systems," "professional bureaucratizes," and "organized anarchies" (Hüther and Krücken 2018; Peterson 2007).

The following describes three frequently used depictions of the traditional university model: universities as loosely coupled systems (Orton and Weick 1990; Weick 1976), as organized anarchies (Cohen et al. 1972), and as arenas (Brunsson and Sahlin-Andersson 2000; de Boer, Enders and Leisyte 2007). All three approaches highlight how the traditional model deviates from the ordinary conceptualization of an organization.

3.1.1. Universities as loosely coupled systems

Weick developed a theory of organizations wherein he used universities as an illustrative case to demonstrate that internal units are not always tightly connected and that maintaining this loose coupling can be advantageous under certain conditions (Orton and Weick 1990; Weick 1976). Weick explicitly highlights how universities have displayed a high degree of efficiency, stability, and legitimacy from a historical perspective, even though they had a high number of loose couplings.

The loose coupling emerges from academic specialization, whereby a multitude of disciplines, subjects, and research groups pursue their respective bodies of knowledge rather independently. Very few elements in the traditional way of organizing science have been motivating or forcing the different units to work together (Clark 1986). In other words, research in economics tended to be independent of research in chemistry and to be only loosely coupled as mutual units within the same "organization".

> In few other workplaces, if any, is it as frequent to ignore what colleagues seated next door are doing and observe so little influence of the activities of those colleagues on one's own tasks (Musselin 2007, p. 7).

Weick (1976) also finds that academic specialization severely weakens hierarchical couplings within universities. Hierarchical coupling is a key coupling mechanism within ordinary organizations. He argues that it would be overtaxing for managers to instruct and inspect professors in detail because each case would require too much specialist knowledge. This "information deficit" of university managers represents an important type of loose coupling in universities. It has therefore been widely acknowledged (historically) that professors best decide themselves how to further their field of research, resulting in considerable individual autonomy.

> Since [managers] are poorly qualified to judge the merits of particular research goals and approaches and the results they produce ... They are unable to coordinate and control them in organizationally specific ways that could generate distinctive competitive advantages (Whitley and Gläser 2014, p. 21).

According to Orton and Weick (1990), the main benefit of a loosely coupled system or organization is that it enables local adjustments without affecting or constraining other units of the organization. This is particularly relevant for pluralistic and multi-purpose organizations, such as universities. "Shoddy teaching and/or research in physics will not have an impact on sociology, and vice versa" (Hüther and Krücken 2018, p. 151). Hence, parts can be added and subtracted with little effect on the whole or even little notice taken, or any blood spilled by the remainders.

3.1.2. Universities as organized anarchies

Cohen et al. (1972) depict universities as organized anarchies that are characterized by problematic preferences, unclear technology, and fluid participation. They highlight how these structural features limit the type of decision-making that is possible in universities. They find that the traditional rational decision-making model, which assumes that a complete search for alternative solutions results in an optimal solution according to a well-defined problem, rarely reflects the organizational reality in universities. Instead, decision-making is argued to reflect rather incidental encounters between problems and solutions and changing decision-makers and decision situations.

Firstly, organized anarchies have problematic preferences, meaning that the goals of the different units in the organization are not coherent; they tend instead to be abstract, ambiguous, and even conflicting. Secondly, organized anarchies have so-called fluid participation in collective decision-making, i.e., a high degree of fluctuation in who participates actively in the various decision-making situations over time. Decision-making in organized anarchies often relies on voluntary commitment or rotation procedures, which renders it

highly dependent on other coinciding commitments and the interests of those involved (Cohen et al. 1972).

Thirdly, organized anarchies have unclear technologies in that the mechanisms for transforming inputs into outputs are poorly understood and far from standardized. Hüther and Krücken argue that "[p]rior to an action, members are often not clear on what impact a certain action will have and, consequently, do not know which actions will have the greatest chance of succeeding in achieving the set goal. It is not possible for members to weigh up matters rationally, which means that actions are subject to trial-and-error procedures. For example, there is no procedure to ensure that new knowledge is produced" (Hüther and Krücken 2018, p. 162). In this view, tacit knowledge carried by individuals and local culture is at the heart of academic activities (Cohen et al. 1972).

3.1.3. Universities as arenas

Brunsson and Sahlin-Andersson (2000) conceptualize the traditional university as an *arena* rather than an ordinary organization. An arena is characterized by the fact that its members are primarily guided by external communities rather than by internal management. The members of an arena perform their tasks relatively free from the control of local leadership; instead, they are guided by external communities. This external governance often leads to blurred hierarchical arrangements wherein multiple formal and less formal hierarchies intersect (Bleiklie et al. 2015; Musselin 2007).

The arena itself represents only a weak and secondary source of unity and guidance, while professional structures extending far beyond the individual arena (e.g., disciplines, associations, conferences, or journals) are of far greater importance. The organizational members of universities (academics, students, leaders, administrators, etc.) orient themselves toward values, questions, methods, standards, and solutions cultivated in global communities. In particular, they are oriented toward global scientific communities, where the competition for reputation, often seen as the main regulative force of academia, takes place (Crane 1972).

> Academia has always been structured as an international network of universities, with much of its life occurring in the "invisible college" of collegial relations (Drori 2016, p. 184).

The arena's local organizational structures make up the *periphery*, providing mainly the pragmatic and supportive infrastructure that the various loosely coupled professionals at the *center* need in order to carry out their independent activities. The periphery is subordinated and responsive to the needs and

decisions made at the center and in scientific communities. Within the arena, the process of establishing academic priorities and evaluating results is, above all, a matter for discipline-specific, scientific communities. This is in conflict with notions of organizational practice, where members align their activities with organizational policy and strategies (Musselin 2007; Whitley 2008b). Functional loose coupling is, thus, a core characteristic of the arena, which refers to low levels of collective coordination, corporation, and goal-setting. Academic professionals are therefore those seen to act rather than the university as a collective entity. In that sense, the individual academics also bear the main responsibility for their own work and should be the main target for third-party inspection and critique.

3.1.4. In sum, the traditional model as a community of professors

The traditional university model has been described – exaggeratedly but illustratively – as a community of loosely coupled professors mainly held together by a central heating system or mutual grievances over car-parking (Kerr 1963, p. 15).

The three theories presented above describe more accurately how the traditional universities were a specific kind of organization, probably unlike any other. The main factors were different forms of internal "loose couplings," which sustained the supremacy of the autonomous professor role. It was the norm to uphold the smallest possible amount of mutual interdependency among professors, groups, and units. Although guided by external academic communities, the individual professors largely controlled professional matters (regarding research, teaching, and academic careers) within their respective branches of learning. The ministry was formally the highest authority, but the internal governance was in practice primarily guided by rules and procedures that were collegially agreed within the professoriate, without much interference from anyone. Leadership and coordination across internal units were weak, and central policies and interventions had only minor effects, i.e., a low congruence between formal structures and actual activities. Real changes took place mainly through ongoing micro-adjustments, while major coordinated changes were difficult to achieve. The university as a collective entity concerned mainly the most basic non-academic matters in which they were subject to state control (e.g., budgets, salaries, infrastructures).

However, there have historically been large differences between national university systems (Clark 1986). The practical setup of traditional universities in different countries has varied. The largest variation was between market-coordinated systems (e.g., the US and UK) and state-coordinated systems

(e.g., Germany and the Scandinavian countries). Scholars argue that management and organizational capabilities played a larger role in the market-coordinated systems from early on compared to the image portrayed by the presented theories (Kerr 1963; Rhoades and Sporn 2002). The degree to which the above stylized model applies to universities in different countries varies, but it may particularly apply to the traditional universities in the typical state-coordinated systems in continental Europe—not least the traditional Danish ones.

3.2. The traditional Danish universities

Acknowledging that the practical setup of traditional universities has varied across countries, this section outlines how Danish scholars have described the traditional Danish university system. It will be evident from the following subsections that the traditional Danish universities largely resembled the theoretical account of the traditional model, described in the preceding section, until the late twentieth century.

The major characteristics of the traditional universities in Denmark have been 1) the autonomous position of the university in relation to the state authorities, 2) the very slow, gradual change in internal authority relations, and 3) the supremacy of the professors (Christensen 2012; Pedersen 1982). The first three sub-sections each describe one of the main characteristics, whereas the final sub-section describes the Danish historical context of their transformation.

3.2.1. The traditional Danish university–state relationship

For many decades, unlike most other public institutions, the traditional Danish universities did not have a subordinate relationship with the ministry and government. The universities enjoyed a relatively autonomous position with regard to determining the core activities of research and teaching and the internal allocation of resources (Aagaard 2011; Larsen 2010; Pedersen 1982).

> The university was in total command of its internal distribution of resources. Although the Ministry of Education possessed the legal power to control the purse, it did not use this power in an active way. It was to a very high degree the university itself that established the goals as well as the quantitative and qualitative standards, and thus also determined the level and distribution of expenditures (Pedersen 1982, p. 237).

The academic community also controlled the initiation, performance, and evaluation of research exclusively. Until the late twentieth century, there was no public government university policy, any network of research councils, nor

other coordinating bodies. The development of research happened almost exclusively in a fragmented, bottom-up fashion with separate professional chairs controlling their respective fields. With regard to teaching, the Ministry of Education issued the curricular requirements formally, but in practice, the universities were the ones actually formulating them through a collegial process. Consequently, the structure of study programs remained rather stable and changed only incrementally (Hansen 2002; Pedersen 1982).

This far-reaching autonomy of individual professors and universities prevailed, according to Pedersen (Pedersen 1982, p. 236), because all of the involved parties upheld an "unqualified adherence to traditional concepts of academic freedom and the autonomy of the university". The main role of the ministry and the government was to set the budget and provide the overall administrative framework and stable funding. Once a year, the Treasury Committee of the Danish parliament decided on requests made by the universities for additional funds or opening of new positions. These requests were the outcome of internal negotiations among the professors in advance and were largely handled in a non-partisan bureaucratic manner by the Treasury Committee. In effect, the annual budget delimited the specific number of positions allowed within each staff category (professors, docents, junior academics, secretaries, laboratory assistants, technicians, and service staff) in each department of every university (Aagaard 2011; Larsen 2010).

3.2.2. The traditional managerial and administrative structure of Danish universities

The managerial and administrative structure of Danish universities was simple and stable over a very lengthy period (Hansen 2017; Slottved 2006). A hierarchy of powerful collegial senates constituted the organizational cornerstones: the overall university senate (*konsistorium*), intermediate faculty senates (*fakultetsråd*), and decentral department senates (*institutråd*). The senates followed, at least in principle, democratic virtues of representation, negotiation, and elections (Hansen 2017). Managers and members of the various senates were all collegially elected.

While the rector was elected to a full-time manager position, the heads of department and often also deans were part-time roles, carrying out their administrative and coordinating responsibilities alongside their research and teaching (although teaching obligations were typically reduced).

The rector, assisted by a central administration under the leadership of a university director, was in charge of the overall management of daily operations at each of the Danish universities. The rector was elected by and referred to the university senate. The role of the rector was to be internally responsible

for maintaining an economic, organizational, and technical infrastructure, to arbitrate internal disagreement, and to defend the independence of their community vis-á-vis the state and external stakeholders.

The underlying organizational structure below the central level varied from university to university, and internally between faculties and departments. These variations resulted from the widespread local autonomy at each university and at each internal level. Some universities (KU, AU, SDU) consisted of multiple faculties under the leadership of elected deans, while others were not divided into separate faculties (DTU, CBS), which thus had no dean and intermediate administration between the individual departments and the rector and central administration. The faculties consisted of a small secretariat and an elected dean, whose role was to contribute to a minimum level of coordination between the largely separate departments and study programs. The health and natural sciences typically had more tightly organized faculties than the social sciences and humanities, the latter usually encompassing few but large and independent departments (Christensen 2012).

The responsibility for financing, personnel, and student administration related to research and education were located on the department level. Here, the managerial responsibility was delegated to an elected head of department, a role that usually circulated internally among the department professoriate. Most administrative tasks were carried out by local secretariats. Vocationally trained secretaries (known as "HK'ere" in Denmark) occupied these secretariats in the vast majority of cases (Christensen 2012). In general, according to Christensen, the administrative structure had a very low level of professionalization. "The few managers and administrators with higher administrative education were mainly working within the secretariats at the [slim] central level" (Christensen 2012, p. 244).

Christensen (2012, p. 247) writes that the management of the traditional Danish universities "was not just modest in size; its ambition was also modest". Its task was to keep the university running externally in relation to ministerial bodies and internally in relation to the academic activities. Internal units had great independence and could more or less freely decide how to run their respective research and teaching activities as long as they stayed within their economic framework (Pedersen 1982). In the exceptions where higher-level management interfered in the operation of individual units, it took place in a "decision-making process that could best be characterized as a political negotiation between equal units" (Christensen 2012, p. 244). The configuration of informal coalitions between strong professors and units largely determined boundary-crossing decisions and resource allocation.

3.2.3. The traditional strong Danish professoriate

In a long-term perspective, the really important actors in the traditional Danish universities were first and foremost the individual professors. According to Pedersen (1982), the professors essentially jointly ruled the day-to-day university business; they determined the subject matter, filled the various collegial bodies, elected the managers from among themselves, and performed a large part of the core activities. A sub-committee of professors consisted of elected members of the supreme university senate (*konsistorium*), which acted as a check on and an advisory body to the university rector. This was an efficient way of coordination as long as a sufficient level of consensus prevailed among the rather small and stable community of professors (Hansen 2017; Pedersen 1982).

As in most European universities at that time, the professorial appointment came with substantial powers to control the development of "its branch of learning". In most departments, the professor was *de facto* a "leader" who enjoyed almost total control over recruitment and careers and could delegate various tasks and duties to subordinated junior academics associated to their chair (usually only one or a few). It was usually a master-apprentice relationship between professors and junior academics. Because the traditional Danish universities were small and rather stable, the junior academics had good chances of receiving a professorial appointment themselves if the relationship held. Under such conditions, personal and professional conflicts were unlikely to see the light of day, because the outcome was easily predictable (Hansen 2017; Pedersen 1982).

The selection of successors for professorial chairs was the key element determining the trajectory of Danish universities (as in most European universities). The seasoned professors in a scientific field controlled academic promotions. The appointment committees often included professors from within the respective department as well as from universities outside Denmark. Pedersen writes, "consensus on scientific principles made this procedure natural and beneficial in an academic community as small and 'inbred' as the Danish" (Pedersen 1982, p. 235).

3.2.4. The Danish historical development

So when did the traditional model prevail, and when did it change? The timeline in Figure 2 provides a broad overview of major historical developments in the Danish university sector from 1953 to 2019. The first important observation is the extensive organizational growth during this period. The number of students (orange line) is a consistent indicator of such growth, but also the simple fact that four universities were founded from 1965-1974 reflects the

expansion. Another indicator is the annual R&D expenditure as a percent of Danish GDP (yellow line), which has never decreased, only increased, especially toward the end of the period. The second important observation is the advent of substantial policy reforms and the intensification of them in the latter decades of the period. The first-ever law on organization and management of universities was the Governance Act in 1970/73, which was followed by stepwise changes in how funding was allocated (Aagaard 2017). Many of these early changes were largely integrated into traditional organizational work roles and arrangements, but the comprehensive and interlinked reforms in the 1990s and 2000s significantly added to the mounting pressure to make deep changes.

Figure 2. Timeline with selected major developments in the Danish university sector, 1953–2019.
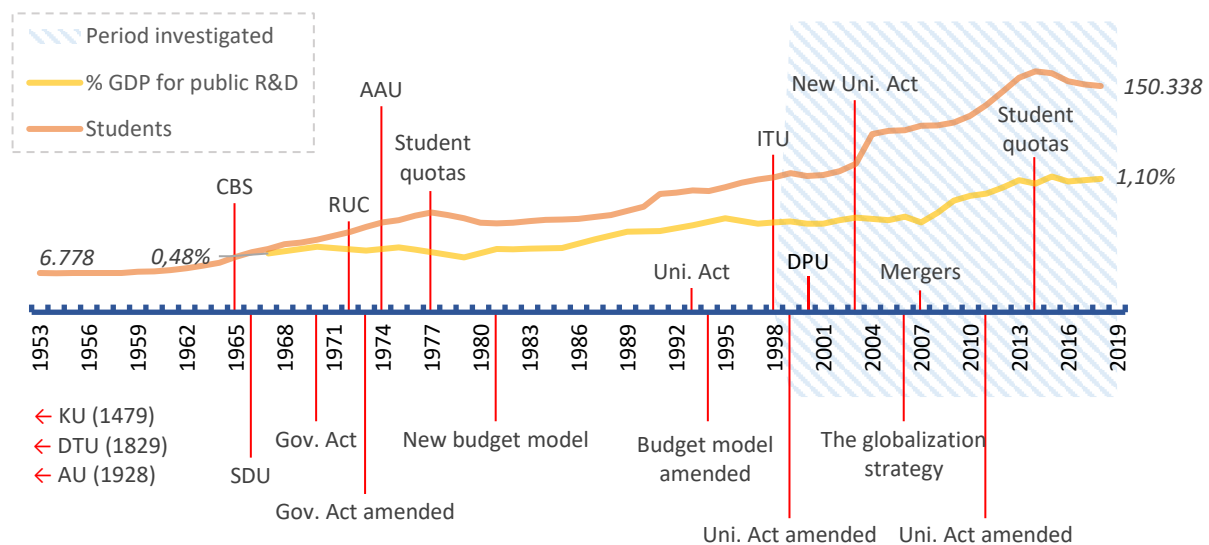
Note: Table 2 describes the marked events.

Until the late 1990s and possibly longer, the Danish universities mainly resembled the traditional model described above. Organizational changes already took place in the 1960s and 1970s, where the number of students increased by 500%, and decision-making power was delegated to democratic senates in which junior academics, students, and non-academic staff became represented. But critical observers noted a continued tendency toward professorial supremacy, endless deliberations, non-decisions, and mutual non-interference (OECD 1988; Rostrup-Nielsen 2001; Wandel et al. 1985). The changes envisioned by stakeholders and the Governance Act around 1970 were largely resisted. The period entailed, in practice, a formalization and upscaling of the traditional model rather than an actual transformation of it.

So even though the Governance Act in 1970 meant a significant change in the way in which university leaders were elected, Danish universities were still self-organizing entities... This principle of self-organization survived another reform in 1993... Even though the heads of department were given more power in 1993, they were still elected by their colleagues and had to answer to them for their dispositions. The basic principle of self-organization—i.e., management based on internal logics and regulations—was therefore still intact (Degn and Sørensen 2015, p. 935).

In the 1990s and 2000s, the Danish universities came under renewed and heightened pressure from various sources to actually change their organizational model. Danish higher education scholars highlight in unison that the University Act of 2003 represents a key catalyst for the organizational transformation of Danish universities (Aagaard and Mejlgaard 2012; Ejersbo et al. 2019; Faye and Pedersen 2012). Parts of the transformation were clearly already in motion prior to 2003; however, as this dissertation shows, it has been an ongoing process ever since. The dissertation concludes that today's universities resemble a significantly different organizational model than their predecessors, but the timing and amount of transition from the traditional model to the new one are debatable. An important assentation is, however, that the organizational transformation of Danish universities mainly took place within the period covered by this dissertation: from 1999 to 2017; hence, the dissertation covers a period characterized by path-breaking change.

Table 2. Major events in the Danish university sector, 1953–2019.

Year	Event	Main
1965	Copenhagen Business School (CBS)	Gained public university status
1966	University of Southern Denmark (SDU)	Founded
1970	Governance Act	The first formal law on the organization and management of the universities. Authority was delegated to democratic and collegial governance bodies, which mainly counted the university senate, faculty senates, and department senates. Students received seats in selected bodies.
1971	Roskilde University (RUC)	Founded
1973	Governance Act amended	Full representation of all employee groups in the collegiate bodies, including students and non-academic staff. Faculty members were given 50% of the seats at governance bodies, 25% to students, and 25% to non-academic staff. The act further specified the relationship and responsibilities of the various governing bodies that the governance Act of 1970 established.
1974	Aalborg University (AAU)	Founded
1977	Student quotas	The student intake at a range of study programs in the social sciences and humanities were sized.
1981	New budget model	The public funding of universities was split into two streams, teaching and research, in order to make the distribution more activity-/performance-based.
1993	University Act	Strengthening of the department-head and dean functions. The elected department heads were given limited instruction authority over faculty members.
1994	Budget model amended	The funding of teaching became almost entirely activity-based in relation to the number of exams passed by students.
1999	IT University (ITU)	Founded
1999	University Act amended	The act turned the relationship between universities and the ministry into a contractual one, where a "development contract" with specific performance goals was to be negotiated every third year.
2000	Danish School of Education (DPU)	Gained public university status

40

2003	New University Act	The reform removed universities from the formal state hierarchy and turned them into so-called "self-owned entities" with the power to draft their own statutes. It further introduced university boards of directors with an external majority, replaced elected academic leaders with appointed managers, and stripped the collegial senates for decision-making powers. The university boards were to appoint rectors, which appoint deans, which in turn appoint heads of departments.
2006	The Globalization Strategy	A package of no less than 350 specific initiatives, which together entailed extensive changes for education and research. One of the key initiatives was to double the PhD uptake.
2006-2008	Mergers	Four universities and 12 out of 15 government research institutes were merged into the current 8 universities. Overall, the reform was anchored in ideas of economies of scale.
2011	University Act amended	The amendment increased the authority of the rectors over the internal organization and the authority of the ministry over the university development contracts.
2014	Student quotas	The student intake at study programs with a 'high' graduate-unemployment rate, predominately in the social sciences and humanities, were seized.

Sources: Aagaard and Mejlgaard 2012; Ejersbo et al. 2019.

Chapter 4.
Approach and data: Understanding university transformation through staff changes

This chapter describes how the transformation of Danish universities can be understood through staff changes. The first section starts with the observation in the international literature that processes of formalization and the delegation of tasks have made certain staff categories less clearly subordinate to the professors. It is argued that this emergence of new, important staff categories calls for a holistic organizational view on universities: one that encompasses *all* university employees. The second section describes how changes in staff categories—and eventually organizational change—can be studied empirically through a bottom-up categorization of job titles, and how it has been done in this dissertation.

4.1. The formalization and delegation of tasks

In the traditional continental European universities, "management" was a collegial issue for the professoriate, and "accountability" rested on internal peer-review procedures. Conservative socialization by senior academics covered "professional development" and "code of conduct", and as there were only a few and akin students, close interaction with academics covered "quality education" and "student services". Student-flows were stable, and funding followed co-opted academic positions, making "external funding strategies" and "strategic communication and marketing" unnecessary. It was taken for granted that "knowledge and technology transfer" happened in a trickle-down fashion through teaching, publishing, and informal networking.

The informal nature of these practices reflected the traditional confidence in the ability of the professoriate to decide and perform almost the full set of tasks, including self-management, self-evaluation, and self-promotion. The field-specific expertise of the professors was considered a sufficient guarantor. It resulted, however, in a great deal of idiosyncratic, partisan, and rigid practices, which, in light of the knowledge economy and NPM discourses, became a long-term target for critical and reformist stakeholders (as described in Chapter 1).

A main consequence of this mounting external pressure has been to formalize and delegate tasks, which were previously conducted informally as integrated parts of academic culture, according to prominent scholars of higher education. This process has by no means been trivial and is seen by these scholars to entail "a fundamental restructuring of professional employment" (Rhoades and Stensaker 2017, p. 130), signaling the transformation of the traditional university model (e.g., Fumasoli et al. 2015; Ginsberg 2011; Krücken and Meier 2006; Marginson and Considine 2000; Paradeise et al. 2009; Ramirez and Christensen 2013; Shattock 2014; Woelert 2019). The result has been that non-professorial staff categories became increasingly important for core activities and thus less clearly subordinated to the professors.

> The old boy network that went hand in hand with the older institutional logics was a cheap mode of operating. The erosion of the clout of the network is brought about by the standardization of organizational policies and practices... This is a standardization that undercuts local custom and informal practice but also generates costs in terms of adding administrative and managerial staff to the university (Ramirez 2006, p. 240).

In order to understand this transformation of contemporary universities, it is obviously imperative to move empirically beyond "the prevailing simple dichotomy of administrative versus academic staff" (Rhoades 1998, p. 116) and examine different staff categories at a higher resolution. The conventional dichotomy may have been sufficient to describe the simple organizational setup of the traditional universities but obviously falls short of contemporary transformations; a realization that several higher education scholars in various countries have taken up. In particular, the literature highlights two parallel staff trends occurring *within* either side of the conventional dichotomy (Rhoades 2017): Firstly, an expansion of temporary and diverse positions within the bottom strata of the academic hierarchy (Fumasoli et al. 2015; Milojevic et al. 2019; Yudkevich et al. 2015) and, secondly, the professionalization of the administrative and managerial staff within an extended hierarchy of specialized offices (Baltaru and Soysal 2017; Kehm 2015a; Krücken et al. 2013).

4.1.1. The rise of temporary academic staff

The rise of temporary academic staff is linked to a process of spreading academic tasks among a more diversified academic workforce, which is expected to be more productive, flexible, and responsive to society. Scholars have highlighted how core academic activities have incrementally changed from being individual to team-based (Hunter and Leahey 2008; Macfarlane 2011;

Milojevic et al. 2019; Walsh and Lee 2015; Wuchty et al. 2007). Professors need to hire and mentor others to conduct a growing share of the academic work, including scientific discovery; not least regarding grant-based research projects.

This process has received much attention from academics and policymakers in Denmark and elsewhere, as it has been considered a core instrument to boost innovation within as well as outside universities. When a junior academic's temporary term is up, most of them are envisioned to leave room for new recruits and become knowledge-workers outside the universities. Policy and funding mechanisms have been introduced with the aim of underpinning the rise of doctoral students and postdoctoral researchers. The extent and consequences of this development are not yet fully understood (Bégin-Caouette et al. 2018), but Lariviére (2013) has shown that doctoral students contributed to a third of peer-reviewed publications in Quebec (Canada); Teichler (2014) reported that junior staff spent more time doing research and published about half as much as professors in Norway; and Münch (2014) demonstrated that the sum of research grants and publications of German professors were clearly dependent on the number of associated assistants. The current group of junior academics has far exceeded the traditional purpose of just ensuring their mentors; instead, they are important and cost-efficient contributors to teaching and research in their own right from an early career stage (Fumasoli et al. 2015).

The increased centrality of temporary academic staff in innovation and the criticism of their working conditions have contributed to a push in Denmark and in most other countries to more formally manage this core human resource. Policymakers, university managers, and labor unions have all recently been active in formalizing recruitment procedures, employment conditions, advancement criteria, and job transition (Bégin-Caouette et al. 2018; Frølich et al. 2018; Fumasoli et al. 2015; Rhoades 2017; Walsh and Lee 2015; Yudkevich et al. 2015). A large study of the academic profession concludes that

> while the professional stability is lower than in previous decades, requirements for particular steps in the [academic] career ladder are more transparent and measurable today... Perhaps the new rules of the academic game are tougher than ever before, but at least they are advertised somehow in advance (Kwiek and Antonowicz 2015, p. 62).

For example, the duration and elements of doctoral studies have become formally specified, and the relationship with the supervisor contractualized.

Scholars argue that this growing formalization and delegation of academic tasks flattens out parts of the older hierarchical structure (Fumasoli et al.

2015; Yudkevich et al. 2015). "The traditionally hierarchical one-way dependence of junior academics yields in some way to a mutual dependence with a structured split of working tasks between seniors and juniors" (Brechelmacher et al. 2015, p. 35). In a similar vein, Degn et al. (2018, p. 242) find that high-performing research groups tend to "organize their shared practice around internally defined authority structures, following perceptions of scientific relevance and excellence, rather than seniority". Although the mentoring and gatekeeping carried out by senior staff continue to be essential, junior staff hold a growing de facto influence on the execution of academic activities. The extensive delegation of academic tasks and the accelerated competition among juniors compel them to specialize and make independent contributions at an early stage in their careers. Furthermore, growing mobility and formalized achievements (e.g., authored publications, certified courses, or acquired grants) reduce the dependency on the one or two professors who initially supported them. In a few short decades, the temporary academic staff has emerged as a large, agenda-setting group that is less clearly subordinated to the professors.

4.1.2. The rise of administrative and managerial professionals

The rise of administrative and managerial professionals is linked to a process of moving tasks and responsibilities out of a fragmented academic arena into an administrative and managerial sphere, which is expected to be more consistent and accountable.

The extent and character of this process have not previously been documented beyond the obvious in the Danish context, but they have been researched more systematically in other countries. Although with different intensity and timing, these studies show a surprising similarity in the tasks that universities in various countries have formalized and delegated (Table 3 lists examples). They highlight that many of these tasks are of a different nature than the traditional rule-based and servicing administrative tasks (Borggräfe 2019; Gornitzka and Larsen 2004; Kehm 2015a; Krücken et al. 2009; Rhoades 2008; Ryttberg and Geschwind 2017; Schneijderberg and Merkator 2013; Whitchurch 2013). They are often ambiguous tasks without straightforward means-end procedures, requiring professionals and managers who can deduce case-specific solutions from abstract knowledge systems. The scope of the moved tasks outmatches the capabilities of the traditional administration and management at universities, which traditionally consisted mainly of local secretaries, auxiliary staff, and professors elected as part-time managers by their colleagues (Christensen 2012; Gornitzka et al. 1998).

A managerialism wave washed over universities globally during recent decades, spurring considerable organizational growth far beyond the faculty ranks—in a wide array of new administrative, service, and management posts. Whole new categories of employee, once unheard of on university campuses, began to appear routinely (Frank and Meyer 2007, p. 21).

Table 3. Growing administrative and managerial tasks

Task	Description	Examples
Strategic management	Strategic steering rather than drifting.	Implementing a strategic vision, distributing collective resources, delegating responsibilities, and engaging with external expectations.
Management support	Preparation and support of management decisions and capacity to implement them.	Controlling and gathering information, sketching action alternatives, and forecasting decision-consequences.
Accountability	Documentation of efficiency.	Accreditation, quality assurance, and performance measures, (self-)evaluation, and data gathering.
Student services	Recruitment and contentment of a diversified student body.	Study counseling, flexible study programs, complaint handling, stress coaches, coordinating mentors, and career services.
Internationalization	Support student and staff mobility and integration.	Exchange agreements, Erasmus, housing, grants, visa and work permits, childcare, and spousal support.
External funding	Help attract competitive funding or endowments.	Monitor and lobby funding opportunities and advise on application processes and grant writing.
Strategic communication and marketing	Narrating and sustaining a strategic identity of "being special".	Advertisement, recruitment of students and staff, rankings, media, performance culture, internal cohesion, and alumni networks.
IT services	Enable students and staff to work digitally.	Data protection and security, data servers for backup, network management, support desk, online interfaces, and hardware maintenance and purchase.
Knowledge & technology transfer	Support university-industry relations.	Encourage applicability, entrepreneurial activities, patents, collaboration contracts, and co-funding.
Human resources (HR)	'Self-own entity' status expands personnel responsibilities	Mental health, staff exchanges, contingent staff, maternity leave, layoffs, and salary negotiations.
Professional services	Improve academic performance.	Teaching-training, talent development, writing coaches, proofreaders, and statistical support.
Inclusion and code of conduct	Uphold modern concepts of justice.	Gender, race, class, meritocratic norms, and research ethics and integrity.

Sources: Borggräfe 2019; Krücken et al. 2009; Schneijderberg and Merkator 2013; Whitchurch 2013.

The formalization and delegation of tasks have led to the proliferation of new management functions and a widening set of responsibilities incorporated into the formal organizational structure (Baltaru and Soysal 2017; Borggräfe 2019; Krücken et al. 2013; Logue 2014; Whitley and Gläser 2014). In practical terms, this process has meant strengthening internal hierarchies and expanding offices with professionals, which are expected to decide and handle specialized tasks on behalf of larger academic sub-units or the organization as a whole. Universities in many countries have therefore witnessed a considerable influx of whole new categories of highly qualified administrative and managerial professionals (Schneijderberg and Merkator, 2013).

> These persons are not primarily active in research and teaching themselves but entrusted to prepare and support decisions of the management, establish new services or professionalize traditional ones, and actively shape the core activities of the organization. They can be found at the central level, in departments or faculties, and in central units outside the departmental or faculty structure (Kehm 2015a, p. 178).

Where the majority of the non-academic staff previously carried out tasks clearly subordinated those of the academic staff, this is less and less the case (Whitchurch 2013). Scott (1995, p. 64) describes how "a managerial cadre has emerged, ready to support a more executive leadership, in place of the docile clerks who had instinctively acknowledged the innate authority of academics," and Aberbach and Christensen (2017, p. 9) argue that "the administrative hierarchy now seems to be not only relatively more influential, in its own right, but also more closely connected to the academic". While the new tasks and functions can still, in many respects, be seen as support of core activities led by professors, they are of a distinctively different character. Technology transfer, strategic planning, internationalization, communication, external relations, and grant-writing support are just some of these tasks, which are not as clearly subordinated the academic activities due to their specialized and proactive nature.

4.1.3. A more diverse staffing model: An organizational view

Contemporary theories on the organization of universities reflect the fact that professors today are far from the only important staff category determining the academic activities (Bleiklie et al. 2015; Clark 1998; de Boer, Enders and Leisyte 2007; Krücken and Meier 2006; Marginson and Considine 2000). The general picture conveyed by this literature is one of growing complexity in the internal configuration and governance of universities, where a multitude of

logics and actors have come into play. The division of labor and decision-making power have become more distributed among various staff categories. The temporary academic staff and the administrative and managerial professionals are acknowledged by this literature as constituting increasingly important staff categories. More critical spaces have been carved out for them to fill. While junior academics and administrators were undoubtedly also necessary for traditional universities, they were far fewer and held far more subordinate roles than today.

> The university as a collegial system run by professors is turning more and more into an organization where different actors are involved (Fumasoli et al. 2015, p. 204).

In the Danish case, the traditional professor-dominated university model more or less survived in practice until the late 1990s and 2000s; however, the transformation toward a more diverse staffing model has been in the cards for quite some time. This vision is already evident in the conclusions from the so-called "administration committee" from 1962 (Uni.adm.-committee 1968; and again in the 'Wandel-committee' Wandel et al. 1985).

The ministry-led "administration committee" was staffed with high-ranking civil servants, the rectors from all higher education institutions, representatives for students and junior academics. For almost a decade, it was center-stage for discussions about the future of Danish universities (Pedersen 1982). After prolonged deliberations, the committee unanimously recommended an expansion of non-professorial capacities within each individual university organization (Uni.adm.-committee 1968). According to the committee, the expanding university missions and student intake had "overburdened" the professors, collegial bodies, and the Ministry with work, administration, and coordination. Each of these three levels was urged to delegate responsibilities to an empowered local "apparatus," thereby freeing up their competences for core tasks and strategic decisions regarding teaching and research. The committee also endorsed the establishment of new, specialized administrative offices supporting the transition to mass universities, including central coordination of lectures and exams, student counseling, pedagogical consultants, internal communication, and management support. The committee expected a strengthened local "apparatus" to allow university management to "act more decisively, represent the university toward the ministry, and pursue strategic initiatives" (Uni.adm.-committee 1968, p. 28).

This co-operation of multiple staff categories stands in contrast to the traditional model in which self-reliant professors dominated all aspects of university life. While loose couplings between "great minds working alone" have set universities apart from other organizations historically, the contemporary

shift toward greater delegation and formalization are apparently doing the opposite. It is argued to signal a move toward more integrated and hierarchically managed organizations whose senior staff take strategic decisions and can be held accountable for the performance of an extended division of labor (Ramirez and Christensen 2013; Whitley and Gläser 2014). This process has been described as an organizational turn, where universities are perceived to become less special and more similar to common notions of "organizations"—at least from a distance (Bleiklie and Kogan 2007; Brunsson and Sahlin-Andersson 2000; de Boer, Enders and Leisyte 2007; Krücken and Meier 2006).

Consequently, recent scholars of higher education have increasingly described university transformations in classic organizational terms (e.g., Bleiklie, Michelsen, et al. 2017; Elkjær and Nickelsen 2018; Fumasoli and Stensaker 2013; Hüther and Krücken 2018; Maassen et al. 2017; Rhoades and Stensaker 2017). This has manifested itself in the scholarly literature with several theoretical labels trying to capture the ongoing organizational changes (Peterson 2007): The "corporate model" (Bleiklie 1998), "entrepreneurial model" (Clark 1998), "adaptive model" (Gumport and Sporn 1999), "enterprise model" (Marginson and Considine 2000), and "penetrated hierarchy model" (Bleiklie et al. 2015) are just a few of the attempts to coin defining characteristics of the organizational changes. These labels mainly target the role and function of universities in society, but they assume a parallel change in the configuration of internal staff categories.

An organizational view seems increasingly necessary to understand contemporary universities. On the one hand, ethnographies of work and profession studies represent a source of vulnerable insights into these matters, but their partial focus on one or a few staff categories lacks a sufficiently holistic view of the entire university as an organization. On the other hand, good organizational and institutional studies exist, which in turn handle organizations as overly coherent units, losing track of internal dynamics. This dissertation therefore takes pride in interpreting detailed staff changes as parts of a whole, for instance, by categorizing the totality of employees and reporting size as a share of total. It acknowledges that staff categories have their full effect only in concert with other staff categories, making their relational standing a vital element to understand. Such a holistic approach relaxes the focus in the classic sociology of profession on professionals as autonomous actors by acknowledging that most of them are, in fact, situated within complex organizational structures (Burton et al. 2016; Noordegraaf 2015).

> Staffing numbers and the associated changes are perhaps the most tangible indicator for organizational change within universities available to researchers, provided that high-quality and sufficiently granular data are available for

analysis. Modifications to universities' staffing profile provide manifest markers of changes affecting the university as a formal organization in its entirety (Woelert 2019, p. 5).

As Clark (quoted in, Gumport 2007, p. 333) puts it, "how do we study the interaction of elements in university change if we tear the elements apart and study them one by one?". Similarly, Scott (2003, p. 24) of how "we will miss the essence of organization if we insist on focusing on any single feature to the exclusion of all others". Changes in one staff category may trigger a cascade of change in other categories within an organizational system (Burton et al. 2016). A disaggregated view on academic staff is becoming more common, so a significant contribution is to reconcile it with a disaggregated view on non-academic staff in a transparent and longitudinal manner. The non-academic side of universities has fittingly been called the "the dark side of the moon" (Santiago and Carvalho 2016) and "the invisible workers" (Szekeres 2004). If one is serious about understanding universities, one cannot ignore half the employees.

> Although this large [non-academic] group of staff consumes a commensurate proportion of institutional budgets by way of their salaries, they have been little considered in the discussion and analysis of Nordic higher education. The primary attention in university staffing matters is rightly paid to academic work, but overall university efficiency and effectiveness can only be improved by having a thorough knowledge of *all* university staff (Aarrevaara and Dobson 2016).

However, while there seems to be general agreement in the literature that new, important staff categories reshape universities in most countries, it remains much less clear what this development covers, how fast and how far-reaching it has been, and the degree to which the developments are uniform in both content and timing across individual universities and national contexts. The available empirical evidence about changes in staff categories is often torn between thick qualitative studies of sub-units on the one hand and overly aggregated records of official categories on the other. Both types of studies yield important insights; however, the epistemic distance between the two seems at times too large, leaving room for rather contradictive interpretations (e.g., administrative bloat versus administrative savings).

4.2. The study of staff changes

A core challenge is, of course, how to disaggregate what has not yet been disaggregated in the Danish context. This dissertation departs from the staff categories highlighted in the international literature as increasing: Temporary

academic staff and administrative/managerial professionals. These rising categories have counterparts that add up to a set of six overarching staff categories (presented in Figure 3). Despite the increasing use of these staff categories in theories about universities as organizations, it remains uncertain what they cover and how they correspond to different job structures across countries. The six overarching staff categories have therefore not been applied in this dissertation in a mechanical way; instead, the categorizations of jobs (both in the Danish case articles and in the comparative article) have been constructed abductively from the most disaggregated level possible, but with the six overarching staff categories in mind.

Figure 3. Six overarching staff categories derived from the literature
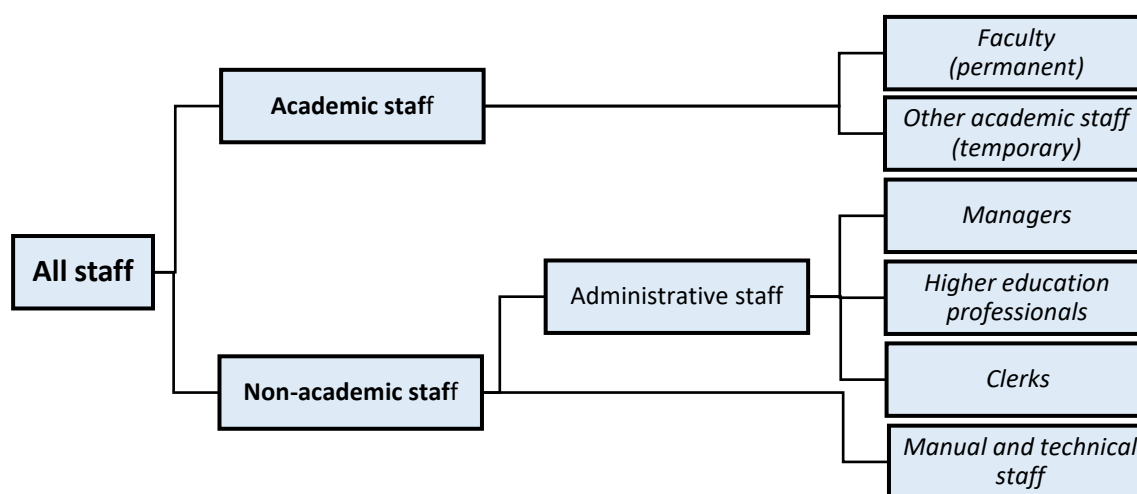
This bottom-up approach allows maintaining the quantitative overview of proportionality and temporality and incorporating the qualitative realization that staff categories have unclear content and boundaries. This dissertation provides an alternative to formal staff categorizations: A multi-tiered categorization whereby the content of high-level categories can be transparently analyzed as aggregations of lower-level categories and actual job titles. This approach provides an empirically grounded view on the six staff categories that the more theoretical literature often take for granted.

4.2.1. Job titles as empirical units: An institutional approach

The lowest empirical units in this dissertation are the job titles that are formally assigned to people by their employment contracts. Qualitative researchers or practitioners with first-hand knowledge are obviously correct in arguing that employees with the same job title often undertake a variety of tasks and that employees with different job titles sometimes undertake the same tasks (Burton et al. 2016). Although the reality is obviously not clear-cut in practice,

Cohen (2016, p. 48–49) argues that "[j]ob titles provide a reasonable proxy for actual jobs". While job titles are (merely) a generalized indicator of actual jobs, employers do not assign titles or salary schemes to employees randomly; they serve a range of social and organizational purposes (Melling 2019). The following section elaborates on how job titles are rather institutionalized in representing distinct role expectations.

4.2.1.1. Job titles as institutionalized roles

Like other social roles – e.g., father, intellectual, or retiree – job titles have real consequences for people and organizations, despite *de facto* inaccuracies (Brubaker 2002; Burton et al. 2016; Stone 2016). According to sociological neo-institutional theory, social action is shaped by taken-for-granted, unspoken, yet widely shared and known "rules" and "roles" for interacting (Yanow 2015, p. 12). Consequently, culturally defined roles orient certain expectations toward people who occupy a given "position" in a social system. Roles promote a way of being and envisage relations to other role categories (Olesen 2015). Applied job titles are intertwined with social roles and thereby laden with expectations. Assigning a job title to an employee is to group him/her with people holding a similar role and orient certain expectations toward them, regardless of the *de facto* fit. Employees partly know their own role and those of others in the organization through labels that describe them publicly.

> Common meanings are the basis of community [or organization]. Intersubjective meaning gives people a common language to talk about social reality and a common understanding of certain norms, but only with common meanings does this common reference world contain significant common actions and feelings (Taylor 1971, p. 30).

It is commonplace to use job titles to invoke tacit presuppositions that transcend the literal words: "Don't worry, I called the IT-technician," "a professor encouraged me to apply for the PhD," "he's in conflict with the Head of Department," "that's a job for the secretary," "the janitor will not allow candles," or "the HR-consultant told me that it's my right". Most people will have expectations to a professor or a janitor in line with the generalized roles associated with those job titles without first scrutinizing the actual fit between their formal job title and their actual work (Melling 2019). Also, more formally, much decision-making in organizations rests on social comparisons, such as salary negotiations or promotions; also here, job titles provide a pragmatic scheme (Cohen 2016, p. 31).

This institutionalized character of job titles is important for co-operation in complex organizations. Although such stereotyping can have unfair consequences, in most cases, institutional theory considers it a pragmatic necessity for practitioners dealing with the complexity of social life. Spender (2000, p. 195) writes of how "[n]aming is the means whereby we attempt to order and structure the chaos and flux of existence which would otherwise be an undifferentiated mass. By assigning names, we impose a pattern". Job titles provide actors with an "organizational language" to make sense of one's own role and those of others in the organization. The job-title system embodies expected relationships between different staff categories, thereby constructing a pattern upon which reflexive actors can act.

> It is important to recognize that typologies and quantitative dimensions are implicit in much ordinary everyday talk … So, it is not the case that category schemes and conceptual dimensions are alien notions imposed upon social life by quantitative researchers; they are already built into it (Hammersley 2013, p. 59–60).

Assigning job titles is clearly a key mechanism to manage employees and construct divisions of labor in organizations (Burton et al. 2016). Structured co-operation between employees with different institutionalized roles is at the heart of the very idea of an organization (Brunsson and Sahlin-Andersson 2000). Hence, "symbolically, the array of jobs that exists in an organizational system signal to both internal and external audiences what that organization intends to do, what it values, what competencies it requires in workers, and ultimately what it is" (Cohen 2016, p. 31).

4.2.1.2. A generalized categorization of job titles

This dissertation bridges the epistemic gap between the six overarching staff categories derived from the literature and the full range of diverse job titles in Danish universities through a bottom-up categorization of the latter.

Departing from the institutional approach, the categorization implies that dissimilar job titles represent distinct roles (e.g., responsibilities, status, and relationships). Hence, the bottom-up categorization process is based on generalized role expectations associated with the different job titles (and *not* actually performed work tasks). This may sound more abstract than it is. Put bluntly, the categorization is based on common-sense understandings of job titles. The key point about generalized role expectations is, in fact, that they are widely shared and known within a practice field, although often taken for granted and unspoken (Yanow 2015, p. 12). For role distinctions to have effect and legitimacy, it is necessary that their general meaning can be conveyed by

those who know and can be learned by those who do not yet know—also without advance sociological inference. Anyone's potential to learn yet-unknown roles rests on common participation and embeddedness in a social field. The ability to learn norms is gained through socialization, schooling, reasoning, and engagement (Olesen 2015).

My embeddedness in the Danish university field has therefore been a prerequisite for categorizing the job titles. I have encountered generalized role expectations in Danish universities through my own participation as an organizational member. Over the course of 10 years, I have been a student, an instructor, a research assistant, and a PhD fellow, and I have engaged in university politics in every stage. This junior experience obviously does not make me acquainted with all of the role expectations in Danish universities, but it is the basis that enables me to learn yet-unknown role expectations from people with broader experience in the Danish university sector: my supervisors, colleagues, managers, HR-professionals, and trade union representatives.

My embeddedness in the international literature on organizational change in universities has provided further basis for categorizing the job titles. Although exploring the full range of job titles was an aim of this dissertation, the literature helped limit the relevant variation to consider. It has pushed the categorization toward certain role differences that are claimed to be more consequential for organizational change in universities than others, particularly by drawing attention to the six overarching staff categories described above. On this basis, I have prioritized variation within certain categories (e.g., the different types of managers and temporary academic staff) while I have cut short the variation within other categories (e.g., the very large variety of job titles relating to IT services and craftsmen). The large distance between the overarching staff categories from the literature and the actual job titles in the data did leave plenty of room for bottom-up exploration.

The categorization therefore does not represent an objective view from *nowhere*, but a situated view from *somewhere within*. Because of this element of interpretation, transparency is key. The categorization is built as a fully expandable, multi-tiered thesaurus of job titles and sub-categories. The content of high-level staff categories can be transparently analyzed as aggregations of lower-level categories; and at the lowest level, as sub-categories of specific job titles. It allows readers with local knowledge to assess whether specific sub-categories of job titles align with their view of generalized role expectations or whether they believe certain job titles to belong in different categories. The thesaurus is directly integrated with the data-processing program, rendering it easy and fast for me to test the impact of allegedly misplaced job titles on the overall results.

The multi-tiered categorization (re)structures the otherwise confusing mass of job titles (Saldaña 2015). It imposes an interpretive pattern that is thought to better make sense of contemporary Danish universities than the official, available ones. The conventional academic/non-academic dichotomy, for instance, is so simple that it is impossible to understand pressing developments. It is noteworthy that official categories are no less based on interpretations or no more ontologically rightful than new, well-reasoned categories (Stone 2016). Hammersley (2013, p. 69) argues that "[w]e need not treat the fuzzy nature of our categories as an insurmountable barrier to social science. What is required is a level of precision that is pragmatically sufficient". By creating the categorization as a transparent and fully expandable thesaurus, new empirical grounded insights about organizational changes become possible.

As the embedded articles hopefully reflect, the real strength of the categorization lies in the possibility to open categories up for detailed but holistic interpretations that can uncover interesting developments that otherwise would be hidden under the surface. In other words, it allows me to zoom in and out, depending on the matter in question. Despite imperfections, I believe that the transparent and multi-tiered categorization presented here will result in people taking note of important and yet previously unnoticed developments in Danish universities.

4.2.2. Data and categorizing

The dissertation draws on rich data from a Danish public payroll database (ISOLA) that keeps track of staff and salary trends. The database is essentially designed to provide the management of public institutions with detailed information about wage levels over time for different job positions. ISOLA collect quarterly data from the actual payout system (SLS) that includes every single salary payment made by any public institution. The Ministry of Finance granted me temporary access to all Danish university payroll data from 1999 to 2017. In total, the payroll data used in this dissertation covers 256,320 individuals receiving at least a single salary payment from a Danish university. Altogether, the payroll data contains information across 64 variables, including job title, staff categories, workplace, salary, working hours, employment conditions, age, and gender.

On several occasions, ISOLA data has been used to inform the parliament about staff composition and salary trends, for example, regarding the police and public schools. More case-specific examples include The Ministry of Higher Education and Science that applied ISOLA data to monitor academic staff composition in a series of supervision reports for each university (2010–

2012). Moreover, the head of Copenhagen University uses ISOLA data on staff composition as a basis for his annual management report (KU 2015).

The payroll data is, however, limited to the formal job attributes assigned by employment contracts and, therefore, cannot detect less formalized workplace roles (e.g., senate/committee membership or leaders elected among peers). For the same reason, the dissertation cannot detect practical and technical positions outsourced to subcontractors nor knowledge-intensive administrative positions outsourced to consultancy firms.

4.2.2.1. Categorizing bottom-up

The actual process of manually coding the job titles into a multi-tiered, bottom-up categorization draws inspiration from the "grounded theory" approach to content analysis. It is relevant because retrospectively coding every job title used in a Danish university over two decades is uncharted territory. In the absence of prior studies that could closely guide this coding, I turned to grounded theory, which describes ways to create a new code system *from data* (Charmaz 2017).

> The grounded theory method depends on using constant comparative methods *and* your engagement. Both constitute the core of the method" (Charmaz 2017, p. 178).

The grounded theory approach acknowledges that the struggles that a researcher goes through by accessing, exploring, debating, analyzing, re-analyzing, and presenting empirical material, all contribute to attuning the mind and body to better understanding the phenomena at hand (Charmaz 2017). The approach encourages using doubt productively and holding pre-conceptions lightly, as our minds easily lure unfamiliar encounters into pre-concepts (Martela 2015). It embraces the often-blurred boundaries between data collection, coding, and analysis. Here, coding is an evolving and iterative process whereby "grounded codes" arise from constantly comparing pieces of data with other or new pieces of related data in a puzzle-like fashion. "Related data" can fruitfully take various forms and be gathered ad hoc while coding puzzling parts of the main data. Through several cycles of data-work, a grounded and consistent coding system may gradually crystalize (Charmaz 2017).

I coded the job titles using a process similar to the grounded theory approach. The long and cumbersome preparation prior to the actual coding made me familiar with many job titles. It was therefore possible to code several upfront; however, far from all. Many job titles required further inquiry. Sorting out puzzling job titles proved to be a pluralistic and explorative process. The coding was generally an iterative process of discovering and deciding

which role differences that make a difference. The codes and connections between lower and higher tiers did not evolve as chronologically and distinctly as may otherwise seem to be the case from the following written account. In particular, the codes targeting an abstract commonality among many diverse job titles (e.g., craftsmen or manager) required much scrutiny. Many of the higher-tier codes were developed through several cycles of re-coding, extending into the writing phase of articles. Striking the right balance between inclusiveness and mutual exclusiveness was a challenge: not having too many, excessively narrow codes versus having too few, excessively broad ones.

Not all aspects of my categorizing resemble the grounded theory approach. Firstly, the aim of the dissertation is less to build a new theory and more to nuance prevalent views. Secondly, the categorization process was first and foremost explorative and data-driven, but considerations about lower-level codes were intertwined with considerations about their correspondence to the overarching staff categories used in the literature. Thirdly, my interpretation of each and every job title did not go as deeply and critically into the generalized role expectations as keen advocates of grounded theory usually preach. I deemed a generalized understanding of their role sufficient, focusing instead on developing a coherent and complete categorization.

4.2.2.2. Categorization tier one: 1,432 job titles

I started out by sorting the full list of job titles in an explorative and iterative manner. As a first step, related job titles were bundled according to generalized role expectations about areas of competence, work, and employment conditions (e.g., janitors with gardeners, associate professors with senior researchers, and financial officers with accountants). The main purpose of this initial coding was to explore, to understand, and to condense the numerous job titles. Aside from classic academic positions, the diversity of job titles at universities extends far beyond what most people imagine. In fact, Danish university employees have been assigned over 1,400 different job titles over the last 19 years.

The first time I delved into the data, it was possible to develop codes for some job titles, as described by "first-cycle coding" (Saldaña 2015). This was the case for common job titles referring to clearly institutionalized roles, such as professions, occupations, and crafts. For instance, several of the academic job titles reflect a highly institutionalized hierarchy. This also applies to several standardized civil servant job titles. Nonetheless, the first-cycle coding was more than just sorting the common job titles mechanically. As job titles have diverse prefixes and hyphenations, the first-cycle coding involved several

judgement-calls about family resemblance and how inclusive a given code should be or whether a complementary code was needed.

The first-cycle coding (or initial coding) also uncovered a very large number of job titles for which additional information was necessary to understand and code them sufficiently. Even though job titles are descriptive in nature, the meaning conveyed by the title itself was, in most cases, not sufficient to grasp which role expectations they related to. To understand job titles that I found puzzling, I retrieved additional information and conducted complementary analyses in varies explorative ways. I analyzed each puzzling job title, for instance, by moving an analytical level up and/or down; that is, analyzing attributes of actual job incumbents and/or analyzing public job descriptions (e.g., job advertisements, official documents, and collective agreements). The alternative attributes in the ISOLA data that also guided the process were administrative groupings, organizational unit, salary schemes, the (D)ISCO-classification, age, and worker-union affiliations. I also asked senior colleagues and managers who were likely to know, and I phoned and asked some of those holding the job titles in question (identified by simple Google searches).

4.2.2.3. Categorization tier two: 65 sub-categories

As I gradually learned about the various individual job titles, I decided on a first basic level of sub-categories. I found that 65 sub-categories could *summarize* the vast diversity of job titles meaningfully. Some of these sub-categories are more straightforward, mutually exclusive, and homogenous than others. Slight variations of classic academic and civil servant job titles neatly form their own categories (e.g., professors or officers), while more differentiated and specialized job titles were categorized under thematic headings (e.g., IT-staff, managers, or craftsmen). These 65 sub-categories provide a structured view of the 1,432 job titles, but not all of them are sufficiently mutually exclusive for strict quantitative analysis, exaggerating differences between certain job titles.

Deciding on inclusion and exclusion criteria for the 65 sub-categories required different levels of detail. The definition of some sub-categories was straightforward, while the definition of the sub-categories targeting an abstract commonality among diverse job titles had to be more elaborate/abstract. Table 4 below lists a few examples of detailed, semi-detailed, and straightforward definitions.

Table 4. Examples of detailed, semi-detailed, and straightforward coding definitions

Code	Coding definition	Examples	Count
Detailed			
Teacher/lecturer	Various instructional positions outside the hierarchy of traditional academic positions. Usually specialized or contingent positions not typically requiring a doctoral degree.	Hourly paid instructor, clinical teacher, subject-specific teacher, speaker, guest teacher, and "college-lecturer". Not: docent, teaching assistant, external lecturer.	58
IT staff	Job titles with direct reference to the Information Technology (IT) area. This covers anything related to computing technology, network administration, programming, hardware, software, the Internet, web development, and technical support.	Web-designer, IT inspector, system administrator, IT specialist, web-master, EDB-technician, software-developer, IT support, and IT officer. Not: General technical job titles such as electrician or technician.	126
Administrative manager/ director	This category covers the many different senior manager and director positions used in universities. Managerial positions are generally more differentiated (descriptively or thematically) than most other staff categories.	The category covers, on the one hand, the classic university management titles such as rector, dean, and head of department, and on the other hand a broad range of "director" or "manager" titles, often stating the rank or area of responsibility, such as deputy, vice, university, office, communication, economy or human resources (HR).	183
Semi-detailed			
Technician	All job titles containing the word "technician," either separately or in combination with a specification of the work area. Job titles covering jobs similar to technicians are also included, such as conserver and engineer-assistant.		48
Apprentice	Various job titles for paid apprentices, primarily from vocational programs.		66
Consultant	Job titles containing "consultant," either separately or in combination with a specification of area. Not: special consultant, senior consultant, or IT consultant.		58
Straightforward			
Associate professor	Job titles containing "associate professor" except study associate professor		66
PhD student	Job titles containing "PhD" or "scholarship"		15
Adm. officer	Job titles containing "administrative officer"		22

4.2.2.4. Categorization tier three: 22 mid-level categories

The detailed 65 sub-categories provided a strong foundation for forming the next level of more general sub-categories. I bundled the 65 sub-categories into 18 mid-level categories. At this mid-level, the mutual exclusivity of most categories improved significantly. However, four administrative and managerial mid-level categories remained too diverse and hard to grasp. This difficulty resonates with the growing literature claiming a proliferation of staff in non-traditional and specialized positions, blurring traditional academic, administrative, and managerial boundaries, and whose competences and work are *invisible* to most bystanders (Schneijderberg 2015; Szekeres 2004; Whitchurch 2013).

To improve the four diverse and hard-to-grasp categories, I split each of them into two by separating employees with a master's degree from those without: Degree-holding professionals versus clerks. This distinction is important, but not directly observable from job titles alone. Clerks and professionals share a set of job titles such as consultants, coordinators, and officers. I thus split the four categories using an indicator of educational background in order to make better sense of the role expectations that they cover. Collective agreements regulating the positions form a good indicator of educational background.[1] In Denmark, collective agreements rigidly separate those with a master-level degree from those without. The latter usually holds a vocational education that gives on-the-job training higher priority. The resulting categories are still firstly defined by the job titles they cover, while the additional educational distinction ensures clear mutual exclusivity and imposes an informative pattern on job titles otherwise too diverse and hard to grasp. The elaboration added four categories to the original 18, ultimately producing 22 distinct mid-level categories.

4.2.2.5. Categorization tier four: 6 staff categories

Based on the preceding process as well as the overarching staff categories highlighted by the international literature on organizational change at universities, it was relatively easy to move forward to form the six end-result categories shown in Table 5 below. Note that at this level of categorization, the "degree-holding professionals" category encompasses both of the overarching staff categories "higher education professionals" and "managers," and the category "employed students and apprentices" remain separate in order to archive a more delineated category for 'clerks'.

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[1] Based on a separate analysis of the 117 different collective agreements regulating the full range of positions over the 19-year period.

Table 5. The six staff category levels

Academic staff	Faculty: Permanent academic staff: Professors, Associate Professors, and similar positions such as Senior Researchers
	Other Academic Staff: Mainly temporary academic staff: Assistant Professors, Postdocs, PhDs, and Academic Assistants, but also teaching positions usually not requiring a PhD-degree, where few are permanent
Non-academic staff	Degree-holding Professionals: Administrative staff with an university-degree: Mainly Managers, Officers, Coordinators, and Consultants
	Clerks: Administrative staff usually with vocational education: Mainly Sectaries, Clerical Officers, and Section Managers
	Service, Craftsmen & Technicians: A wide range of positions usually *not* performed at an office desk: E.g., Janitors, Laboratory Technologists, and Engineers
	Employed Students and Apprentices: Mainly employed students and paid apprentices from vocational educations

The macro-categories in Table 5 resemble those used commonsensically by organizational members and in analyses in other countries (Gornitzka et al. 2009; Krücken et al. 2013; Rhoades and Sporn 2002) and function as the dissertation's main level of quantitative analysis. However, despite the commonsensical character of the six macro-categories, whom they cover in more detail and how they have evolved over time are contested issues (Paldam 2015).

4.2.3. Basic cross-validation of categorization

The categorization of the payroll data has been cross-validated against official FTEs and salary numbers published by the universities. It is only possible at a general level because the universities have not published disaggregated numbers regarding the non-academic staff. Furthermore, the official numbers cannot be perceived as the golden standard, but merely as a rough yardstick. A level of random variation is expectable due to lacking standardization and transparency regarding the official staff statistics across universities and over time.

In appendix 1, the result of the cross-validation shows a significant overlap between official numbers and this dissertations' numbers – both in terms of FTEs and salary. Discrepancies over a 5% threshold have been highlighted in color (occurring for the IT University of Copenhagen and Copenhagen Business School), but as noted above, these discrepancies cannot be automatically

interpreted as errors of this dissertation. Importantly, the aggregated payroll data largely align with the official numbers. Hence, the cross-validation shows that there is no reason to consider the FTEs and salary numbers presented in this dissertation to be profoundly different – except being calculated more transparently and consistently across universities and over time – than official numbers.

4.2.4. Dendrograms of the multi-tiered staff categorization

The dendrogram in Figure 4 displays the different coding tiers and the connections between them, but Tier 1 with specific job titles is not included due to space considerations. Instead, Figure 5-13 display the full range of job titles at Tier 1, separated by the six macro-categories at Tier 3 (i.e., those in Table 5). To indicate the relative weight of specific job titles, the number of full-time equivalents (FTEs) for the full period is displayed next to the title: *<Job title | number of FTEs>*.

Figure 4. Dendrogram of the multi-tiered staff categorization, tier 2-5

Figure 5. Dendrogram of 'clerks', tier 1-5

65

Special employment
- | 313
- Efterlønsmodtager | 1
- Fr. | 1
- Hon.lønnet U.titel | 2
- Hr. | 2
- Specialarbejder | 851

Bachelor
- Bachelor | 18
- Professionsbachelor | 9

Publishing Staff
- Bogbinder | 151
- Bogbinderiassi 100
- Grafisk Trykker | 16
- Typograf | 1465

Examination Staff
- Censor | 2
- Eksamensleder | 2
- Eksamensmedarb. | 26
- Eksamenstilsyn | 10
- Tilsynsassistent | 11
- Tilsynsførende | 558

Other |
- Kartograf | 8
- Kunsthistoriker | 1
- Litograf | 27
- Psykolog | 12
- Reprofotograf | 1
- Skabslurist | 5
- Statsgeolog | 1
- Statsmeteorolog | 1
- Stenograf | 2

AC-Tap | 10

Other staff

AC-Staff

Administrative Officer
- Adm. medarbeider | 304
- Administrationsmedarbeider | 31
- Administrator | 145
- Administrator | 12
- Centeradministrator | 271
- Centerassistent | 24
- Driftsmedarbejder | 142
- Driftsplanlægger | 335
- Driftsmægtig | 5
- Fuldmægtig | 15
- HR-Partner | 83
- HR-sagsbehandler | 11
- Institutadm. | 4097
- Institutadministrator | 7
- Kontorassistent | 54511
- Kontorassistent- | 66
- Kontorfuldmægtig | 25721
- Kontorfuldmægtig- | 90
- Kontorfunktionær | 299
- Kontormedarbejder | 12
- Kontormedhjælper | 43
- Kontormedarbejder | 133
- Patentmedarbejder
- Personalefuldmægtig | 26
- Personalesagsbehandler | 12
- Procesmedarbejder | 12
- Projektadministrator | 2
- Pædagog.-Adm. Medarb | 8
- Regnskabsfuldmægtig | 303
- Retsmedicinsk kontorp.
- Sagsbehandler | 48
- Statsadvokatfuldm. | 1
- Studie/eksam.medarb | 913
- Studieadmi.sekretær | 20
- Studieadmi.medarb. | 30
- Studieadministrator | 2
- Transportforvalter | 86
- Økonomifuldmægtig | 8

Secretary
- Afdelingsekretær | 313
- Centerdir.sekretær | 11
- Centersekretær | 128
- Chefsekretær | 815
- Direktionssekretær | 128
- Ekspeditionssek. | 2256
- Faggruppesekretær | 478
- Faglig Sekretær | 20
- Forskningssekretær | 456
- Institutsekretær | 688
- Journalfører | 4
- Journalleder | 83
- Kursusmedarbejder | 239
- Ledelsessekretær | 96
- Lægesekretær | 41
- Ph.d.-sekretær | 238
- Programsekretær | 83
- Projektsekretær | 18
- Receptionist | 802
- Sekretariatssekretær | 57
- Sekretariatsmedarb | 20
- Sekretær | 4622
- Studienævnssekretær | 259
- Uddannelsessekretær | 146
- Økonomisekretær | 327

Assistant
- Assistent | 12889
- Audiometriassistent | 1
- HR-assistent | 51
- HR-medarbeider | 780
- Personalemedarbejder | 1
- Politiassistent | 0
- Projektassistent | 3
- Projektmedarbejder | 136

Accounting Staff
- Bogholder | 17
- Controller | 182
- Debitorbogholder | 18
- Emne-Hush økonom | 6
- Hovedbogholder | 16
- Kasserer | 637
- Kreditorbogholder | 1
- Løn og Pers.medarb | 358
- Lønningsbogholder | 0
- Lønmedarbejder | 24
- Overrevisor | 1
- Projektøkonom | 4
- Regnskabsassistent | 27
- Regnskabsmedarbejder | 2320
- Revisor- | 1
- Statsrevisor | 15
- Økonoma | 7
- Økonoma | 1
- Økonomimedarbejder | 3061

Communication
- Formidlingsmedarb. | 25
- Informationsassistent | 107
- Informationsmedarb. | 17
- Informationsmedarb. | 5
- Kommunik.medarb. | 64
- Korrekturlæser | 4
- Korrespondent | 851

Clerks & Officers

Senior assistant
- Overassistent | 55182

Helper
- Skolemedhjælper | 1
- Målemedhjælper | 2
- Medhjælperske | 519
- Medhjælper | 3
- Medhjælp | 3
- Handicapledsager | 9

Figure 6. Dendrogram 1/2 of 'degree-holding-professionals', tier 1-5

Special employment
- | 826
Anden stilling | 1
Fr. | 1
Hon.Lønnet U.Titel | 1
Hon.lønnet U.titel | 2
Hr. | 1
Pensionist | 104
Seniormedarbejder | 24
Specialarbejder | 19
Uautoriseret Stilling | 1

Other HE Professional
Agronom | 67
Arkitekt | 975
Arkitekt M.A.A. | 20
Arkæolog | 146
Biolog | 1
Bromatolog | 163
Epidemiolog | 71
Filologisk Medarbejd | 38
Geograf | 1
Geolog | 38
Hortonom | 0
Humanbiolog | 6
Hydrolog | 1
Kemiker | 47
Mikrobiolog | 212
Molekylærbiolog | 122
Patolog | 0
Psykolog | 174
Scenograf | 1
Serolog | 21
Sociolog | 1
Statsbiolog | 29
Statsgeodæt | 49
Statsgeolog | 3
Statsobducent | 7
Statsseismolog | 1
Teknisk Cellebiolog | 15

Bachelor
Bachelor | 3532
Bachelor B.a. | 12
Professionsbachelor | 20

Degree-holding Other Staff

Examination Staff
Bedømmer | 10
Censor | 239
Eksamensleder | 0
Eksamenstilsyn | 1788
Eksamensvagt | 1136
Fagkyndig Bedømmer | 2
Kontrollør | 0
Tilsynsførende | 44
Tilsynsfører | 1
Tilsynsvagt | 26

Publishing Staff
Bogbinder | 0
Bogbinderiassistent | 0
Typograf | 0

Cand.X
Cand. Comm. | 27
Cand.Agro. | 7
Cand.Brom. | 26
Cand.Hort. | 8
Cand.Interpret. | 5
Cand.It | 4
Cand.Jur. | 1
Cand.Ling.Merc. | 25
Cand.Mag. | 116
Cand.Med. | 5
Cand.Med.Vet | 4
Cand.Merc. | 45
Cand.Oecon. | 1
Cand.Pharm. | 36
Cand.Phil. | 27
Cand.Polit. | 0
Cand.Polyt. | 1
Cand.Psych. | 48
Cand.Scient. | 1391
Cand.Scient. Adm. | 2
Cand.Scient.Pol. | 1
Cand.Stat. | 1
Cand.Tech.Al | 6
Cand.Tech.al | 1
Cand.Techn.Soc | 68

Cand.agro. | 66
Cand.brom.
Cand.it. | 10
Cand.jur. | 13
Cand.ling.merc. | 114
Cand.mag. | 202
Cand.med. | 1
Cand.med.vet | 0
Cand.merc. | 14
Cand.oecon. | 37
Cand.pharm. | 20
Cand.phil. | 9
Cand.polit. | 10
Cand.polyt.
Cand.psych. | 61
Cand.pæd. | 4
Cand.scient. | 1305
Cand.scient.Adm. | 49
Cand.scient.pol. | 8
Cand.scient.san.publ. | 94
Cand.scient.soc | 15
Cand.scient.soc. | 10
Cand.stat. | 41
Cand.techn.soc
Forstkandidat | 98
Kandidat | 1
Lic.Pharm. | 60
Lic.Scient | 0
Lic.Techn. | 16
Lic.pharm.
Lic.scient | 36
Mag.
Mag.Art.
Mag.Scient. | 67
Mag.Scient.Soc. | 27
Mag.art. | 21
Mag.scient.soc. | 9
Magister | 324

Figure 7. Dendrogram 2/2 of 'degree-holding-professionals', tier 1-5

Radial dendrogram of Danish job titles mapped to harmonised categories.

Central / intermediate nodes

- Specialist
- Senior Consultant
- Adviser
- Special Consultant
- Administrative Manager/Director
- Degree-holding Adm. Managers

Leaf labels (title | count)

Upper-left cluster:

- Arbejdsmiljøspecialist. | 24
- Europæisk Specialist | 5
- Patentspecialist | 1
- Phare-Ekspert | 10
- Specialist | 51
- Specialist | 17993
- Chefkonsulent | 66
- Chefrådgiv | 23
- Chefrådgiver | 128
- Kommunikationsrådgiver | 3
- Kommunikationsrådgiver | 83
- Særlig rådgiver | 1
- Teknisk Rådgiver | 262
- Senior Konsulent | 3191
- Seniorkonsulent | 1442
- Specialkonsulent | 5

Right arc (Administrative Manager/Director):

- Accessionschef | 5
- Adm.direktør | 20
- Administrationschef | 873
- Administrationsleder | 55
- Administrativ Leder | 66
- Afdelingsforstander | 1
- Arbejdsmiljøchef | 0
- Arkivchef | 12
- Bestyrelsesformand | 1
- Bestyrelsesmedlem | 52
- Bibliotekschef | 48
- Biblioteksdirektør | 115
- Budgetchef | 8
- Campus direktør | 131
- Campuschef | 19
- Centerchef | 4
- Centerdirektør | 56
- Chef | 19
- Chefcontroller | 35
- Chefjurist | 49
- Datachef | 1404
- Dekan | 1170
- Direktør | 5
- Drifts- + adm.chef | 28
- Driftschef | 247
- Driftsleder | 354
- EDB-Chef | 75
- EDB-Sikkerhedschef | 7
- Edb-Chef | 46
- Edb-Sikkerhedschef | 20
- Eksekutivdirektør | 5
- Fabrikschef | 6
- Fakultetsdirektør | 283
- Formand | 0
- Forskningsdirektør | 4
- Forstander | 65
- Forstander V. Læsesk | 0
- Forstanderinde | 1
- Forvaltningschef | 9
- Fungerende Rektor | 6
- Funktionschef | 69
- Fællestillidsmand | 1
- Hospitalschef | 31
- Hr-Chef | 157
- IT-Chef | 478
- IT-Driftchef | 33
- IT-Udviklingschef | 11
- Ikt-Chef | 14
- Indkøbschef | 16
- Informatikchef | 12
- Informationschef | 142
- Infrastrukturchef | 20
- Innovationsdirektør | 7
- Institutchef | 4
- Institutdirektør | 723
- Institutionsleder | 92
- Institutleder | 6064
- International chef | 21
- It-Chef | 50
- It-Driftchef | 16
- Kommunikationschef | 434
- Kompetencekonsulent | 9
- Koncerndirektør | 36
- Kontrolchef | 1
- Kvalitetschef | 4
- Likviditetschef | 0
- Logistikansvarlig | 4
- Marketingchef | 21
- Mediechef | 15
- Myndighedschef | 9
- Personalechef | 63
- Pressechef | 851
- Prodekan | 329
- Prorektor | 360
- Prorektor for Uddannelse | 14
- Publikumschef | 221

Bottom arc (Degree-holding Adm. Managers):

- Regnskabschef | 68
- Rektor | 1314
- Skolechef | 4
- Skoleleder | 96
- Statsamtmand | 5
- Strategi-og proceschef | 1
- Strategisk chef | 14
- Studiechef | 543
- Studieleder | 19
- Teknisk Chef | 418
- Teknisk Direktør | 13
- Teknologichef | 133
- Uddannelseschef | 2
- Uddannelsesdir. | 44
- Udskrivningschef | 1
- Udviklingschef | 97
- Udviklingsdirektør | 256
- Underdirektør | 498
- Universitetsdirektør | 864
- Vicebibl.direktør | 2
- Vicecampusleder | 0
- Vicedirektør | 3
- Viceinstitutdirektør | 151
- Viceoperachef | 1
- Vicepolitikommissær | 1
- Vicerektor | 11
- Viceuniversitets.direktør | 13
- Viceuniversitetsdirektør | 11
- Økonomi og Pers.chef | 0
- Økonomichef | 5
- Økonomi-/Planl.Chef | 420
- Økonomidirektør | 18

Figure 8. Dendrogram of 'faculty', tier 1-5

Professor
- Undervisningschef | 0
- Semesterkoor.professor | 2
- Professor- tidsbegrænset | 133
- Samarbejdsprofessor | 116
- Professor emeritus. | 3
- Professor Mso | 17183
- Professor MSA | 89
- Professor MSO | 125
- Professor | 78898
- Kursusleder | 6
- Koor. Klinisk Lærestol | 6459
- Klinisk Professor | 45
- Klinisk Lærestolsprofessor | 537
- Gæsteprofessor | 42
- Globaliseringsprofessor | 1822
- Forskningsprofessor | 10
- Forskn.rådsprofessor | 5
- Forskn.Rådsprofessor

Researcher
- Adjung.seniorrådgiver | 2
- Forskningsleder | 124
- Forskningsspecialist | 408
- International Researcher | 213
- Projektseniorforsker | 139
- Senior Forsker | 54
- Senior Rådgiver | 321
- Senior forskningskonsulent | 135
- Seniorforsker | 27126
- Seniorrådgiver | 3292

Medical Doctor
- Afdelingslæge | 84
- Dr.Med. | 0
- Dr.med. | 1
- Embedslæge | 0
- Læge | 955
- Overlæge | 55
- Reservelæge | 6
- Speciallæge | 94
- Speciallæge under udd. | 1
- Vicestatsobducent | 372

Docent
- Ingeniørdocent | 613
- Docent | 4046

Academic

Faculty

Associate Professor

- Udviklingslektor | 27
- Udenlandsk Lektor | 609
- Uddannelsesleder | 120
- Studieleder | 392
- Postg.Klinisk Lektor | 19
- Lektorvikar | 826
- Lektor-tidsbegrænset | 289
- Lektor-civilingeniør | 354
- Lektor- ph.d. | 80
- Lektor- Mag.scient. | 918
- Lektor- Ingeniør | 2
- Lektor- Cand.polit. | 176
- Lektor- Cand.ling.m. | 69
- Lektor- Cand.interpr | 2
- Lektor- Cand. Scient | 122
- Lektor- Cand. Mag. | 75
- Lektor- C.techn.soc. | 2
- Lektor- Arkitekt | 13
- Lektor- Akademiing. | 55
- Lektor civilingeniør | 13
- Lektor Ingeniør | 31
- Lektor IVA | 108
- Lektor Emeritus | 5
- Lektor Cand.merc. | 2
- Lektor Cand.ling.m. | 1
- Lektor Cand. Scient | 6
- Lektor Cand. Mag. | 2
- Lektor Akademiing. | 4
- Lektor Arkitekt | 1
- LEKTOR | 256644
- Lektor | 5221
- Klinisk Lektor | 3
- Gæstelektor | 20
- Forskningslektor | 2984
- Forskningsleder | 0
- Forskningschef | 794
- Centerleder - ny løn | 43
- Centerleder | 420
- Ass. Fagleder | 18

70

Figure 9. Dendrogram 1/3 of 'service, craftsmen, & technicians', tier 1-5

Figure 10. Dendrogram 2/3 of 'service, craftsmen, & technicians', tier 1-5

Service, Craftsmen, & Technicians

Security staff
- Vagtleder | 1
- Vagtmestermedhjælper | 16
- Vagtmester | 1114
- Vagtmand | 253
- Vagtfunktionær | 0
- Vagtbetjent | 1
- VAGTMESTER | 10
- Nattevagt | 17

Service Staff
- Teknisk Servicemedarbejder
- Servicemedarbejder | 3924
- Serviceassistent | 321

Non-academic

Laboratory Technologists
- Afd.Bioanalytiker | 7
- Afd.bioanalytiker | 174
- Afdelingslaborant | 230
- Analysekemiker | 202
- Aut.Hospitalslab. | 48
- Aut.Laborant | 78
- Aut.hospitalslab. | 91
- Aut.laborant | 53
- Bioanalytiker | 8950
- Farmaceut | 244
- Farmakonom | 307
- Histolaborant | 259
- Hospitalslaborant | 1424
- Instruktionslaborant | 242
- Lab.specialist | 4
- Laborant | 47257
- Laborantstuderende - | 17
- Laborantvikar | 11
- Laboratorieassistent | 35
- Laboratoriechef | 59
- Laboratoriefaglig medarbejder | 1
- Laboratoriefuldm. | 1109
- Laboratoriefuldmæg. | 44
- Laboratoriefunkt. | 5314
- Laboratorieinspektør | 9
- Laboratoriekoord. | 3965
- Laboratorieleder | 1704
- Laboratoriemedhjælp. | 455
- Laboratoriemester | 374
- Laboratorieoverass. | 670
- Laboratorieanalytik. | 2752
- Ledende Bioanalytik. | 275
- Ledende Laborant | 202
- Levnedsmid.Kandidat | 12
- Levnedsmid.kandidat | 5
- Levnedsmiddeltekn. | 389
- Overlaborant | 8
- Sygehusapoteker | 21
- | 513

Library and Student Counselor

Library Staff
- Afdelingsbibliotekar |
- Bibliotekar | 11809
- Bibliotekarvikar | 31
- Biblioteksassistent | 395
- Bibliotekskonsulent | 81
- Biblioteksleder | 466
- Biblioteksmedarbejder | 2
- Cand.Scient.Bibl. | 16
- Cand.scient.bibl. | 195
- Forskningsbibliotek. | 1465
- Førstebibliotekar | 483
- Ledende Bibliotekar | 241
- Overbibliotekar | 353
- Universitetsbibliotekar | 9

Student Counsellor
- Central Studievejl. | 13
- Erhvervsvejleder | 16
- Faglig Vejleder | 4697
- Int.studievejleder | 8
- Kursistvejleder | 1
- Praktikvejleder | 2
- Projektvejleder | 27
- Socialpædagog | 103
- Studievejleder | 920
- Uddannelsesvejleder | 98
- Vejleder | 2

Inspector
- Afdelingsinspektør | 1
- Brandinspektør | 0
- Driftsinspektør | 575
- Forsikringsinspektør | 608
- Husinspektør | 39
- Inspektør | 3
- Museumsinspektør | 141
- Pædagogisk Inspektør | 5
- Serviceinspektør | 1
- Toldinspektør | 17
- Viceinspektør | 0

Janitor
- Amtsbetjent | 0
- Amtsportner | 0
- Auditoriebetjent | 135
- Betjent | 13.222
- Betjent-EU | 17
- Betjent-FU | 1028
- Betjentformand | 444
- Betjentmedhjælper | 124
- Bibliotekbetjent | 10
- Bygningsbetjent | 650
- Fagbetjent | 142
- Faglært Betjent | 213
- Faguddannet Betjent | 152
- Førstebetjent | 737
- Klinikbetjent | 31
- Kontorbetjent | 138
- Laboratoriebetjent | 146
- Museumsbetjent | 6
- Opsynsbetjent | 2146
- Pedel | 33
- Pedelmedhjælper | 545
- Portner | 196
- Skolebetjent | 203
- Varmemester | 103
- Vicevært | 30
- | 130

Figure 11. Dendrogram 3/3 of 'service, craftsmen, & technicians', tier 1-5

Engineer

- Akademiingeniør | 697
- Bygningsingeniør | 100
- Civilingeniør | 7459
- Diplomingeniør | 312
- Dokumentationsing. | 1
- Driftsingeniør | 193
- Eksportingeniør | 12
- Elektroingeniør | 23
- Ingeniør | 1780
- Ingeniørassistent | 8
- Kemiingeniør | 33
- Laboratorieingeniør | 4
- Levnedsmiddeling. | 1022
- Maskiningeniør | 14
- Mejeriingeniør | 4
- Projektingeniør | 20
- Rådgivende Ingeniør | 0
- Senioringeniør | 658
- Seniorudv.ingeniør | 34
- Servceingeniør | 0
- Skov-Og Landsk.ing. | 301
- Synteseingeniør | 6
- Teknikumingeniør | 2143
- Udviklingsingeniør | 1143

Other skilled labourer

- Arkivar | 1
- Bademester | 105
- Biologassistent | 33
- Chauffør | 24
- Chefoperatør | 24
- Designer | 119
- Dyreassistent | 2425
- Dyrebruger | 71
- Dyrepasser | 3596
- Facility supporter | 20
- Faglært Landbrugsarb | 118
- Faglært Slagter | 15
- Filmfotograf | 1
- Filminstruktør | 1
- Fiskemester | 67
- Fisker | 11
- Fiskeriassistent | 37
- Fjerkræforvalter | 31
- Fotograf | 646
- Fotografmedhjælper | 2
- Installatør | 60
- Komponist | 1
- Konservatorass. | 83
- Konservatorass. | 235
- Korsyngemester | 40
- Kunstner | 0
- Kustode | 247
- Kølemontør | 75
- Lagerchef | 16
- Lagerformand | 33
- Landinspektør | 28
- Landsarkivar | 1
- Maskinmester | 1758
- Maskinmester- | 27
- Montør | 136
- Museumspædagog | 8
- Musiker | 1
- Operatør | 220
- Overfotograf | 154
- Overmontør | 161
- Producer | 6
- Præparatfremstiller. | 23
- Pædagog | 4
- Pædagogleder | 1
- Regissør | 1
- Reparatør | 753
- Røntgenfotograf | 16
- Røntgeninstruktør | 27
- Skovarbejder | 22
- Skovfoged | 75
- Skuespiller | 1
- Socialpædagog | 1
- Solodanser | 1
- Staldformand | 67
- Staldmester | 5
- Stenhugger | 1
- Stereooperatør | 1
- Studiemiljøtutor | 1
- Suffler | 12
- Synsleder | 1
- Tegner | 132
- Teknisk Assistent | 1439
- Teknisk Medarbejder | 290
- Teknisk Tegner | 1037
- Teknisk designer | 54
- Tonemester | 2
- Ventilationsmontør | 58
- Værkstedsfunkt. | 249
- Værkstedsmedarb. | 61

Figure 12. Dendrogram of 'other academic staff', tier 1-5

Figure 13. Dendrogram of 'employed students', tier 1-5
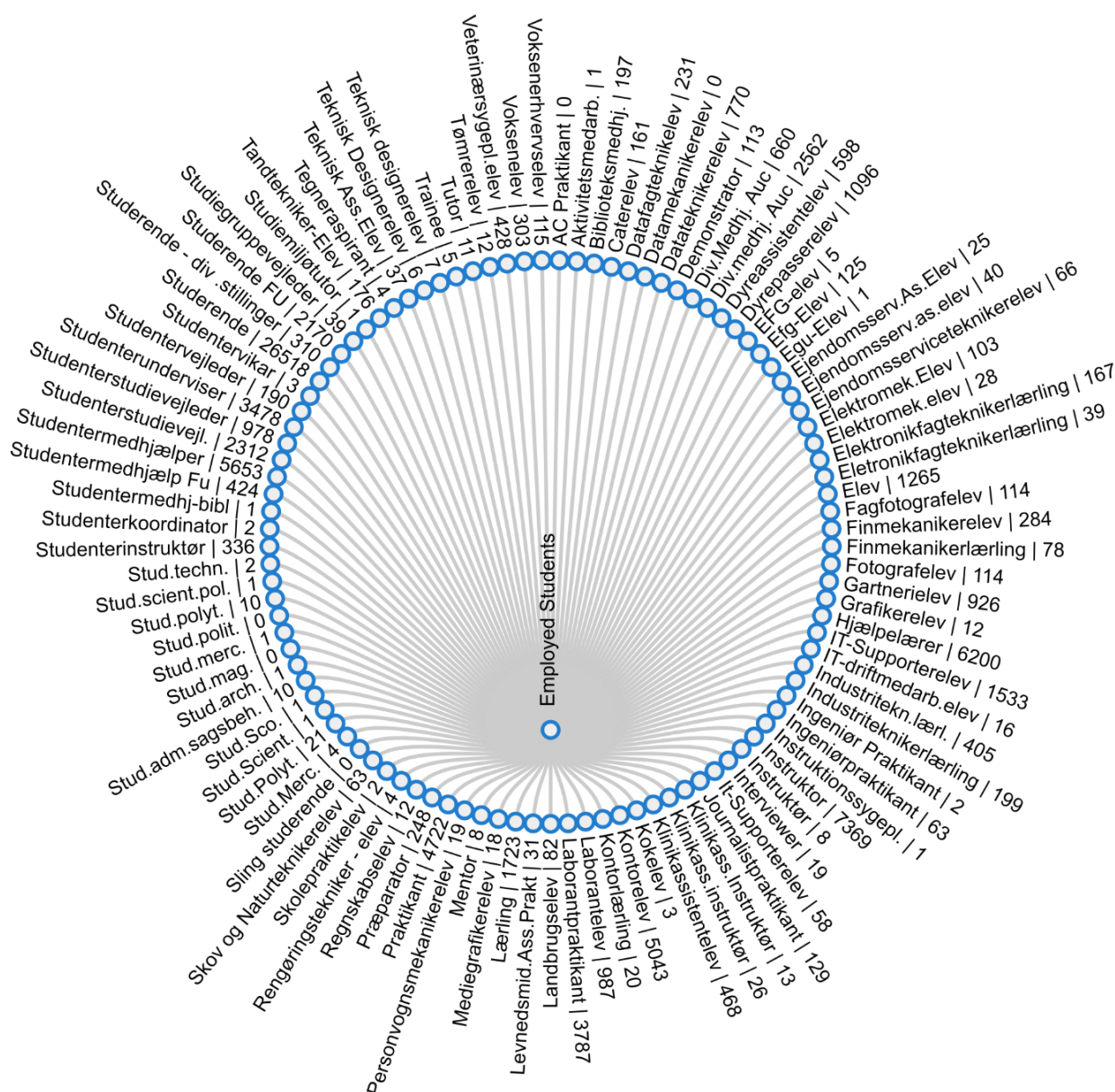
4.2.5. New empirical basis unlocked

This multi-tiered categorization of payroll data enables a new fine-grained, consistent picture of staff categories' development in terms of full-time equivalents (FTEs), salary, and contract type (e.g., fixed-term or manager contracts). These are empirical dimensions that are reasonably comparable across universities, countries, and time. Depending on the questions examined in the following four articles, the multi-tiered approach allows zooming in and out on changes at various levels of resolution. Separate articles combine the payroll data with other countries' staff data, university funding data, and interview data with managers. Together, the following four articles provide a new

tangible empirical basis for assessing the character, pace, and drivers of university transformation.

Chapter 5.
Danish universities under transformation: Developments in staff categories as indicator of organizational change (article 1)

Abstract
Claims of fundamental changes in the organizational model of universities have been widespread during the latest decades. To empirically assess the character and extent of organizational change is, however, not straightforward. This article contributes with partial, but also very tangible evidence of long-term organizational changes at Danish universities by analyzing detailed data on staff composition and salary distributions. The article shows that Danish universities indeed have undergone significant transformations, but that the full extent of these changes only becomes visible when a fine-grained analytical approach is employed. On the academic side of the organizations, relatively low-wage temporary positions have boomed at the expense of more expensive permanent ones. On the administrative side, specialized and highly educated administrative staff has surged substantially, while less expensive positions such as clerks, technicians, and service staff conversely have diminished in relative terms. Hence, while the analysis supports the overall claims in the literature, it also adds important nuances to the dominant narratives of organizational change.

Keywords: Staff composition, Salary distribution, Universities as organizations, Non-academic professionals, Organizational change, University Administration

5.1. Introduction

Both the functions and the organizational structures of the traditional university model have been under increasing attack from stakeholders and policy-makers since the 1980s. Changes have in particular been demanded in order to transform the predominantly collegial institutions into more professionalized and hierarchically managed organizations (Whitley and Gläser 2014). In

the literature, this process has been described as a general organizational turn towards more complete entities (Bleiklie and Kogan 2007; Brunsson and Sahlin-Andersson 2000; de Boer, Enders and Leisyte 2007; Krücken and Meier 2006). But while it is generally acknowledged that substantial changes have taken place in this period, it is not entirely clear what the development covers, how fast and how far-reaching it has been, and to what degree the developments are uniform in both content and timing across institutional and national contexts. Although studies appear to document some general cross-country patterns (Baltaru and Soysal 2017; Bleiklie, Enders, et al. 2017; Kehm 2015a) and although there are more detailed accounts of a few national cases, the available evidence is in general still limited and patchy (Rhoades 2017; Seeber et al. 2015).

Like most other European systems, also the Danish higher education system has been significantly reformed over the past decades: From the initial radical democratization reforms of the 1970s to the comprehensive 'New Public Management'-inspired reforms of the new millennium. These reforms have, in turn, spurred a number of discussions on the actual content and extent of organizational changes at Danish universities. But a particular challenge both in a Danish and in a broader international context concerns the fact that national discourses, as well as some scholarly debates, tend to perceive 'administrative cost' as anything that is not academic in a traditional sense (Rhoades 2016, for Danish examples, see Mckinsey & Co. 2009; Boden and Wright 2010; PriceWaterhouseCoopers 2011; Paldam 2015). This simplistic binary view of the universities is insufficient to the task of understanding the changing organizational models and the changing landscape of professional employment in higher education. Instead, as Rhoades argues, we need to map and tap into data that more accurately tracks the new structures of professional employment (Rhoades 2017, p. 215).

Hence, data on changes in staff compositions over longer time-spans can be seen as a partial, but a very tangible indicator of organizational changes (Gornitzka and Larsen 2004; Krücken et al. 2013). Based on unique and newly created Danish time series on job titles, education, and salary for all eight current Danish universities from 1999 to 2017, this analysis moves beyond crude staff categorizations and provides a coherent image with a sufficient resolution to capture changes both *within* and *between* the academic and administrative staff. Hereby the analysis contributes to the emerging mapping of long-term changes in staff composition at universities across countries (e.g., Baltaru 2018 (UK); Desrochers and Kirshstein 2014 (USA); Gornitzka et al. 1998, 2009 (Norway); Karlsson and Ryttberg 2016 (Sweden); Krücken et al. 2009, 2013 (Germany)). This is not least interesting as the time period covered by the present study allows us to follow the development throughout a

period characterized by extensive policy change. From this outset, we examine at different levels of detail how the staff composition has developed at Danish universities over time. Most emphasis will here be given to the administrative side as this broad category is often treated as a black box, although developments within it are crucial for understanding the extent to which the organizational model of the Danish universities has been undergoing transformation.

5.2. Universities under transformation

The central managerial and administrative level has historically played an almost negligible role at universities in continental European countries, which often have been characterized as pluralistic and bottom-heavy institutions with low potency for collective action (Clark 1986). Traditionally, this level mainly consisted of secretaries, auxiliary staff, and local academics elected as temporary managers by their colleagues. Rather than managers and administrators, the actors influencing the practices at the universities were the state and the academics. The state decided on most financial and administrative matters top-down, while academic guilds, dominated by individual professors, decided on the academic activities bottom-up (Clark 1986). The organizational level was squeezed in the middle with limited legitimate space. In recent years, however, scholars have highlighted how the administrative and managerial level has been extensively empowered at universities in many European countries (Amaral et al. 2003; Bleiklie, Enders, et al. 2017; Kehm 2015a; Rhoades and Sporn 2002; Thoenig and Paradeise 2016). It is argued that this reflects a 'corporatization process,' aiming to enable universities to act more as 'corporate actors' (de Boer, Enders and Leisyte 2007), 'organizational actors' (Krücken and Meier 2006), or 'strategic actors' (Whitley 2008b).

Hierarchy and capacity for rational action are perceived as key ingredients for such organization building (Brunsson and Sahlin-Andersson 2000, p. 726). The construction of hierarchy takes place through state-devolution and local centralization of duties and responsibilities and through the strengthening of managerial roles (Bonaccorsi and Daraio 2007). This has been described as rationalization aiming to improve the organization's capabilities to set goals, gather information, formulate plans, delegate responsibilities, and evaluate progress (Ramirez 2013). In terms of staff composition, these processes require managers to decide on goals and actions and specialized personnel to gather information and execute organizational plans. Hence, the centrally placed staff takes on a variety of new "tasks, which previously were not regarded as part of the *organization's* responsibility" (Krücken and Meier

2006, p. 250). Prominent examples of such tasks include the evaluation of academic results, knowledge transfer, professional development, internationalization, student support, communication, and the safeguarding of meritocratic norms. According to the literature, these tasks have in turn led to a proliferation of new management functions and a widening set of responsibilities incorporated into the formal organizational structure (Borggräfe 2019; Gornitzka and Larsen 2004; Krücken et al. 2013; Logue 2014). The result is an increasingly fine-grained set of offices expected to handle specialized tasks on behalf of sub-units, the organization as a whole, and the state. To match the scope of these new tasks, universities in many countries have witnessed an influx of whole new categories of highly qualified administrative and managerial professionals (Schneijderberg and Merkator 2013).

While there seems to be general agreement in the literature concerning the main trends in these developments across most countries, there are still important empirical gaps in terms of the content, timing, and extent of the changes. The existing empirical evidence about these long-term organizational transformations uses mostly cross-sectional methods and deduces change retrospectively. However, the nature of the claimed transformations calls for robust longitudinal studies. Analyses of staff changes offer one such perspective. It is a perspective that many university stakeholders intuitively take when considering organizational change, and it often implies a quantitative notion of proportionality over time. However, the available empirical evidence is often torn between thick qualitative studies of sub-units on the one side and overly aggregated records of official categories on the other.

Both types of studies yield important insights; however, the epistemic distance between the two seems at times too large, leaving room for rather contradictive interpretations (e.g., administrative bloat versus administrative savings). Thus, our understanding of staff changes, and how it may reflect organizational change, can be sharpened by employing an empirical middle position: One that maintains the quantitative overview of proportionality and temporality and incorporates the qualitative realization that staff categories have unclear content and boundaries. Our approach represents such a middle position by providing an alternative to formal staff categorizations: A tiered categorization constructed abductively from formal job titles and collective agreements, where the content of high-level categories can be transparently analyzed as aggregations of lower-level categories.

The main questions in the empirical part of this article are to what extent the described organizational transformation also can be observed in a Danish context through the lenses of changes in staff composition and salary distributions. To what extent and at what pace has the composition of the administrative staff at the Danish universities changed during the period 1999-2017?

Which sub-groups have grown and diminished in relative terms, and how do these developments relate to changes on the academic side of the universities? Do the detailed data, in fact, support the general claim of an organizational turn?

5.3. Data and methods

The present study draws on rich data from a Danish public payroll database (ISOLA) that keeps track of staff and salary trends. Altogether, it contains information across 64 variables such as job title, staff categories, workplace, salary, working hours, employment conditions, age, and gender. For this project, the ministry granted us temporary access to all Danish universities' payroll data from 1999–2017. In total, the data covers 256,320 individuals, who, at least once, received a salary payment from a Danish university. Hence, the ISOLA data provide a very fine-grained and consistent picture of the staff composition and salary distribution over time.

As a starting point, we assume that differences in salary and job titles represent differences in tasks and responsibilities. The reality is obviously not that clear cut as many job titles overlap. Nonetheless, employers do not assign salaries or job titles to employees randomly. Job titles serve a range of organizational purposes and tie jobs to formal systems and social conventions. Assigning job titles is a key mechanism to manage employees and construct divisions of labor (Burton et al. 2016). Dividing labor between different role categories is at the heart of the very idea of an 'organization' (Brunsson and Sahlin-Andersson 2000). Job titles are therefore a suitable starting point for developing a staff categorization-system.

We constructed the categorization bottom-up as a fully transparent thesaurus of job titles and sub-categories (Fig. 1). The thesaurus enables the break-down of each category to sub-categories and their individual job titles (See appendix A).

Figure 1. Thesaurus of job titles and sub-categories.
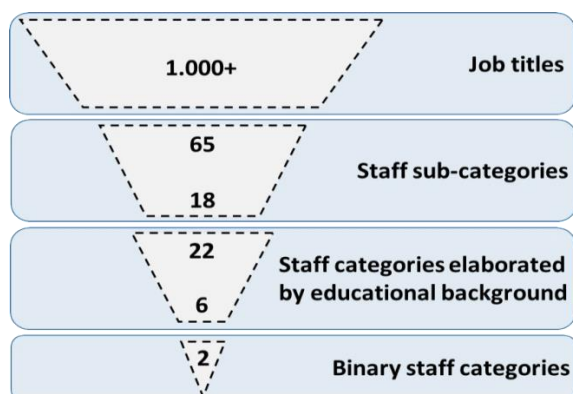
Note: The move from 18 to 22 reflects an elaboration of four categories by a binary education indicator.

As a first step, related job titles were bundled into 65 sub-categories by their area of competence, work, and employment conditions. Classic academic and civil servant job titles neatly form their own categories (e.g., Professor or Officers), while we categorized more specialized job titles under thematic headings (e.g., It-staff, Managers, Craftsmen). These 65 sub-categories give a structured view of the more than 1,000 job titles, and they formed the foundation for creating the next 18 more general mid-level categories. At this mid-level, the mutual exclusivity of most categories improved significantly. However, four administrative and managerial categories remained too diverse. To improve those four categories, we split each into two by separating employees with a university-master-degree from those without[2]: Degree-holding Professionals versus Clerks. This elaboration added four categories to the original 18. We thereby end with 22 distinct mid-level categories making it relatively easy to move forward to form the six end-result categories shown in Table 1.

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[2] In Denmark, collective agreements regulating individual positions form a good indicator for educational background. They rigidly separate those with a master-level degree from those without. The latter group usually hold a vocational education and give on-the-job training higher priority.

Table 1. The six staff category-level

Academic staff	Faculty: Permanent academic staff: Professors, Associate Professors, and similar positions such as Senior Researchers
	Other Academic Staff: Mainly temporary academic staff: Assistant Professors, Postdocs, PhDs, and Academic Assistants, but also teaching positions usually not requiring a PhD-degree, where few are permanent
Non-academic staff	Degree-holding Professionals: Administrative staff with an university-degree: Mainly Managers, Officers, Coordinators, and Consultants
	Clerks: Administrative staff usually with vocational education: Mainly Sectaries, Clerical Officers, and Section Managers
	Service, Craftsmen & Technicians: A wide range of positions usually *not* performed at an office desk: E.g., Janitors, Laboratory Technologists, and Engineers
	Employed Students and Apprentices: Mainly employed students and paid apprentices from vocational educations

These six macro-categories resemble those used in analyses in other countries (Gornitzka et al. 2009; Krücken et al. 2013; Rhoades and Sporn 2002) and function as our main level of analysis. But as we will show in the following section, the possibility to open these categories further up enables us to highlight important developments that otherwise would be hidden under the surface.

5.4. Changes in staff composition at Danish universities

This section first presents a brief account of the Danish policy background, before we in detail examine staff developments at different levels of aggregation. The empirical part starts at the most aggregated level and then proceed by gradually opening up relevant categories. Subsequently, we provide figures for salary distributions, which further highlight the hierarchy of the categories and the magnitude of the observed changes.

5.4.1. Danish policy background

The Danish higher education system consists of eight research universities and a number of non-research based organizations such as University Colleges and Academies of Professional Higher Education. While the Danish higher education system as a whole has undergone profound changes since the turn of the millennium, this article focuses on changes in the research universities only.

Up until the early 1990s, Danish universities were bottom-heavy, self-organizing entities with a weak organizational level closely resembling the traditional models described in Section 2. The universities were formally governed by the Minister of Education, but the internal management was first and foremost guided by collegially agreed rules and procedures without much external interference. In 1993, a reform strengthened the department head and dean functions, but more fundamental changes were not seen before the turn of the millennium (Degn and Sørensen 2015; Pedersen 1982).

After a change of Government in 2001, a sweeping reform process started with the intention to transform Danish universities into key players in the global knowledge economy (Aagaard and Mejlgaard 2012). Increased competition for funding and students, higher demands for accountability, more comprehensive evaluation activity, and a stronger focus on social responsibility were seen by the government as some of the essential means to transform the universities. Four elements in this wave of reforms can be seen as central in the change processes affecting the university sector. Firstly, a new University Act from 2003 introduced governing boards with a majority of external members and abolished the 'primus inter pares' model by requiring appointed university leaders at all levels instead of elected. The stated objectives were to accentuate the universities' profiles, to professionalize and empower managerial structures, and to increase collaboration between research and innovation activities (Aagaard and Mejlgaard 2012; Degn and Sørensen 2015). Secondly, the research funding system became more competitive with the establishment of a number of new research funding councils (Aagaard 2017). Thirdly, while some changes in the funding systems were initiated in 2003, they were all considerably strengthened as a result of the comprehensive Danish Globalization Strategy, presented in 2006 to make Denmark a leading knowledge- and entrepreneurial society (The Danish Government 2006). A part of this strategy targeted PhD education with the aim of doubling the uptake. Fourthly, in 2007, the Government launched a far-reaching merger process, which reduced the number of universities from twelve to eight and transferred twelve out of fifteen Government Research Institutes (GRIs) to the eight remaining universities (Aagaard et al. 2016). However, the extent to which the organizational structures of the universities actually have changed during this reform-intensive period remains a contested issue.

5.4.2. Macro trends in the staff composition at Danish universities

The total number of full-time equivalents (FTEs) employed at the eight current universities grew from 14,266 to 32,980 from 1999 to 2017. The doubling

of the sheer size, however, has not been a simple upscaling of 1999-practices. Instead, staff composition has been restructured thoroughly.

At the highest category-level, Fig. 2 shows the conventional distinction between non-academic and academic staff. Here it is interesting to notice that there has been a steady trend towards a higher relative share of academics. While the two groups were of almost equal size up until 2004, the academic group started to grow at a faster pace from here onwards. The sudden jumps seen in 2007 reflect the large-scale merger process, leading to an increase in the numbers of both academics and non-academics. Notice, however, that the share of non-academics was higher at the GRIs than at the universities. Hence, the mergers affected not only the total number of staff but also the ratio between the two groups – at least in the short run.

Figure 2. Binary staff composition across all current universities, 1999-2017
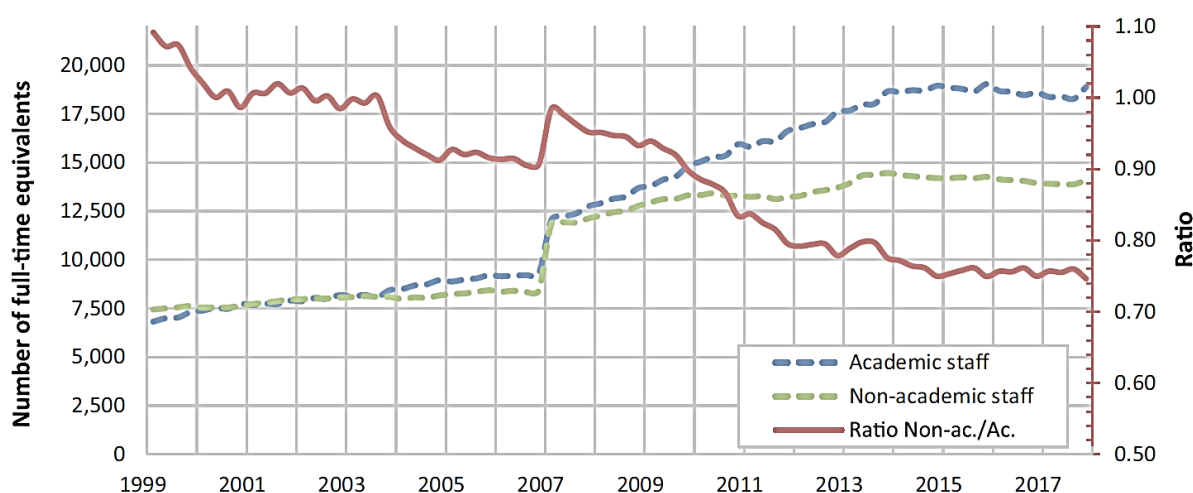
Note: The left y-axis for the green and blue lines, and the right y-axis for the red line. The ratio is non-academic staff divided by academic staff.

Although crude, this figure shows a picture that stands somewhat in contrast to a popular narrative of an ever-growing administration at the expense of the academic heartland. This simple categorization, however, may also lead to misleading conclusions as it hides noticeable underlying shifts. Hence, to gain a better understanding of the developments, a more fine-grained categorization is needed. Fig. 3 shows the same development at the six-category level.

Figure 3. Staff composition across all current Danish universities, 1999-2017
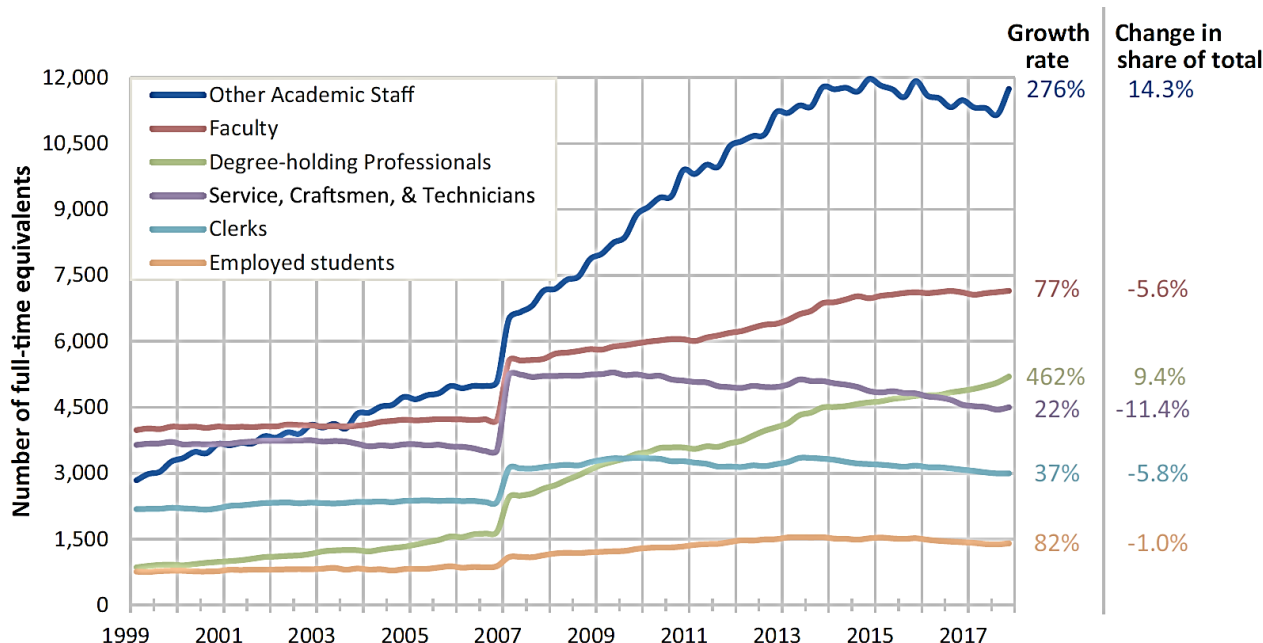
Note: Growth rate is in percentage, and change in share of the total is in percentage points, from 1999 to 2017.

Although all six categories shown in Fig. 3 have increased in absolute numbers from 1999 to 2017; variation in growth rates has led to substantial relative shifts. Particular two categories (one from either side of the conventional binary distinction) stand out: on the academic side, the category 'Other Academic Staff', mainly consisting of academics in temporary positions; and on the non-academic side, the category 'Degree-holding Professionals'. Both categories have had rapid growth rates of respectively 276% and 462%.

As the figure shows, the aforementioned academic upswing represents, in fact, an intensified use of temporary academics in the 'Other Academic Staff' category. Where the permanent 'Faculty' outnumbered 'Other Academic Staff' by 1,000 FTEs in 1999, this situation has changed significantly during the period – in particular from 2007 to 2014. If 'Faculty' had maintained their 1999-relative-size, there would have been over 2,000 additional full-time Faculty in 2017. However, by further opening up these academic categories (see appendix B for details), it can be seen that the number of 'Full Professors' has almost tripled since 1999, increasing their relative size among all employees by one percentage point. Meanwhile, 'Associate Professors' has only grown with one-third of the rate of professors, leading to a drop in their relative size by 6.6 percentage points. Also, the three sub-categories of 'PhD-students', 'Postdocs', and 'Academic Assistants' have all had growth rates from 279% to 404%, which have dramatically increased their respective shares of total employees. Thus, the academic staff composition has become more polarized around the

top academic positions and the temporary bottom positions. The tenured in-between position of associate professors has, on the other hand, experienced a substantial relative decrease.

An equally comprehensive change can be observed on the administrative side. By the turn of the century, the main bulk (88%) of non-academic staff was found in the categories 'Service, Craftsmen, Technicians', 'Employed Students', and 'Clerks'. However, in the subsequent decade, these categories grew much slower than the other administrative category. They even have sloping curves in the last 5 years, exposing decreasing absolute numbers. In stark contrast to the falling shares of clerks and technicians, the steady growth of 'Degree-holding Professionals' started to take off around 2003. This trend further accelerated significantly around 2007. By 2017, this category made up 16% of the total number of university FTEs, compared with only 6% in 1999. If the 'Degree-holding Professionals' had kept their 1999-relative-size, they would account for approximately 3,200 fewer FTEs in 2017.

5.4.3. Comparison between universities

In order to investigate whether the observed sector trends may be the result of a more heterogenic underlying picture, we have selected three rather different universities for comparison: Copenhagen Business School (CBS), a relatively small, teaching-intensive, predominantly social science-oriented university; University of Copenhagen (KU), a large, comprehensive and research-intensive university; and finally, the Technical University of Denmark (DTU), a large, research-intensive technical/natural science university.

As Fig. 4 shows, the staff categories' direction of change, whether increasing or decreasing, is uniform across the three universities. Naturally, CBS with its predominantly social science-oriented profile employs fewer craftsmen and technicians for experiments than the Technical University of Denmark. But still, relatively speaking, the two universities display the same trend: Both of them as well as KU have halved their share of 'Service, Craftsmen & Technicians' during the period. Likewise, although with different initial volumes all three universities have more than doubled their proportion of 'Degree-holding Professionals' and almost halved their proportion of 'Clerks'. On the academic side, the direction of change is also uniform, but with greater variation when it comes to 'Other Academic Staff'. KU and DTU have increased their share of 'Other Academic Staff' at a faster pace than CBS. The share of Faculty has dropped quite uniformly by 6-8 percentage points across all three universities. Hence, the observed trends at the sector level appear to be mirrored fairly accurately at the level of individual institutions, even across universities of very different sizes and with very different profiles.

Figure 4. Changing staff composition at three selected universities, 1999-2017

	1999	2008	2017
Copenhagen Business School			
Employed students	6.6%	8.1%	7.4%
Degree-holding Professionals	11.3%	19.4%	24.1%
Clerks	20.0%	15.7%	14.3%
Service, Craftsmen & Technicians	10.7%	7.5%	5.6%
Other Academic Staff	21.7%	24.9%	26.7%
Faculty	29.7%	24.5%	22.0%
Copenhagen University			
Employed students	6.1%	5.8%	4.4%
Degree-holding Professionals	4.7%	11.2%	13.4%
Clerks	14.3%	11.4%	8.3%
Service, Craftsmen & Technicians	28.1%	22.7%	15.4%
Other Academic Staff	20.3%	28.3%	38.0%
Faculty	26.5%	20.6%	20.5%
Technical University of Denmark			
Employed students	4.4%	3.7%	3.4%
Degree-holding Professionals	8.6%	12.1%	17.4%
Clerks	12.8%	9.5%	7.4%
Service, Craftsmen & Technicians	35.7%	25.3%	17.0%
Other Academic Staff	12.7%	29.9%	36.7%
Faculty	26.0%	19.5%	18.1%

5.4.4. Opening up the administrative categories

As shown in Section 4.2, substantial changes have taken place between differ-ent sub-categories during the period under examination. Hence, the six cate-gory-level reveals significant restructuring *within* both the non-academic and the academic categories. But while the changes on the academic side, in gen-eral, are well-known, there is a need to open up the administrative categories further. A key question is what this restructuring entails on the administrative side in more detail. To do so, we draw in additional details from the lowest category-level. By further differentiating the non-academic staff categories, additional restructuring comes to the fore, as shown in Fig. 5.

Figure 5. Change in number of FTEs between 1999 and 2017 in sub-categories
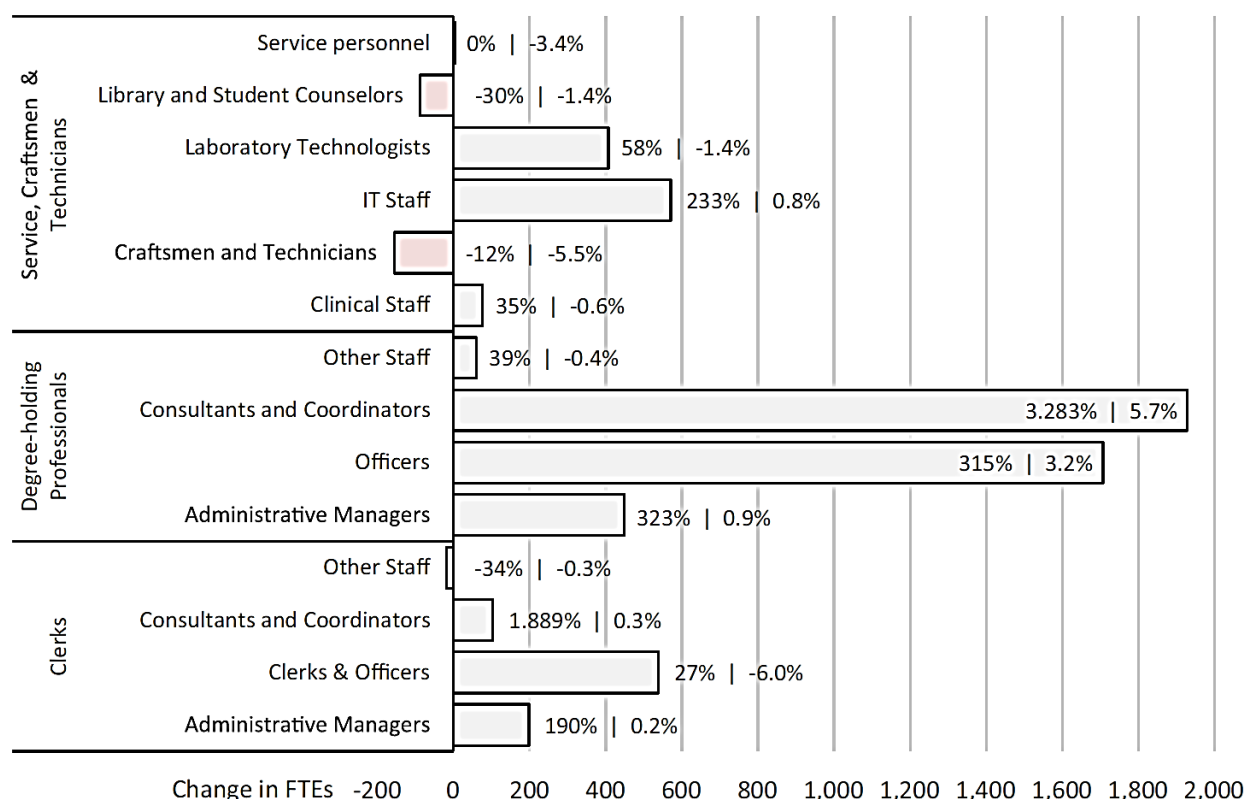
Note: The bars' length shows changes in FTEs in absolute numbers. The numbers next to the bars show growth rates in percentages and changes in the share of total in percentage points.

The category of 'Degree-holding Professionals' is the key in order to understand the element of organizational change at Danish universities. The category not only grew the most but also has been internally changed in composition. In 1999, 'Degree-holding Professionals' were mainly found in jobs categorized as either 'Administrative Officers' or as 'Managers/Head of units'. The number of FTEs in both of these two sub-categories quadrupled from 1999 to 2017. But parallel to these large expansions in the two traditional sub-categories, a new sub-category of 'Degree-holding Consultants and Coordinators' surged. It covers job titles almost not used at all prior to 2003. In 2017, one out of every sixteen university employees belonged to this emerging sub-category. In addition, the number of obscure job titles placed in the category 'Other Staff' grew among degree-holding professionals.

In the other large administrative category, 'Clerks', we observe a different picture. The traditionally very large sub-category of 'Clerks and Officers', which comprised 14% of all employees in 1999, grew with merely 27%. That is very low compared with the overall growth rate of 122% needed to breakeven. Its relative size has therefore been reduced by 6.0 percentage points from 1999

to 2017. Upcoming job titles, here categorized as 'Consultants and Coordinators', have only rarely been assigned to clerks (n=109 in 2017). However, in contrast to the other clerical sub-categories' low growth rates, 'Managers and Heads of Units' almost tripled in numbers.

In the same vein, the diverse category of 'Service, Craftsmen, and Technical staff' has also been reduced substantially in relative terms. The only technical sub-category actually gaining in relative size is the 'IT Staff' (0.8 percentage point), and even here, the increase is surprisingly low given the massive growth in use of IT-technologies during the period under examination. In all other areas, the share of technical and practical positions has been decreasing. The employees inhabiting these positions usually have educational backgrounds and competences quite different from 'Clerks' and 'Degree-holding Professionals'. Thus, today there is a relatively much smaller group of technical and practical positions among the non-academic staff to do maintenance, campus services, and technical research support than at the beginning of the period. Notice, however, that it varies widely whether technical staff has direct research support functions. In particular, the Laboratory Technologists and a subset of the Technicians and Librarians have to different degrees technical research support tasks. However, they all belong to proportionally diminishing sub-categories.

5.4.5. Frequently used job titles

As mentioned in Section 4.4, there are unclear boundaries between job titles in administrative and managerial staff categories at the lowest level of analysis. But by breaking down the same-named sub-categories of 'Clerks' and 'Degree-holding Professionals' to frequently used job titles[3] and comparing them side-by-side, important details of how they differ beyond education become visible (see Appendix C for exact tables).

This is particularly the case when examining the 'Manager' job titles, where important differences between 'Clerks' and 'Degree-holding Professionals' can be seen. Both categories have managerial job titles for smaller office units, but the 'Degree-holding Professionals' exclusively hold the senior management positions. This division is also manifest in the distribution of salary, which shows a minimal overlap between the two groups (see Fig. 6).

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[3] Top-10 most used job titles with no less than 400 FTEs from 1999-2017

Figure 6. Monthly salary distribution between Clerical and Degree-holding Managers in 2017
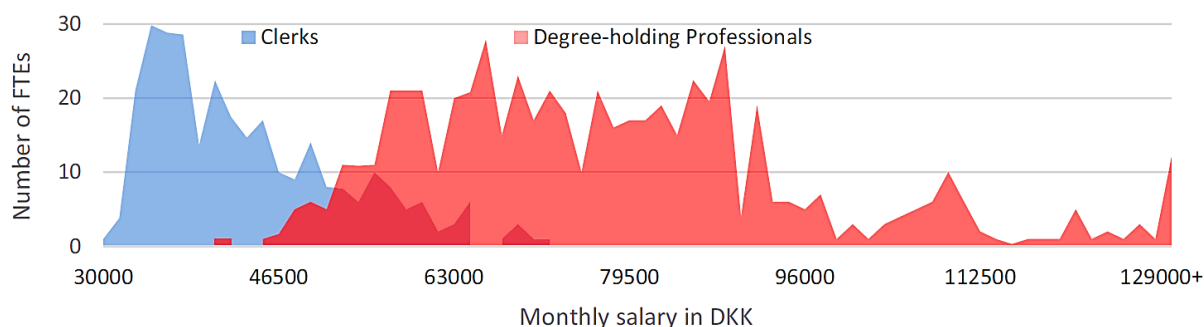
Note: See the definition of salary below in table 2's note. 1,000 DKK = 134 €.

Close to all Clerical Managers hold the uniform title of 'Section Manager', while the Degree-holding Managers hold a set of more differentiated and descriptive job titles. This set, on the one hand, covers the classic university management titles such as Rector, Dean, and Head of Department, whose status was formally converted to strictly 'non-academic' in Denmark by the University Act in 2003. But on the other hand, 'Degree-holding Managers' also covers a broad range of 'Director' or 'Manager' titles, which state the rank or the area of responsibility such as Deputy, Vice, University, Office, Communication, Economy or Human Resources.

Also, the broad 'Officer' category shows interesting differences. In this category, we find all the traditional administrative positions for both 'Clerks' and 'Degree-holding Professionals'. In 1999, almost all 'Clerks' held job titles such as 'Senior Assistant', 'Clerical Officer', and various versions of 'Secretary'. Similarly, the majority of the 'Degree-holding Professionals' outside of the managerial hierarchy, held either an 'Officer' or 'Correspondent' title in 1999. The widely used job titles, 'Clerical Officer' and 'Officer', differ by a formal university-degree requirement. These traditional administrative positions have over the years been used less and less, in particular for the 'Degree-holding Professionals'.

At the same time, new types of job titles, which were hardly present in 1999 at all, have steadily become the new normal. Compared with the traditional administrative titles, these new titles signal expertise in specific subjects. While few 'Clerks' have been assigned new job titles such as Specialist and Consultant, the big changes are found among the 'Degree-holding Professionals'. The job titles 'Special Consultant' and 'Senior Consultant', which public agencies commonly use to rank their civil servants by expertise, have rapidly gained ground in Danish university administration as well (respectively, 1140 and 560 in 2017, compared with 16 and 8 in 1999). Also, 'Coordinator' and 'Consultant' titles have proliferated (remarkably often with a hyphenated spe-

cialization such as development, project, HR, economy, communication, administration, research, or education). However, decreasing numbers of 'Coordinators' in recent years indicate that such positions have been incorporated in the ever-growing corps of various in-house consultants.

Summing up, 'Clerks' hold low-level managerial positions, and they continue to be employed mainly under traditional administrative job titles. 'Degree-holding Professionals', on the other hand, hold senior management positions, and their traditional administrative job titles have been extensively complemented by a new set of job titles signaling expertise and new functions.

5.4.6. Salary profiles

To supplement the FTE analysis, we here examine the boundaries between the categories with data on salary levels. The salary profiles of different categories provide further insights into their relative standings, while at the same time providing another type of longitudinal overview of the development. As the Violin plot in Fig. 7 shows, the distribution of salary has changed substantially for both the academic and the non-academic categories from 1999 to 2017 (see Appendix D for details). In 1999, the salary distribution of the academics was mid/top-heavy, while the distribution of the 'non-academics' was very bottom-heavy. In 2017, the salary distribution of the 'academics' had become noticeably more bottom-heavy as a consequence of the strong growth in the temporary staff. Interestingly, the opposite is the case for the 'non-academics', where the 1999-bottom-heaviness has become less pronounced, and the middle- and top-layers have expanded. Thus, the two contrasting staff categories display by 2017 a newfound similarity, both converging towards a drop-shaped composition of low- and high-wage employees.

Figure 7. Academics and non-academics' relative salary distribution in 1999 and 2017
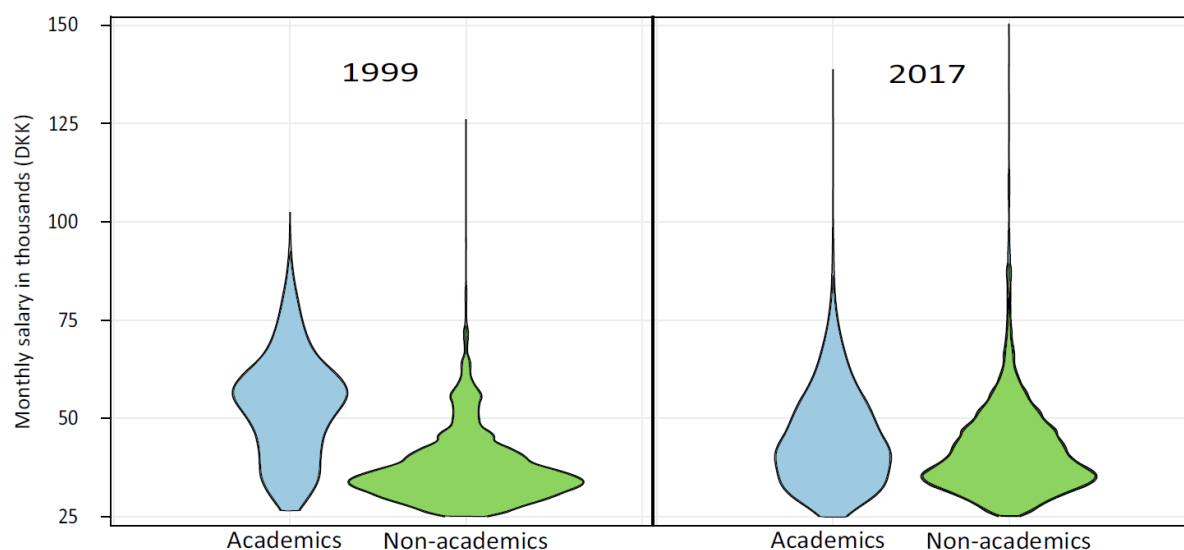
Note: The 1999-salaries are adjusted to 2017-level by Statistic Denmark's wage index for public institutions.

As Table 2 shows, salaries vary considerably between staff categories (See Appendix E for the 22 category-level). Thus, changes in staff composition have significant consequences for universities' overall salary expenditures. The permanent 'Faculty' is obviously more expensive than the 'PhDs' and the 'Postdocs', and similarly do the 'Degree-holding Professionals' on average earn significantly more than the 'Clerks' and 'Service, Craftsmen & Technicians'. On both sides, there is on average a 40-50% salary gap between the high wage and the relatively low wage staff categories.

Table 2. Average salary in thousands (DKK) across staff categories in 2017

Staff categories	Average monthly salary of:			Standard deviation	Pay rise 1999-2017
	All	Top 10%	Bottom 10%		
Clerks	36	51	27	7	90%
Degree-holding Professionals	51	84	34	14	89%
Service, Craftsmen & Technicians	38	53	26	7	78%
Faculty	57	80	45	11	67%
Other Academic Staff	37	47	29	6	69%

Note: Salary is defined in accordance with Moderniseringsstyrelsen's recommendation (2016) and covers employee's basic salary, pension contributions, regular supplemental payments for the fourth quarter's middle month (i.e., November), and 1/12 of their total irregular supplemental payments for the past 12 months, except paid-overtime, compensated leftover vacation and severance payment. The table shows the salary of full-time positions. 1,000 DKK = 134 €.

The salary ranges of 'Clerks' and 'Degree-holding Professionals' have a minimal overlap (See Table 2). The top 10% of 'Clerks', presumably the most experienced and skilled of these, receive the same salary as the average 'Degree-holding Professional'. Thus, the overlap is restricted to Top-Clerks and Bottom-Degree-holding Professionals. Compared with 'Clerks' as well as 'Service, Craftsmen & Technicians', the bulk of 'Degree-holding Professionals' is virtually in a league of their own in terms of salary. The top 10% of 'Degree-holding Professionals' (n=463 in 2017) earns even more than the top 10% of 'Faculty'. The actual distribution of job titles within this administrative and managerial elite is shown in Table 3.

Table 3. The top 10% highest-paid 'Degree-holding Professionals' by job title in 2017

Job titles (Parenthesis shows the number of FTEs)	Full-time equivalents
Classic management titles	
Head of Department (120), Dean (25), Pro-dean (24), Rector (8), and Pro-Rector (7).	184
Director titles	
Not hyphenated (16).	82
Hyphenated with department (23), vice (23), faculty (8), university (7), library (1), campus (1), corporate (1), education (1), and economy (1).	
Manager titles	
Hyphenated with office (26), section (20), administration (10), secretariat (13), function (7), economy (6), human resources (5), communication (5), study (5), and others (24).	121
Consultants	
Senior Consultant (65), Special Consultant (5), Department Administrator (3), and Top Advisor (2).	75
Total	462

Regarding these titles, it should be noticed that while recruitment to the classic management titles happens from the ranks of faculty, the other 'top 10% positions' are recruited more broadly (e.g., business firms or other public institutions). The large number of hyphenations of the 'Director' and 'Manager' titles reflects an elaborated management hierarchy. In addition, the many senior consultant positions, which are also among those with an average monthly salary of 84,544 DKK, underline the significant build-up of high-profiled competence also outside the official line-management.

Figure 8. Yearly salary expenses at the binary category-level across all current Danish universities, 1999-2017
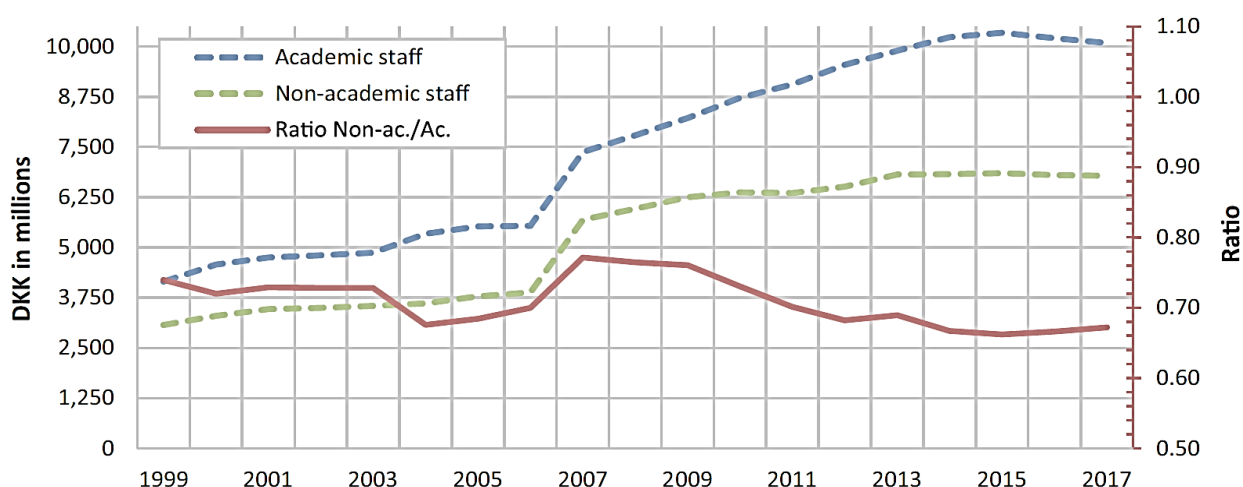
Note: The left y-axis for the green and blue lines, and the right y-axis for the red line. The ratio is Non-academic staff divided by Academic staff. Salary expenses are adjusted to 2017-level by Statistic Denmark's wage index for public institutions. See the definition of salary expenses above in table 2's note.

Fig. 8 shows how the overall salary expenses for academics and non-academics have evolved over time. In 1999, the non-academic group accounted for 42.5% of all salary expenses, decreasing to 40.2% in 2017. However, this decrease amounts only to a minor drop in the salary expense-ratio by 0.05 (Fig. 8), although the FTEs-ratio between non-academics and academics decreased by 0.32 (Fig. 2). In other words, the non-academic group's share of FTEs has decreased much less than their share of salary expenses. This disproportionality reflects the above documented occupational restructuring that has occurred *within* each of the two crude staff categories. From 1999 to 2017, the average salary expenses per non-academic employee have increased by 19.3% and decreased by -7.4% per academic employee.

5.6. Discussion and concluding remarks

Based on the results presented in Section 4, we now return to the key questions raised in Section 1 and 2. To what extent has the organizational model of Danish universities changed viewed through data on staff composition and salary distribution over an extended time period? The discussion will touch upon several elements that can only be answered partly because of the approach chosen in this study. Hence, in our concluding remarks, we point at issues that deserve further attention in the ongoing discussions of university transformations.

5.6.1. Main findings

The period under examination has been characterized by massive overall growth in personnel at all eight current universities, but this growth has by no means been even for all staff categories. By gradually opening up different levels of staff categories, we have shown that a very fine-grained examination is indeed necessary to grasp the full extent of the organizational changes.

At the most aggregated level, we observe a trend towards a strengthening of the academic side of the university. This observation is somewhat in contrast to a popular Danish narrative of an administration outgrowing the academic part of the universities. Nevertheless, this binary view only shows a superficial part of the larger picture. As soon as we open up the aggregated categories, important nuances surface. These nuances have clear implications for understanding universities as organizations: Most notably, the growth on the academic side is, to a very large extent, the result of massive growth in the use of temporary positions for junior academics. Hence, the balance between permanent and temporary academic staff has tilted dramatically during the period under examination. As shown in other countries, also the Danish academic labor market has become markedly more precarious over time (Rhoades 2017). On the administrative side, we also see a very significant change of balance between different categories, but here the direction is almost the opposite: The strongest growth has taken place among the categories placed high in the internal hierarchy, while almost all other categories have decreased in relative terms. Noticeable, these trends appear to be uniform across very different university types. Hence, on the academic side, we observe a weakening of the middle and a strengthening of the bottom layers of the career hierarchy, while the strengthening at the administrative side is found at the middle and top layers. In terms of salaries, these trends can be translated into a growth of the relatively low-wage positions at the academic side and a growth of the more expensive positions on the administrative side. Further, a detailed examination of job titles at the administrative side shows indications of a proliferation of new, specialized functions that are added on top of the (now shrinking) traditional administrative support functions.

5.6.2. Changed staff composition = changed organizations?

Overall, we accordingly observe clear indications of an 'organizational turn' within Danish universities. Despite a notorious reputation for being reluctant to change, this analysis has shown that the organizational model, in fact, has undergone considerable changes from 1999 to 2017. However, as Gornitzka and Larsen (2004, p. 463) have highlighted, bystanders might interpret the

increased share of 'Degree-holding Professionals' as nothing more than re-named job titles as a result of more and more people holding higher education credentials. This view would imply the work of renamed jobs had remained largely the same. While this might partly be the case, our analysis shows that it is by no means the whole story. Not only does the sizeable salary gap be-tween old and new non-academic categories indicate that the latter group en-gages with new and more demanding types of work, so does the job titles. Here, the new tasks of the administration become very visible, and likewise we see the contours of a new and more elaborate hierarchy. These observations are also in line with qualitative studies of managers and highly qualified ad-ministrators finding that these groups indeed differ notably from 'Clerks' in terms of work tasks, attitudes, skill sets, levels of discretion, internal and ex-ternal networks, sense-making processes, and employment conditions (Rhoades et al. 2008; Ryttberg and Geschwind 2017; Schneijderberg and Merkator 2013; Whitchurch 2013). In other words, the observed staff changes support the claims of qualitative studies of a large-scale influx of employees working on new tasks, which previously were not regarded as part of the ad-ministrative and managerial responsibilities.

Judging from the job titles, Danish universities today display an increas-ingly professionalized and rationalized administration and management. The increasing use of specialist and hyphenated manager and administrator titles shows how responsibilities are increasingly separated into designated offices and organizational subdivisions that complement each other in a fine-grained and rationalized system. In this process, certain types of non-academic em-ployees have gained priority at the expense of others. Employees with special-ized job titles, high qualifications, and high salaries have increased, while em-ployees with job titles that directly refer to practical, technical, and clerical work have declined. The latter includes direct research support, where cadres of temporary junior research staff seem to take over. Instead, the payroll data show a hiring boom in administrative employees with better prerequisites for handling work that is more ambiguous, and that takes higher levels of profes-sional interpretation (i.e., symbolic, analytic, advisory, coordination, commu-nication, and decision-making).

Our analysis might underestimate practical and technical positions be-cause we cannot detect outsourcing. However, the same is true for knowledge-heavy administrative positions. Outsourcing to prominent consultancy firms is widespread despite the boom in advanced in-house capabilities. No full pic-ture of such outsourcing exists, but Aarhus University is an illustrative case. In the reform intensive years from 2007 to 2011, they outsourced "develop-ment tasks" to consultancy firms for 200 million DKK (Aarhus University 2018), which equals 330 average Degree-holding Professionals (FTEs).

The documented staff changes also point at potential changes in the relationship between the academic and the administrative workforce: Where the majority of the non-academic staff previously carried out tasks clearly subordinated those of academic staff, this is less and less the case. As Aberbach and Christensen (2017, p. 9) write, "the administrative hierarchy now seems to be not only relatively more influential, in its own right, but also more closely connected to the academic". The group of staff explicitly titled as practical and clerical workers is shrinking, while the growing parts of the administration and management are positions signaling additions or upgrades of tasks and functions. While these new tasks and functions still in many respects can be seen as support of core activities, they are of a distinctively different character. Technology Transfer, Strategic Planning, Internationalization, Communication, External Relations, and Grant Writing Support are just some of these new tasks, which due to their specialized (or para-academic) and proactive nature, are not as clearly subordinated the academic activities.

Abbott highlights that increases in professional tasks do usually not equal decreases in clerical and practical tasks. Rather, the claim is, most people are overly optimistic about how professionalization and technology reduce the need for clerical and practical manpower. Therefore, in organizations with growing shares of professionals, Abbott notices an internal diffusion of clerical and practical tasks (Abbott 2016, p. 251). The extensive staff changes documented here begs the question of how the work task distribution and portfolio of different positions have evolved. For instance, studies find that professors increasingly need to master and do a widening set of skills and tasks beyond the traditional academic ones, for example, fundraising, project and personnel management, and networking (e.g., Latour and Woolgar 2013). However, our data only provide an initial and rough indicator of the multiple changes in tasks beneath the observed changes in personnel structure.

5.6.3. Future work

The analysis presented in this study raises a number of further questions. At least two of these will be central in our coming work: Firstly, in this article, we have not touched much upon the drivers behind the observed changes. How and to what extent are the observed organizational changes driven by factors such as international blueprints, national and transnational policies, job market trends, societal expectations, and evolved academic practices? As indicated in this article, the pace of the changes suggests that national university policies have played a significant role in the Danish case: As shown in Section 4, the observed changes have developed continuously since 1999, but they clearly accelerated shortly after the 2003-reform and again after the mergers

in 2007. Similarly, the restructuring of the academic workforce appears to have stabilized around 2014, shortly after the funding from the Danish Globalization Strategy ran out. At the same time, the non-academic workforce has nonetheless kept changing steadily in the same direction without signs of stabilization.

However, the Danish pattern of change is at the same time similar to patterns observed in other countries (Baltaru and Soysal 2017; Gornitzka et al. 2009; Karlsson and Ryttberg 2016; Rhoades and Sporn 2002). For instance, the trend in Germany matches the one we observe in Denmark: A relative bigger academic side, with ever more junior positions, and a shrinking but heavily restructured non-academic side (Krücken et al. 2013). Hence, these observations indicate that there clearly also are transnational drivers involved in the transformation processes. More systematic work is, therefore, necessary to try to disentangle the relative importance of different drivers.

Secondly, a key question is also to what extent the observed organizational changes, and in particular the strengthening of the administrative mid- and top-level, in fact, affect the organizational culture and core academic activities? Is it possible that the Danish universities, which increasingly resemble complete organizations in terms of administrative and managerial capacities, still on the 'factory-floor' function more or less as they did 30 years ago as loosely coupled systems of self-reliant academics? As Drori et al. note: "*It is an open question whether universities only ritually adopt new and globally diffusing concepts and models stressing their actorhood, whether they are making fundamental changes in their institutional identities and actual organizational practices*" (Drori et al. 2006, p. 21). Hence, the new organizational model does not necessarily dismantle academia's other vibrant features completely. Different models and logics may co-exist and mix in different combinations (Bleiklie, Michelsen, et al. 2017; Hüther and Krücken 2018; Kleimann 2018). The actual mix at particular universities may be dependent on their local traditions and pathways (Ramirez and Christensen 2013; Thoenig and Paradeise 2016; Whitley 2012). For understanding the full extent of actual change in the inner workings of universities as organizations, the approach chosen in this study needs to be complemented by other types of data and methodologies.

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5.8. Appendixes

The following five appendixes belong to chapter 5.

5.8.1. Appendix A: Staff thesaurus

A fully expandable thesaurus over the multi-level staff categories can be provided by request to the corresponding author.

This thesaurus extends down to separate job titles accounting for at least five full-time equivalents during the period under examination (n=895). To indicate the relative weight of (sub-)categories and job titles, the number of full-time equivalents (FTEs) for the full period is displayed next to the name:

Category/title name | number of FTEs

Figure A1. Explanatory snapshot of the thesaurus with the various levels colored
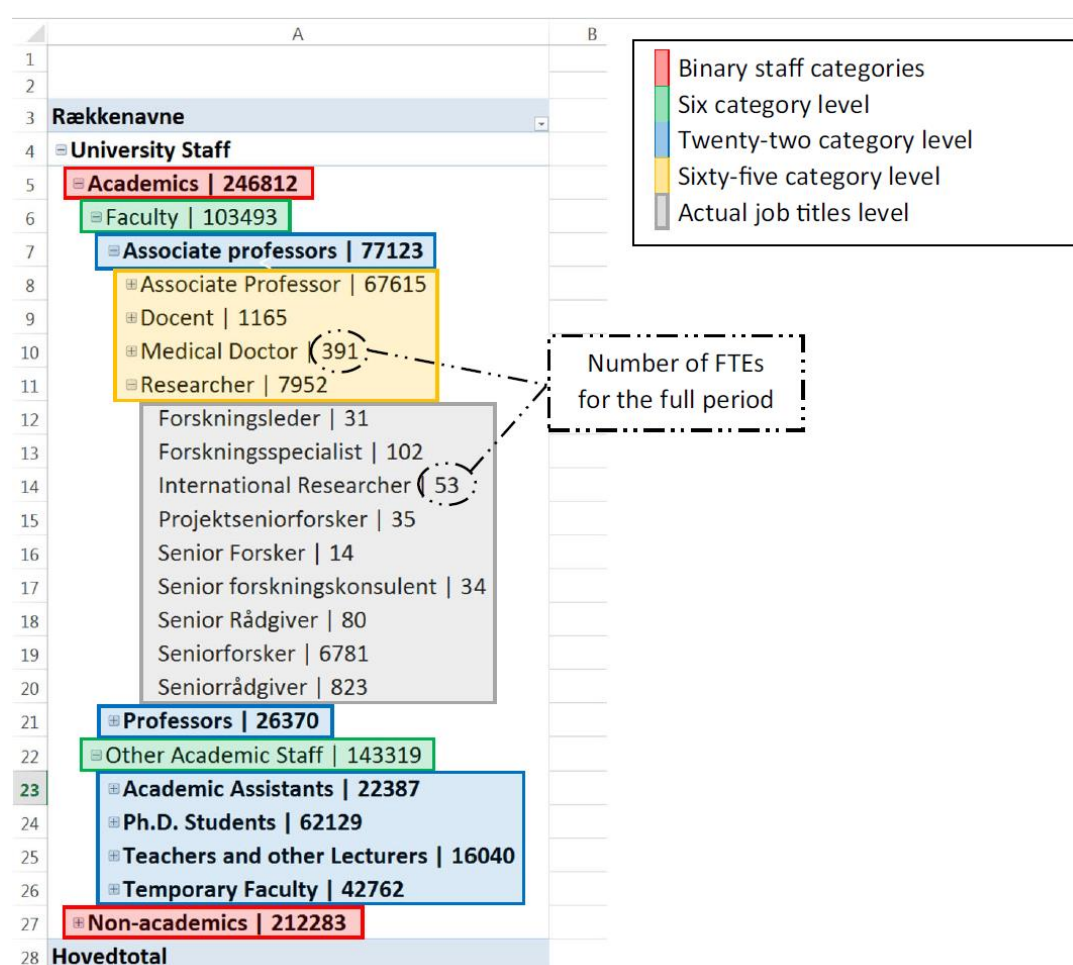
5.8.2. Appendix B: Full 22-category level

The full 22-category level includes academic and student sub-categories. We draw upon these developments in section 4.2.

Figure B1. Change in the number of full-time equivalents (FTEs) between 1999 and 2017 by sub-categories
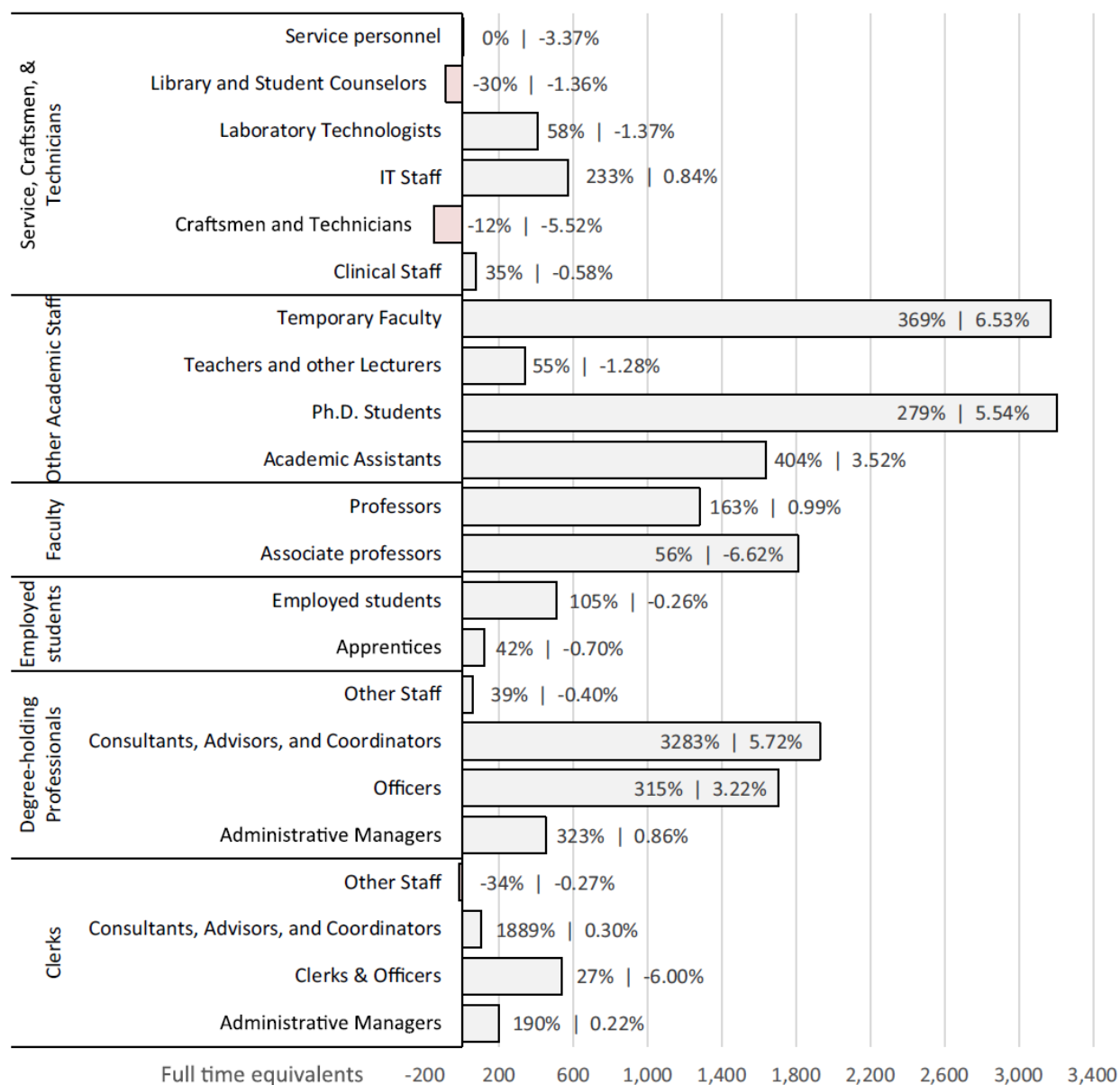
Note: The length of the bars shows the change in full-time equivalents in absolute numbers. The numbers next to the bars show growth rate in percentages and change in share of total in percentage points.

5.8.3. Appendix C: Frequently used job titles

Table C1-3 shows a side-by-side comparison of the most frequently used job titles within the same-named sub-categories of 'Clerks' and 'Degree-holding Professionals'. These sub-categories are 'Administrative Managers and Head of Units', 'Administrative Officers', and 'Consultants and Coordinators'.

In Table 1, the number of full-time equivalents for each job title during the full period from 1999 to 2017 is displayed in brackets. We delimit the most frequent job titles to the top-10 most used job titles with no less than 400 FTEs in total during the 19 years. Below the top-10 list we briefly summarize the residual job titles.

Table C1. Managers and Head of Units

Degree-Holding Professionals	Clerks
Head of Secretariat (2,649)	Section Manager (13,853)
Head of Unit/Section (2,399)	Operation Manager (729)
Office Manager (2,023)	Team Manager (562)
Director (1,019)	Economy Manager (406)
Administration Manager (830)	Head of Secretariat (400)
Vice-director (792)	
Deputy Manager (732)	
Communication Manager (602)	
University Director (470)	
Economy Manager (681)	
Hyphenated manager- and director titles (≈2,900) such as campus, deputy, development, team, HR, Faculty, economic, museum, operation, and administration.	Hyphenated manager titles (≈800) such as administration, office, and HR.

Table C2 Administrative Officers

Degree-Holding Professionals	Clerks
Officer (68,582)	Senior Assistant (51,205)
Correspondent (7,094)	Clerical Officer (50,020)
AC-Staff (4,164)	Office Staff (22,039)
AC-Officer (3,070)	Assistant (11,447)
Project Staff (2,208)	Helper (4,883)
Journalist (1,962)	Economic Officer (4,765)
Communication Staff (1,275)	Secretary (4,173)
Academic (Faglig) Secretary (950)	Office assistant (3,828)
Secretary (1,101)	Principal administrator (2,200)
Information Staff (808)	Study Secretary (1,946)
	Senior Secretary (1,131)
Hyphenated secretary titles (≈1,000) such as center, department, institute, or management.	Hyphenated secretary titles (≈3,200) such as HR, research (-group), education, department, doctors', management, or project.
Various job titles related to office staff, administrators, and economic officers (≈4,300).	Various job titles related to office staff, exams, projects, administrators, receptionists, and economic officers (≈3,900).

Table C3. Consultants and Coordinators

Degree-Holding Professionals	Clerks
Special Consultant (27,020)	Specialist (649)
Senior Consultant (15,502)	Consultant (537)
Project Manager (1,695)	Coordinator (459)
Consultant (1,200)	Economic Coordinator (400)
Research Consultant/Specialist (756)	Project Manager (400)
Research Officer (808)	
Program Coordinator (782)	
Project Coordinator (778)	
Coordinator (488)	
Hyphenated consultant and coordinator titles (≈4,000) such as development, process, HR, economy, management, logistics, marketing, information, communication, administration, research, academic (faglig), or education/didactic.	Hyphenated consultant- and coordinator titles (≈2,200) such as administrative, project, work environment, housing, exam, study, didactic, HR, and salary.

5.8.4. Appendix D: Salary distributions across staff categories

While the violin plot shows the relative change in composition, it does not convey changes in absolute numbers. The figure below shows the absolute salary distributions and the variation between the six staff categories. In terms of salary, the figure lays out the hierarchy both within and between the staff categories.

Figure D1. Salary distribution across staff categories
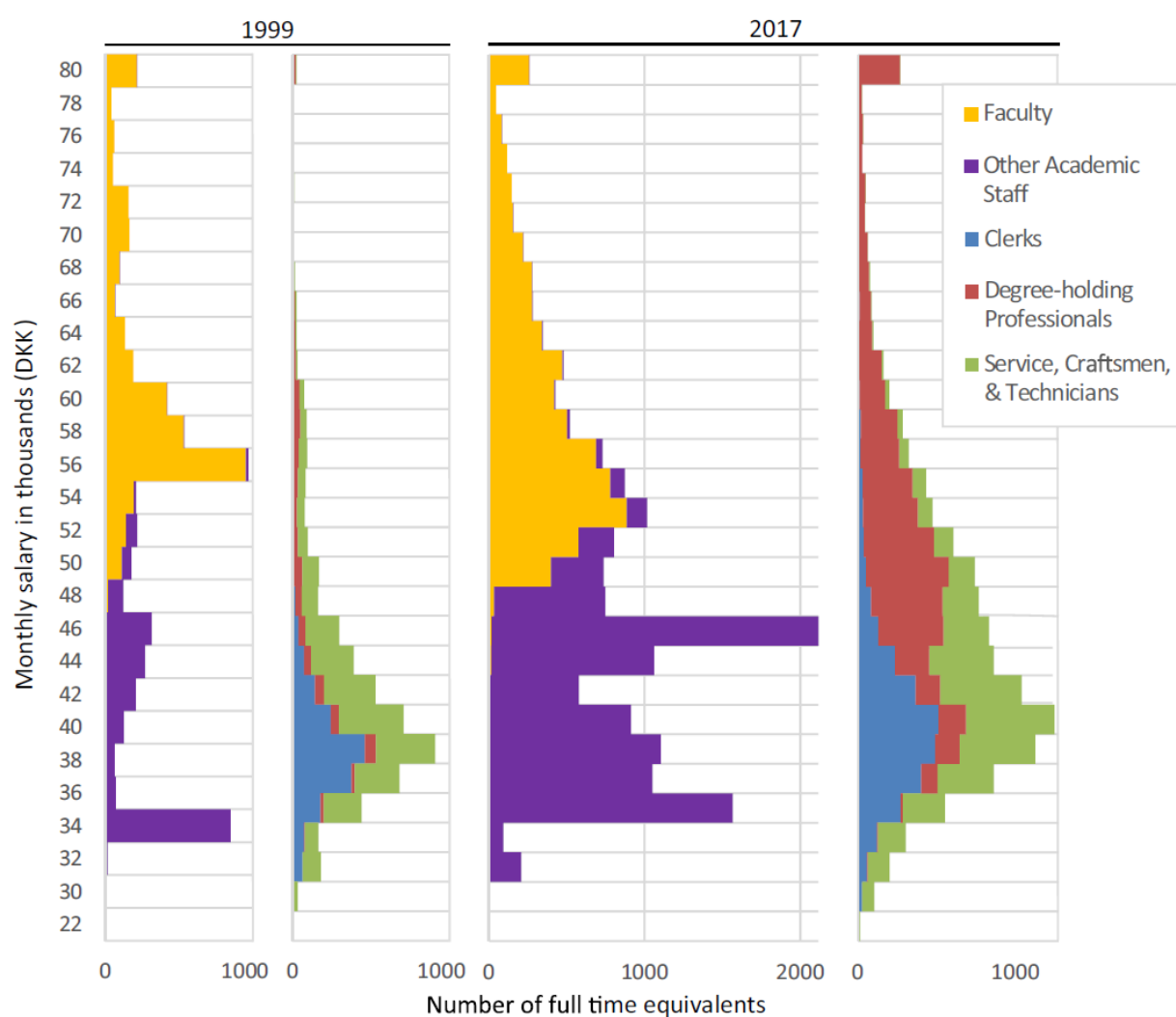
5.8.5. Appendix E: Salary across sub-categories

Table E1. Salary in thousands (DDK) across staff sub-categories

Staff sub-categories		Average monthly salary in 2017			Standard deviation	Pay rise 1999-2017
		All	**Top 10%**	**Bottom 10%**		
Clerks	Managers/Head of Units	45	65	33	10	71%
	Clerks & Officer	35	44	27	5	88%
	Consultants and Coordinators	43	58	29	8	-
	Other Staff	29	40	23	6	-
Degree-holding Professionals	Managers/Head of Units	77	118	53	19	105%
	Administrative Officers	42	51	33	5	75%
	Consultants and Coordinators	53	67	44	7	69%
	Other Staff	42	60	31	10	68%
Faculty	Associate professors	53	65	45	6	62%
	Professors	69	93	58	11	66%
Other Academic Staff	Academic Assistants	38	50	29	6	72%
	PhD Students	32	39	29	3	67%
	Teachers and other Lecturers	45	55	36	6	89%
	Temporary Faculty	41	48	35	3	64%
Service, Craftsmen & Technicians	Clinical Staff	39	55	28	8	59%
	Craftsmen and Technicians	40	54	30	7	75%
	IT Staff	43	57	32	7	83%
	Laboratory Technologists	35	43	28	4	89%
	Library and Student Counsellor	42	52	33	5	70%
	Service Personnel	33	51	24	8	73%

Following Moderniseringsstyrelsen's recommendation (2016), salary cover employee's basic salary, pension contributions, and regular supplemental payments for the 4th quarter's middle month (i.e., November) and 1/12 of their total irregular supplemental payments for the past 12 months, except paid-overtime, compensated leftover vacation and severance payment. Based on full-time positions' salary. 1,000 DDK=134 € or 166 $.

Chapter 6.
Changing managerial roles in Danish universities (article 2)

By Hanne Foss Hansen, Jonas Krog Lind and Andreas Kjær Stage, the article is published in *Science & Public Policy*.

Abstract

The article analyses changes in university managerial roles in the wake of a range of reforms, most notably a radical Danish management reform in 2003, using institutional work as the theoretical framework. Both qualitative and quantitative data is drawn upon, the former consisting of interviews with academics and managers on all levels, the latter in the form of payroll data for all Danish university employees. By combining these data in a mixed-methods study, the analysis reveals how managerial roles have changed slowly, steadily, and substantially in the years since the reforms, resulting in extensive change. The article hereby questions the resilience of universities as organizational incarnations of a traditional collegial template.

Keywords: University reform, managerial roles and recruitment, institutional work, universities as organizations

6.1. Introduction

Across Europe, reforms have pushed to transform traditionally collegial universities into more professionalized and hierarchically managed organizations; a change that should enable university managers to take strategic decisions and to be held accountable for their performance (Ramirez & Christensen 2013; Whitley & Gläser 2014). However, scholars of higher education and general critics of the reforms have highlighted the limited possibility for managers to organize and control academic activities that are characterized by highly unclear technologies and influenced by external scientific communities (Musselin 2007; Whitley 2008). Therefore, the European universities have been described as being resilient to reforms that impose a more hierarchical and corporate governance structure. Correspondingly, compliance with these types of reforms is often assumed to be rather superficial, where traditional academic practices are merely continued under new labels and rhetoric. As Drori et al. (2006: 21) note, 'it is an open question whether

universities only ritually adopt new and globally diffusing concepts and models stressing their actorhood, whether they are making fundamental changes in their institutional identities and actual organizational practices'.

This article investigates ways in which managerial roles have actually changed in Danish universities since a range of reforms, most notably a comprehensive Danish management reform in 2003. The management reform embodied a managerial template that emphasized the hierarchical nature of universities and the authority of managers. This template is at odds with the collegial template upon which the traditional Danish universities have been modeled for decades and which emphasizes the collegial nature of universities and professional autonomy.

In order to analyze changing managerial roles, this article uses the *institutional work* approach (Lawrence & Suddaby 2006), which emphasizes the capacity of actors to purposefully engage in strategic actions to either create, maintain, or disrupt institutional templates. In contrast to dominant branches of institutional theory, which emphasize institutions' resilience and their constraining effect on actors, the institutional work perspective emphasizes how micro-level actors can actually induce change.

Focussing on how actors promote either a collegial or managerial template, the article investigates how managerial roles have transformed after the state-led introduction of a clear line management structure. We particularly stress how the implementation process has stretched over a long period of time, making longitudinal data and general attention to the unfolding of events over time necessary when analyzing university change. The article asks the following research question: How can we characterize and understand the changes in managerial roles after a range of reforms in Danish universities? The overall results of the analysis challenges the common view of universities being resilient to change.

We combine longitudinal payroll data on staff composition with interview data with line managers in order to describe the formal emergence of new managerial positions and the qualitative change in the roles of these managers. This mixed-methods approach provides depth and breadth to the analysis.

The article is structured in six sections. Section two presents the Danish university governance reform trajectory and section three and four describes the theoretical framework and the methods used in this article. Section five analyses how the reform and reactions from actors have transformed managerial roles. Finally, the sixth section concludes the article and discusses the findings.

6.2. The Danish governance reform trajectory

Denmark is a small, unitary country in Northern Europe. Higher education is organised in the setting of the Nordic welfare model, based on the principle of universalism and high levels of public funding. Until recently, the post-WWII university history has been one of expansion (Hansen 2018). The current eight universities all offer undergraduate and graduate programmes, including PhD programmes, and are responsible for the major part of public research activities.

In the context of expansion and rising levels of public funding, the university field has turned into a high politics area, especially since the 2000s (Aagaard 2012). Reform has become part of everyday life. Most remarkable was the radical management reform introduced in 2003.

Prior to 1970, Danish universities were primarily organised according to principles of collegial governance. In the wake of the youth revolution in the 1960s, a democratic governance regime was launched in the 1970s (Hansen 2017). Decision-making bodies including representatives for academic staff, technical-administrative staff, and students were introduced, and managers were elected at all levels. In 1993, a reform was introduced which aimed at strengthening managerial power and opening up the universities to external influence. This also meant external representatives being granted seats in decision-making councils.

The 2003 reform resulted in a governance regime based on university boards with an external majority and an external chairman. Further appointed managers became mandatory for all universities. A bottom-up model was thus replaced with a top-down management model. With the exception of study boards, the former decision-making bodies were turned into advisory councils (Degn & Sørensen 2015).

In 2007, the management reform was followed by a comprehensive merger reform. The majority of former government research institutes (GRIs), all organized according to managerial principles, were merged into the universities, and some of the universities merged, lowering their number from 12 to 8 (Aagaard et al. 2016). Overall, the reform was anchored in ideas of economies of scale and aimed at further increasing competitiveness. Ministries and universities were to negotiate contracts about deliveries, where the aim was, in the longer run, to develop a contracting-out regime.

Finally, changes have also taken place in relation to funding. Most importantly, the level of external research funding of Danish universities has increased since the 2000s, now accounting for more than 45% of all research funding. Funding has also been directed more towards applied research and collaboration with industry (Aagaard 2017).

Summing up, the 2003 governance regime remains in place, albeit with adjustments. Managerial roles have clearly been strengthened formally, but the university boards still are obliged to secure a level of staff and student participation. Both managerial and collegial principles are, thus, present in the universities' current legal framework. However, it remains a contested issue how the formally strengthened managerial roles have been enacted in practice.

6.3. Theory

While the mainstream institutional theory has a dominant position in the higher education literature, few studies use the institutional work perspective (Cai & Mehari 2015). Most studies focus on the relationship between universities and their changing environment. The role of internal actors in implementing changes from the institutional environment has been underplayed (See Degn 2015b; Leišytė and Wilkesmann 2016; Teelken 2012 for exeptions). As Greenwood et al. (2011) have argued, institutional changes in the environment of organizations depend on organizational members that are attuned to such changes, without which new institutions may not translate into altered organisational structures and practices. In order words, somebody needs to do the institutional work within each respective organization.

Lawrence & Suddaby (2006, p. 216) define institutional work as 'purposive action aimed at creating, maintaining, and disrupting institutions'. They sought to accommodate better individual agency than traditional neo-institutional theory. In contrast to 'cultural dopes', actors are described as potentially creative and resourceful agents, who are capable of disrupting resilient institutions and shaping institutions (Lawrence et al. 2009, 2011; Lawrence and Suddaby 2006).

Universities have been highlighted as organizations in which much institutional work currently takes place (Cai and Mehari 2015), because of a recent clash between strong old and new ideas about how a university ought to be organized and managed (Kleimann 2018; Kraatz and Block 2008). The new institutional ideas impinging on universities originate, to a very large extent, from external pressures such as policy reforms and stakeholder demands. In this article, we simplify the institutional pluralism to two institutional templates: A collegial template and a managerial template.

The collegial template embraces the university as a loosely coupled organisation in which collegial governance and professional autonomy are the defining principles (Cohen et al. 1972; Weick 1976). Academic work should primarily be guided by global scientific communities rather than local organizational conditions (Crane 1972; Thoenig and Paradeise 2016). A minimum of

internal interdependency is expected to uphold external allegiances and professional autonomy. Centralised leadership has to be weak by design and changes are expected to occur via ongoing local adjustments. Inevitable cross-cutting decisions should be taken by bodies of elected peers and leaders (not managers) who are the 'first among equals'. Leadership is considered a service wherein the leader answers to their collegial constituency (Sahlin and Eriksson-Zetterquist 2016).

The managerial template draws inspiration from the mainstream organizational structure of private businesses (Brunsson & Sahlin-Andersson 2000; de Boer et al. 2007). Here the university is considered a coherent entity (rather than a loosely coupled organisation) that can instrumentally realize desired ends, and it should be run as a goal-oriented, integrated, and hierarchical organisation (Krucken & Meier 2006). The authority to make strategic decisions should be entrusted to a hierarchy of appointed managers, who are expected to develop their unit within a mandate from higher-level managers. Managers should be professional and use strategy work and accounting techniques to manage and secure quality in the organisation (Brunsson & Sahlin-Andersson 2000; Seeber et al. 2015).

It is well documented in the higher education literature that the professoriate has historically preferred the collegial template and have opposed or half-heartedly engaged with external pressures promoting the managerial template (Locke et al. 2011; Teelken 2012). It is therefore obvious that the managerial template does not replace the collegial template overnight – if ever. Arguably, the external pressures have instead led to a rather slow and gradual adaptation process, where the two templates co-exist and only partially mix over time (Bleiklie, Enders, et al. 2017; Hüther and Krücken 2018). In these cases where external pressures fail to transform institutions, scholars posit that it is common with disproportional growth of elements that mainly support emerging institutions, which is expected to eventually trigger the desired broader changes (Aagaard 2017; Capano 2018; Streeck and Thelen 2005).

Enders & Naidoo (2019) argue that the long-run external pressures on universities have spurred the *recruitment of* and *assignment of tasks to* many new internal "actors who mediate between the organisation and its environment, who provide meaning to institutional pressures, who can theorise the failure of existing norms and practices and provide legitimacy to new norms and practices. It calls for actors who have the social skills to exert coercive power or soft power, to influence agendas and frame arguments, to engage in persuasion and brokering, and to create space to bring together unusual elements or constellations of actors" (Enders and Naidoo 2019, p. 1292). Again, somebody needs to do the institutional work that is necessary to disrupt and shape institutions. In this article, we focus on the strategies of institutional

work related to *recruitment* and *assignment of tasks*, which are further operationalised below.

Lawrence and Suddaby (2006, p. 223) specifically highlight *the construction of identities* as a form of institutional work "central to the crating of institutions because identity describe the relationship between an actor and the field in which that actor operates." If those who hire managers begin to look for candidates with different mindsets and work experiences, we might see a change in the roles of managers more generally. For instances, recruiting managers from outside the respective university or with former managerial experience may be strategies to secure allegiance upward the hierarchy and towards appointed mandates (Zilber 2009). Internal candidates would likely have greater allegiance to their long-time colleagues. The formal assignment of increasingly specific tasks may affect the role of managers, as they are held accountable for something concrete that they have been tasked to solve. This may especially affect whom they feel accountable to. New specialized or subordinate managers and administrators may further illuminate the assignment of new tasks.

In this article, it is the collegial and managerial institutional templates that are subject to institutional work from actors within (and outside) universities. When we use the sub-strategies of institutional work, *recruiting*, and *assigning tasks*, it is their contribution to creating, maintaining, or disrupting these two templates; we are referring to.

6.4. Methods and data

This article combines quantitative payroll data on all university employees and qualitative interview data with managers and academics in order to reveal changes in the managerial roles in Danish universities.

This mixed methods approach accommodate the 'breadth and depth of understanding and corroboration' (Molina-Azorin 2018, p. 4). Firstly, the two types of data make broader claims possible: The depth from the qualitative data and breadth from the quantitative data enable us to make broader claims. Secondly, we use the two types of data to corroborate findings. For example, the qualitative data shed light on how managers were first hired long after the reform, which the quantitative data corroborated and further unfolded.

To collect the qualitative data, we employed a case study approach, which is particularly relevant for obtaining analytical depth and understanding complexity (Yin 2009). The 'maximum variation cases' selection strategy support making more general claims and somewhat generalising from the selected cases to the national university system (Flyvbjerg 2006). We selected the University of Copenhagen (UCPH) and Aalborg University (AAU) to represent

maximum variation on the commonly used continuum between old flagship universities and upcoming regional universities (Pinheiro et al. 2018).

UCPH is a traditional flagship university: It is the oldest Danish university (founded in 1479), ranked highest on most rankings, and located in the national capital. Historically, Humboldtian norms of academic freedom and the unity of teaching have heavily influenced UCPH. Its history stretches back to long before the democratic reforms in 1970/1973 and management reforms in 1993/2003. Hence, it has a strong cultural heritage of independence and academic freedom. AAU is on the other end of the continuum: It is a newer regional Danish university (founded in 1974), ranked low to medium on most rankings, and located the furthest away from the capital. It was founded after the first major Danish university reform, which was a time where various other, albeit internal, stakeholders (junior academic staff, administrative staff, and students) were included in the decision-making process. Hence, AAU do not have the same roots in the 'professorial rule' era and the same heritage of self-governance as UCPH.

By focussing on the similarities between these rather different universities and combining it with the payroll data for all Danish universities, we argue that general claims about changing managerial roles in Danish universities is possible.

Twenty-eight interviews[4] were carried out in 2016–2017, thirteen at the UCPH and fifteen at AAU. Ten respondents had top management experience as vice-chancellors, deans, or university directors, seven were middle managers (heads of department, heads of section, heads of schools, or heads of studies), and the rest were senior academic staff members (associate or full professors). At both universities, the fields of chemistry and sociology were covered. The interviews centred on questions about change processes and their consequences. They have been analysed using NVivo software and coded thematically according to the two institutional templates (collegial and managerial).

We combine these qualitative data with rich statistical data from a Danish payroll database (ISOLA) that store information about all university employees from 1999 to 2017. In total, it covers 256,320 individuals that have received at least a single salary payment from a Danish university during that period. It contains information about the individual's job title, workplace, and contracted working hours. Hence, the ISOLA data provides a long-term, wide-

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4 Collected as part of the FINNUT-PERFECT project, which analyses the effects of changing leadership and management structures in Nordic universities. While this was a Nordic collaborative research project, this article draws solely on the Danish interview data.

angled view of the development of formal managerial positions. The data is, however, limited to the formal job titles assigned by employment contracts and can therefore not detect less formalised workplace roles such as senate/committee membership or leaders elected among peers.

6.5. Analysis

This section analyses how managerial roles have changed after a range of reforms, most notably the comprehensive management reform in 2003. The first and central part of the analysis (5.1) investigates the changes directly related to the 2003 reform, while the second part (5.2) briefly analyses how other coinciding reforms (mergers and research funding) have indirectly affected the managerial roles.

6.5.1. The 2003 reform and changing managerial roles

Prior to the management reform in 2003, Danish universities had very few full-time line managers. Most decisions were instead made by academics in collegial bodies. Leadership roles (e.g., head of department, dean, or senate member) circulated among senior colleagues on the basis of collegial elections and were generally only part-time and secondary to one's main position usually as an professor (Christensen 2012; Pedersen 1982). The 2003 reform turned selected 'managerial roles' into full-time and primary 'line manager positions'. The university boards were to appoint rectors who appoint deans, who in turn appoint department heads (Degn & Sørensen 2015). This new line manager hierarchy was envisioned to professionalize the management, allow more strategic decision-making, and increase external accountability (Wright & Ørberg 2008).

The management reform in 2003 was a coercive but distance form of institutional work by the government. Lawrence and Suddaby (2006: 221) highlight the act of changing formal rules as an typical trigger of institutional change processes. They label such as 'defining', which refers to 'the construction of rule systems that confer status or identity, define boundaries of membership or create status hierarchies within a field'. The reform assigned new formal roles for managers at all levels in the university and abolished the former powerful collegial decision-making bodies.

However, the formal introduction of new managerial positions in 2003 did not change the governance of Danish universities overnight. The transformation process had already started prior to the 2003 reform, albeit slowly, but it was greatly accelerated by the reform. Still, the following analysis clearly show that the transformation has since then been relatively slow but steady. The roles and authority of the managerial positions have been developing over

time as a result of an interplay between the institutional work of managers and academics.

It is evident from both the payroll data and the interviews that the implementation of the 2003 reform has been a long, ongoing process. Firstly, the positions had to be negotiated and established formally, after which the managers had to be appointed according to the new rules, and the managers then had to simultaneously make sense of their new roles and act within them (see also Degn 2015). It is possible to track the shift to a fully-fledged line management by the conversion of traditional managerial roles (i.e., research director, head of department, dean, and rector, as well as deputies) too full-time managerial positions in the payroll data. Figure 1 shows the development across Danish universities.

Figure 1. The number of FTEs on dedicated line manager contracts, all Danish universities 1999–2017
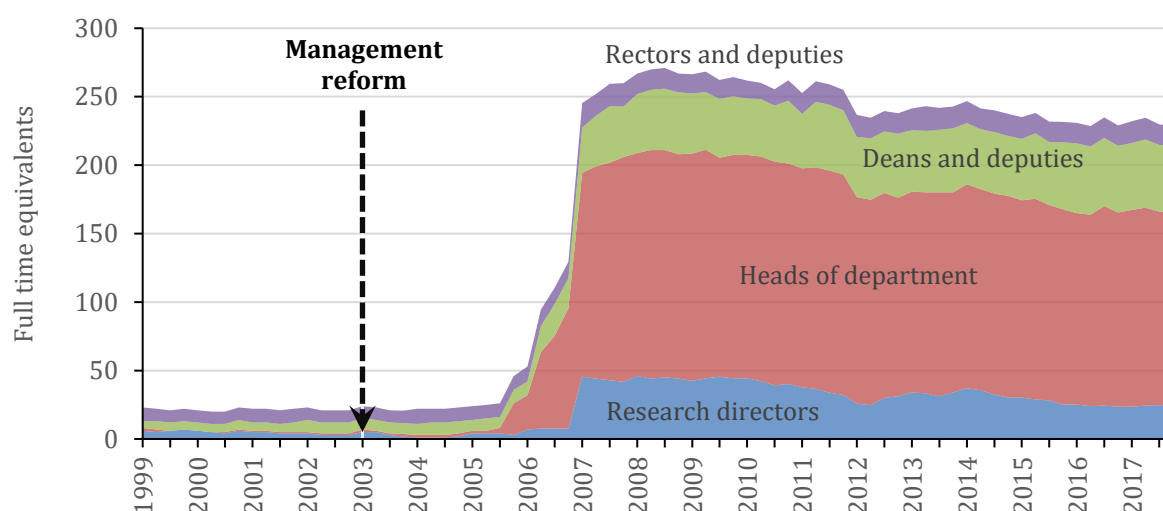
In total, over 200 new positions were formally established in Danish universities from 2006 to 2007 (i.e., 3–4 years after the University Act). This is one of the explanations for the prolonged transition phase from the initial reform in 2003 to actual changes in managerial roles.

The increases from 1999 to 2017 illustrated in Figure 1 are somewhat misleading if interpreted purely as an indicator of resource-intensity, as management obviously also required resources before the reform. It is unknown how many de facto FTEs were spent in 'managerial roles' prior to the implementation of the University Act. Still, Figure 1 shows the abrupt appearance of a large number of line managers with significantly different contractual powers and conditions than the former elected leaders, who did not have dedicated, full-time managerial contracts and therefore figured in the payrolls by their academic titles.

Figure 1 also sheds light on the distribution across the different line management levels, which almost resembles the classic, pyramid-shaped hierarchy. The installation of numerous heads of department on full-time and formal manager contracts was a key element in the construction of a cohesive line management system (see also Degn 2015). As they are appointed downwards and responsible upwards, they represent an important link between the empowered upper management levels and the separate departments in which the more concrete institutional work can be done.

The overall impression from the interviews is that line managers now find that they have considerably more de facto power than they had immediately around the time of the reform. They have agendas, adhere to mandates received from above, engage wholeheartedly in strategy work, use performance funding indicators as management tools, and perform tougher HR-policies. In the following, we elaborate on these changes and point to the institutional pressure and work responsible.

6.5.1.1. Hiring Managers

An important aspect of *constructing identities* (Lawrence and Suddaby 2006: 223) that work more along the lines of the managerial template, is the practice of recruiting and hiring new types of managers.

According to the interviewees, constructing such identities have been a prolonged process. Firstly, it took some time before the terms of the sitting elected managers ran out and new ones were appointed according to the new rules. This delay was illustrated in Figure 1 by the emergence of managers 3-4 years after the reform. Secondly, many members of the first generation of appointed line managers were former elected leaders. The interviewees highlighted that these 'first-generation managers' brought both legitimacy and a leadership culture from the former governance regime with them into their new role. These managers were characterised as 'staff-supporting', mostly doing institutional work in line with the collegial template such as emphasising their accountability to the academic base. Figure 2 shows how many years the first generation of line managers (those appointed in 2006/2007) remained in office and how their share of all line managers has gradually waned over the years. About half of them had been replaced by new line managers in 2011, and 10% of the line managers in 2017 have held managerial positions since 2006/07. Hence, Figure 2 illustrates the persistence of the first generation of line managers, who have been replaced over a long stretch of time. This development may offer further explanation for the slow pace with which new management practices have developed.

Figure 2. The persistence of first-generation line managers (those employed according to the new rules in 2006 and 2007), all Danish universities 1999–2017
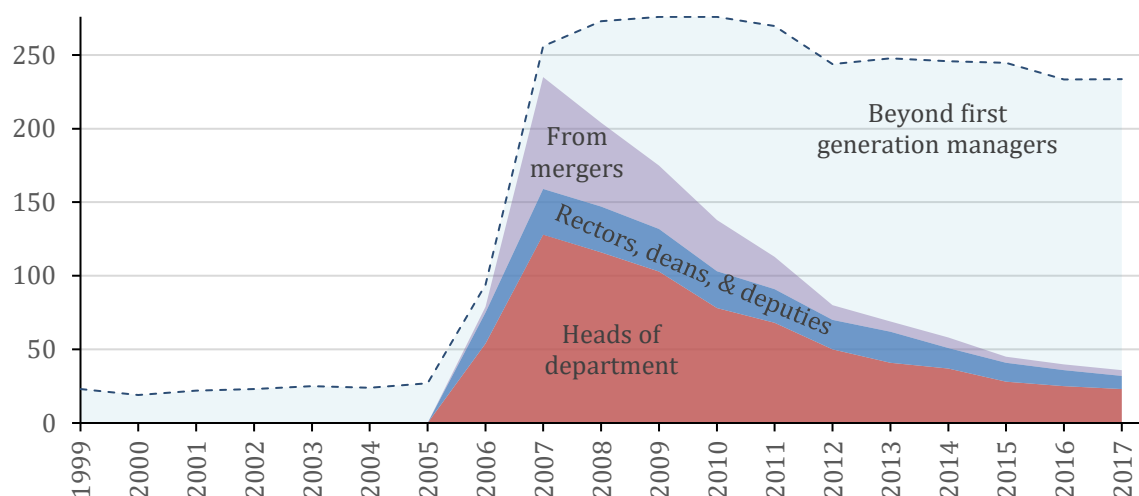
The hiring pattern is further illuminated by scrutinising from where the managers have been recruited. Prior to the 2003 reform, all managers were internally recruited through collegial elections. The new University Act made it formally possible to hire line managers from outside the university (albeit required to be 'recognised researchers'). Figure 3 illustrates the extent to which upper managers use the new strategic possibility to recruit department heads externally, which can be a form of institutional work aimed at disrupting old institutions.

While most heads of department continue to be recruited from within the same university, around 25% of those in office in 2017 were recruited from another Danish university or from outside the university sector. Moreover, the mergers brought in managers with more managerial backgrounds, which will be elaborated on later. Over time, it has become slightly more common to recruit department heads from other universities. A similar development has been the case for deans and deputy deans, whereas it has been less common to externally recruit rectors and deputy rectors until the last 5 years of the period, at which it increased sharply. In 2017, seven out of the sixteen rectors and deputy rectors were recruited from other universities. One can debate whether these numbers are high or low, but it definitively shows that the new possibility to hire externally is not merely a formal possibility, which was made possible by the policy reform, but something that has been practiced routinely.

Figure 3. Initial recruitment source[a)] of the heads of departments on dedicated manager contracts, all Danish universities 1999–2017
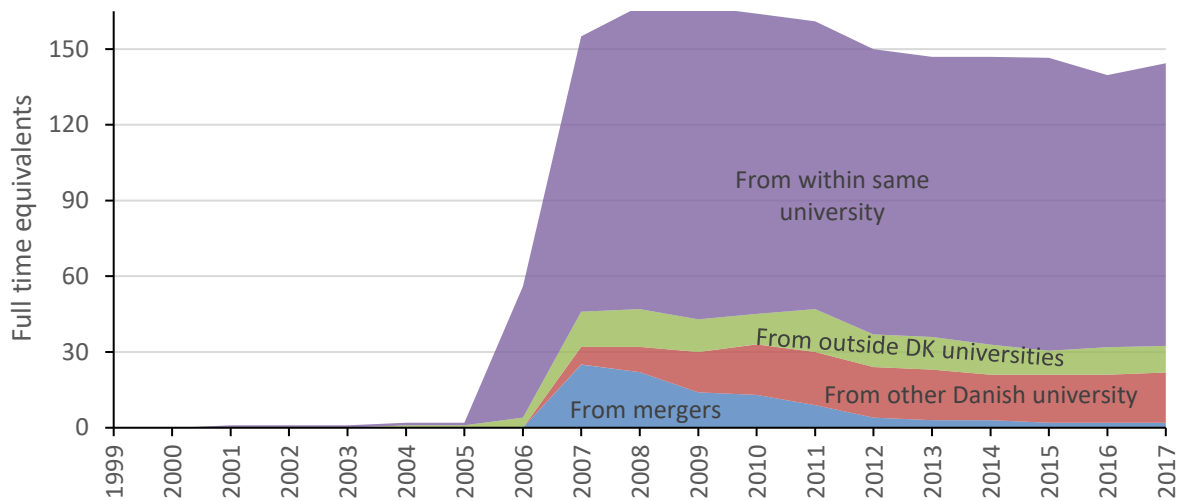
Note: The job position of managers one to two years prior to appointment is the indicator. If a manager appears in the dataset prior to appointment, it can be determined from where they were recruited; and if a manager does not appear in the dataset, they have thus been recruited from outside the Danish universities.

External recruitment was described in the interviews as a strategy to secure the allegiance of lower-level managers towards the upper-level managers (or board members) who hired them. Externally recruited managers have no shared or close history with the employees in their unit and feel less obligated to follow the sentiments from below as an internally recruited candidate managing their former colleagues (and perhaps go back to being an ordinary faculty member at some point).

6.4.1.2. Assigning Tasks and Giving Mandates

Another aspect of constructing identities is how upper managers assign tasks to subordinate line managers as well as administrative managers. An interesting observation from the interviews was that it has become normal to hire managers with a more or less specific mandate. We encountered, for instance, a rather weak mandate to 'turn the ship around' (Manager, University of Copenhagen, DK5), a more concrete mandate to initiate a cultural change from an individualistic to a more collaborative culture (Manager, University of Copenhagen, DK4), and a strict mandate to turn around a financial deficit by, among other means, firing low-performing academics (Manager, Aalborg University, DK3). Hiring managers who are willing to follow assigned mandates has apparently become more common over time. As one dean vividly explained, his hiring practices had changed over time, preferring department heads who had strategic ambitions over those who would merely 'run the shop' (Manager, University of Copenhagen, DK8).

124

As shown elsewhere, particularly upper managers must be attentive to the demands from their institutional environment (Kraatz 2009). Hence, an explanation of the time from reform introduction to practice change is probably that the top management feels the pressure to conform to the new role-expectations more deeply. The practices of these managers have then to 'trickle down' over time to lower level managers. According to the interviewees, former managers and most of the first-generation managers did not have these prior mandates imposed from above. The practice of assigning mandate to managers seems to be a form of institutional work that further the managerial template. This has been one of the strategies for upper managers to secure the allegiance and accountability of lower-level managers.

In addition, the proliferation of managerial responsibilities and mandates have increased the need for administrative managers and personnel to whom the line managers can assign tasks. Here, it is important to note that the 2003-reform integrated the formerly separate academic (e.g. rector, deans) and administrative (university director, faculty directors) hierarchies into one unified administrative and managerial hierarchy in which line managers were given broader administrative responsibilities. In practice, all administrative managers are under the authority of a line manager: The university director answers to the rector, the faculty director answers to the dean, and so on. Hence, the numbers and categories of administrative managers indicate the changing capacities and priorities of the line managers.

It is clear from the payroll data that the administrative hierarchy has expanded in parallel to the line management hierarchy (see also Stage & Aagaard 2019). This expansion further consolidates and empowers the line management, as institutional work can be done by assigning tasks to the non-academic staff in a significantly more direct fashion than to the largely self-reliant academic staff. Figure 4 shows the full set of administrative manager job titles[3] in Danish universities in 1999 and 2017, respectively, and how many FTEs each represents. In addition to an increasing number of administrative managers, Figure 4 makes clear that whole new types and layers of top- and middle management have emerged (e.g. deputy director, division manager, communication manager).

Figure 4. The volume and composition of the top administrative manager and director job titles[a)] in Danish universities in 1999 and 2017
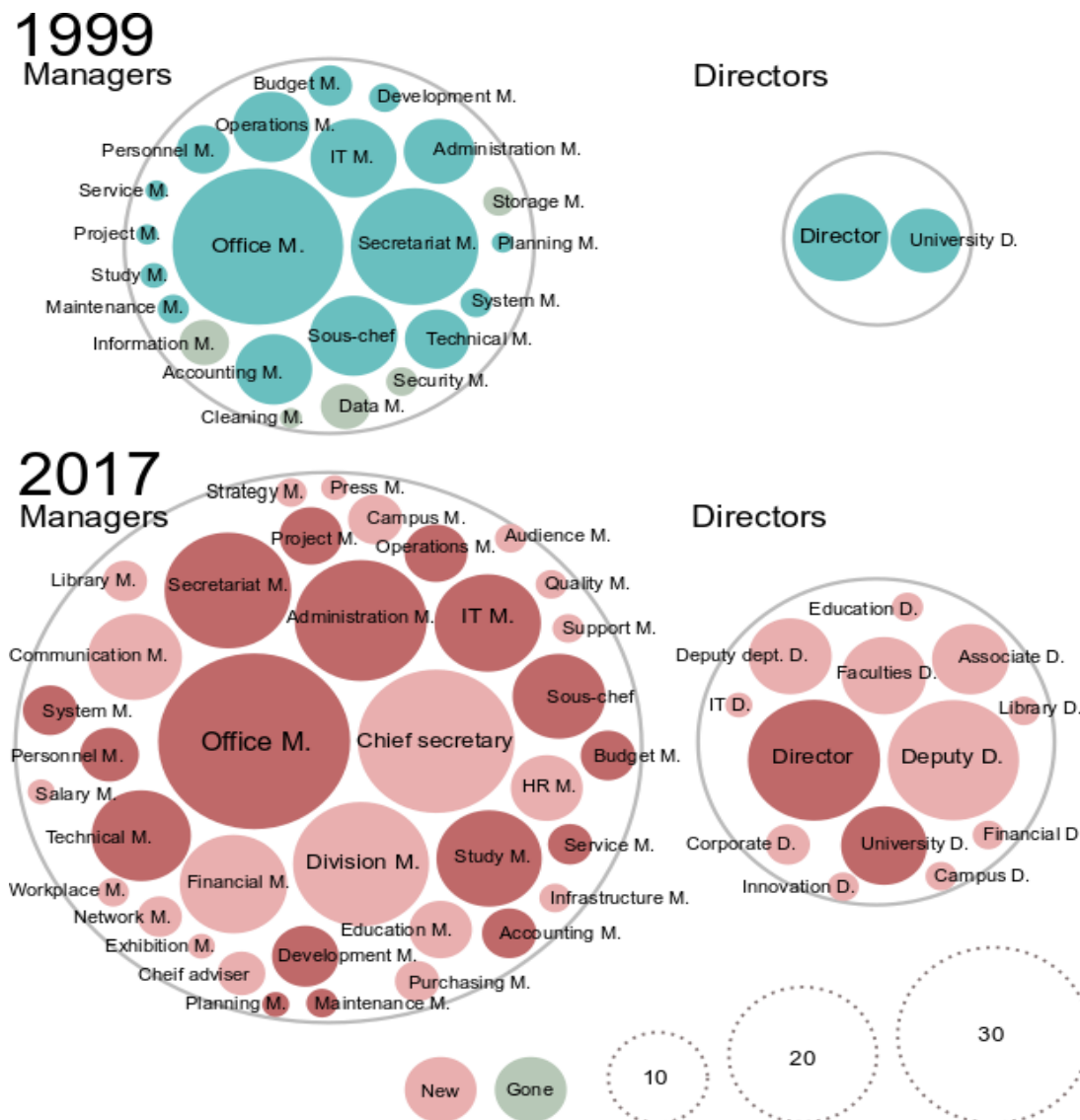
Note: In the Danish nomenclature, there is a hierarchical relationship between the titles director (*direktør*), manager (*chef*), and leader (*leder*). Figure 3 covers all job titles containing either *direktør* or *chef*, except senior consultants (*chefkonsulenter*). The original Danish titles of selected categories: *kontorchef* (office manager), *chefsekretær* (chief secretary), *sekretariatschef* (secretariat manager), *afdelingschef* (division manager).

The parallel expansion of the line management and administrative hierarchies reflects an ongoing process of departmentalization on multiple organizational levels. Administrative capacities have been built around the various line managers and around cross-cutting services of strategic importance (see also Gornitzka et al. 2009). In addition, the groups of employees to whom top administrative and line managers increasingly assign tasks have been profoundly professionalized over the last two decades. Figure 5 shows the growing share of administrative staff that holds a university degree and who receive on

average 35% more in salary than the traditional administrative staff (usually clerks) (Stage & Aagaard 2019).

Figure 5. The share of administrative staff with a university degree in Danish universities, 1999–2017
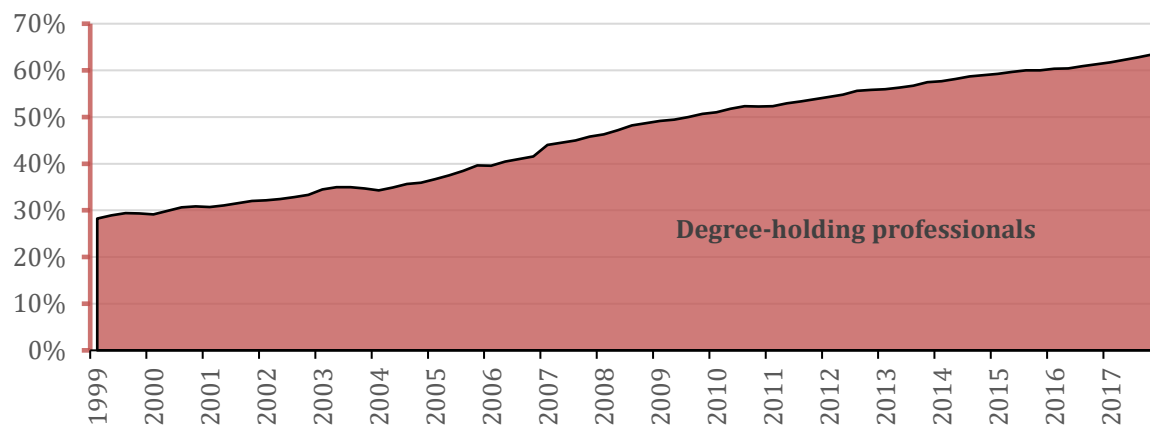
Scott (1995:64) writes about how 'a managerial cadre has emerged, ready to support a more executive leadership, in place of the docile clerks who had instinctively acknowledged the innate authority of academics'. This observation is in line with more recent qualitative studies that also find that the surging degree-holding professionals differ from the more traditional types of administrative staff (usually clerks) in terms of loyalties, work tasks, attitudes, skill sets, levels of discretion, internal and external networks, and employment conditions (Rhoades et al., 2012; Ryttberg & Geschwind, 2017; Schneijderberg & Merkator, 2013; Whitchurch, 2012).

A concrete example of how the tighter integration within the administrative and managerial side is practiced in Danish universities is the growing tendency to construct leadership teams involving both academic and administrative managers. These teams are used in particular as a platform for assigning tasks across internal units. While not required by the law, the interviews make very clear that leadership teams have become widespread ways of coordinating internally. Leadership teams are described to increase cohesion, turning the universities into more managed and coherent actors. Such teams exist at all organizational levels at each of the two case universities, but it varies how they work. However, a tendency at both universities is that the university-level leadership team does indeed work very much as a cohesive team, facilitating strategic action for the university as a whole. A practice has developed in both case universities whereby the rector assigns responsibilities to the deans across the faculties. This can be interpreted as a powerful form of institutional work aimed at *constructing identities* (T. B. Lawrence & Suddaby 2006). This practice forces deans to think about the good of the university in terms of their

specific university-wide responsibility, and this role might well spill over to other parts of their work as deans. The interviewees reported the faculty-level leadership teams as having less an effect as uniting department heads in the common interest of the faculty. Here, deans have also refrained from introducing cross-department responsibilities for department heads, as at the university level.

The new hiring practices and assignment of tasks contribute to the development of a more strongly coupled line management structure along the lines of the managerial template, as managers are expected to loyally implement the policies decided by upper-level managers. While not necessarily the case, this may at times be in conflict with the trend to hire managers with their own strategic ambitions, where the role of the strategist and entrepreneur is emphasized. But the mandates handed down by upper management appear to give direction to the efforts of lower-level managers.

6.4.1.3. Creating, Removing or Changing Bodies of Influence

Another type of institutional work undertaken by university managers is the creation, removal, or change of bodies of influence. In line with the operationalisation of roles, we see these acts as a structural means of assigning tasks.

The already-discussed introduction of leadership teams is an important example of the creation of a new, albeit informal, body of influence. Department councils offer another example. After the 2011 reform, which emphasised the need for better staff involvement, re-introducing department councils was the answer at most universities. However, the University of Copenhagen recently decided to abolish these councils. This can be interpreted as manager-led institutional work aimed at creating a governance structure without elements associated with the collegial template. The explanation was that department councils were not relevant since matters were resolved in other fora; first and foremost, the collaboration committees (*samarbejdsudvalg*). Interestingly, the abolishment of the department councils never resulted in any public counter-reactions of institutional work directed at maintaining the collegial template (e.g. debates in the media).

Another example of bodies receiving new roles was found at one of the departments at Aalborg University. Here, the department head reformed the council from the original role of securing staff influence on local decision-making to functioning more like a working group for organising seminars, preparing the annual report, assessing new professors, etc., and instead used the informal leadership team as the place for organisational deliberation and decision-making. Interestingly, none of the interviewed academics from the respective departments expressed dissatisfaction with the development, and the

department head reported satisfaction among the academics with the arrangement.

All of these recent developments are examples of institutional work aimed at disrupting the collegial template and strengthening the managerial template. They can also be seen as changes to the tasks of academics who are moved further away from tasks associated with organisational decision-making.

It is interesting that both cases of removing and changing bodies of influence have met so little resistance through institutional work. The development in the academic workforce provides some basic cues as to why this has been the case. Figure 6 shows the number of pre-reform and post-reform academic staff (faculty and other academic staff). Pre-reform staff covers those who were employed at the current eight universities before the 2003 reform (also those who changed academic category after the reform), whereas post-reform staff covers those who were hired (or absorbed through mergers) after the 2003 reform. As Figure 6 illustrates, the vast majority of current academic staff has been hired *after* the 2003 reform. This trend even applies if we consider only the permanent faculty in Danish universities.

Figure 6. The number of pre- and post-reform academic staff
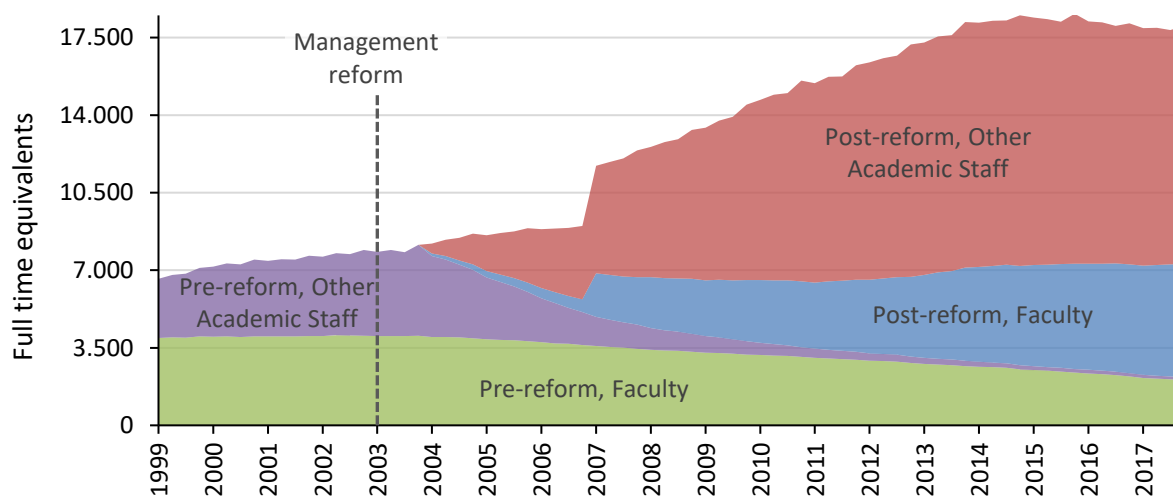
The academic majority have therefore not experienced any other governance regime than the present, which may partly explain the low resistance when remnants of the former collegial regime (e.g., bodies of influence) have been abolished or changed. Moreover, the growing majority of post-reform academics may also be a part of the more general explanation of the apparent success of managers to actually expand their roles over time. The new generation of academics has 'grown-up' with the regime of appointed, powerful

managers; they have possibly come to perceive it as the 'normal' and legitimate way of governing contemporary universities.

6.4.1.4. De-coupling of Management Decisions

While the aforementioned forms of institutional work seem to reduce or even disrupt institutional elements from the collegial template, there are also strategies helping to keep it alive. Different kinds of de-coupling of management decisions can be seen as examples of institutional work aiming at this. In line with the operationalisation of roles, we see de-coupling as strategies that serves to undermine efforts of managers to assign tasks to lower level managers or academics.

In one department, a publication performance system introduced by the dean was ignored by academics, and the head of department did little to further compliance (Manager, University of Copenhagen, DK4). Likewise, there are examples of deliberately ignoring strategies from above in the production of a local department strategy; in one of the departments, a system for registering teaching activities was ignored by academics and eventually terminated (Manager, University of Copenhagen, DK15).

These strategic acts can generally be seen as visible reactions when values connected to the collegial template are threatened. But the template itself and the taken-for-granted values associated with it also hold great power and limit the extent to which the managerial template gains ground. In general, for academics and managers alike (especially at the department level), there is an understanding that managers cannot do anything they wish without some level of backing from the academic base. This understanding was often stated as 'fact', emphasizing the taken-for-granted nature of the collegial template. As one manager commented, 'well, in the end, you can't do much as a leader if you don't have backing' (Manager, University of Copenhagen, DK5). Hence, the managerial roles in universities are still infused with values from the collegial template. However, the extent to which this conviction is salient varies substantially between universities, units, and individuals. The collegial template was undoubtedly more present at the University of Copenhagen, the longer history, strong academic culture, and deep traditions, as emphasized in the methods section, than the newer and more entrepreneurial Aalborg University.

6.5.2. Influences of further reforms

The second part of the analysis describes how subsequent reforms have interplayed with the management reform and in many ways strengthened the shift

towards the managerial template. The focus is on the merger reform in 2007 and changes in research-funding mechanisms.

6.5.2.1. Mergers

The merger reform boosted the managerial template because the GRIs had a culture built more on the managerial template and less on the collegial template than the traditional universities (Christensen & Pallesen 2003). As Figure 7 shows, a rather large number of people from the absorbed units were employed as line managers after the mergers. Many of these occupied a similar managerial position prior to the mergers, which indicates an initial continuation of the existing organizational groupings. However, it is also clear that several of these transferred managers were either replaced or phased out over a few years.

Figure 7. Line managers stemming from the organizations merged into the current universities
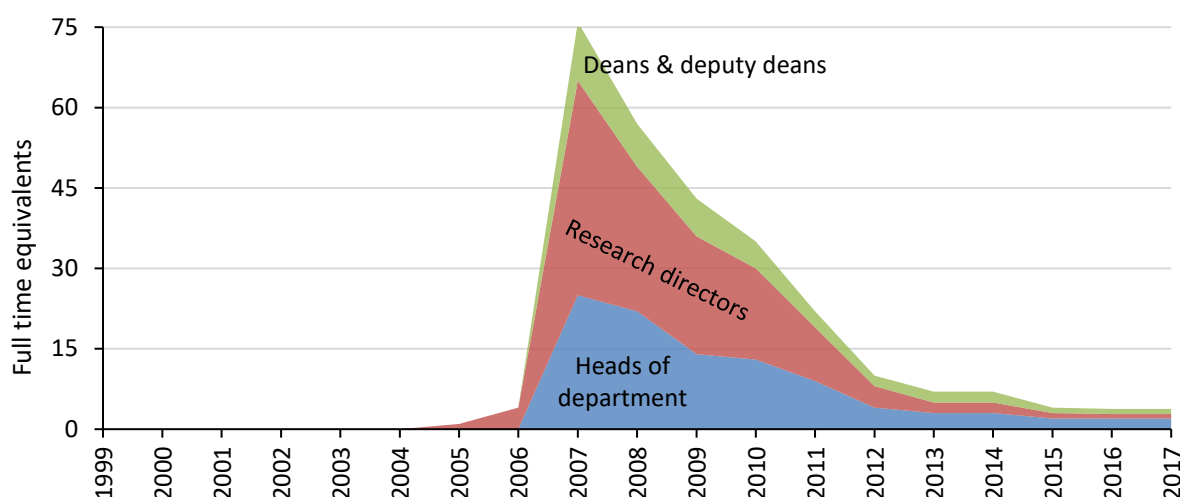
In line with these findings, the interviewees describe how the absorbed organizations were initially organized into the universities in federal structures, buffering the existing university cultures from the newcomers. In most places, however, the federal structures were re-organized after years aimed at integrating the two types of cultures. This is also backed up by the data in Figure 5, where we see that, over time, new managers take over the position of the former GRI managers (or the positions are changed due to internal reorganizations).

Finally, the mergers can be seen as the first real test of the new managerial regime as well as a reform that further pushed the implementation of the new managerial roles. It placed even more strategic decision-making in the hands of the top line management teams. For some universities, the possibility of

merging was also seen as a risk of losing opportunities to grow and expand their activity portfolio. Merging with other universities or GRIs required substantial strategic leadership.

6.5.2.2. Research Funding Mechanisms

The increase in external funding has ambiguous effects on the role of managers. On the one hand, the increased external funding takes decision-making power away from the management, placing it instead with the funders of research and, to some extent, with the researchers applying for funding (Aagaard & de Boer 2017; Lind et al. 2019). Virtually all of the interviewed managers nevertheless view this as a legitimate way of distributing funding. Managers do not want to interfere excessively with the funding researchers apply for, respecting academic freedom and recognizing that motivation drives performance. Hence, in terms of competitive research funding, the collegial template remains strong, putting limits on what is seen as legitimate for managers to control.

On the other hand, the development seems to spur a logic of 'budget-maximisation' among line managers. As one manager puts it, even 'money from hell' (funding without overhead, with co-funding, and huge administrative costs) is welcome. The interviewed managers accept external funding as a condition, but it also pushes academics to acquire further external funding, for example, by linking funding success to career advancement. They are also increasingly hiring new types of administrators and setting up research support units to help researchers with their applications and to direct them towards sources of funding they find of strategic importance. Another type of strategic initiative mentioned in the interviews involves different forms of seed money, for instance, directed towards participating in large-scale EU funding programs. Hence, in response to increasing external funding, it becomes evident that managers on all levels have developed an increasingly pro-active role in which they try to steer and manage the external resource environment. Changes in the external resource environment, therefore, seem to have opened up for institutional work by the managers who further support the managerial template.

In addition to the changes in external funding, changes in how bloc funding for research is allocated internally has affected managerial roles. In 2010, the existing performance-based research funding system related to basic research (PRFS) was reformed. Prior to this reform, a small percentage of the basic funding for research was distributed among the universities according to performance on student throughput, external funding acquisition, and PhD production. However, the lack of a quality measure of research performance

spurred reform, which added bibliometrics to the model. The new element was counts of publications, divided into two levels yielding different points.

While the universities initially attended little to this, it later became a managerial tool in some universities (and specific units within universities). This reflects how, after this reform, managers largely used accounting techniques associated with the managerial template in their new managerial roles. Managers implemented the model differently, which demonstrated their extensive discretion, in theory as well as practice, in how to react to the national model (see Lind 2018 for an elaboration of the argument). Especially at Aalborg University, where management introduced the national system as the distribution model for the local budget, this pushed the competition between faculties, departments, and researchers. The local use of the system strengthened the aforementioned budget-maximisation logic and further strengthened the managerial template (see also Mouritzen et al. 2018).

6.6. Discussion and conclusion

From an international perspective, the Danish university management reform of 2003 was rather radical, as it markedly changed the formal organizational structures by introducing an executive governance system that, in its formal reform elements, resembles the elements in the managerial template. This paper has shown how coercive policy reforms in Denmark – and the reactions from various actors to them – effectively transformed collegial managerial roles into an empowered hierarchy of appointed line managers, who have very actively enacted their powerful roles within a new line management structure. The decisions of university managers have furthered the managerial template, in which the hierarchical nature of universities and the authority of managers are emphasized at the expense of the collegial template. The changes have by no means been neither superficial nor a clear continuation of the traditional university model.

However, if one were to take stock of the impact of the reform in the years immediately following, one might have concluded that due to a resilient collegial template, the universities de-coupled the reform from having a substantial effect on how managers carried out their roles. As we found, it took time for the new roles to become formally established (as shown in Figure 1). The first generation of managers employed under the new regime took the mindset of the former regime with them to some extent. They remained in office for some time before a new generation took over (as shown in Figure 2). In that regard, the universities displayed some initial resilience to the new governance regime.

Over time, the collegial template seems to have been clearly weakened. Today, the managerial practices in Danish universities are substantially different compared to before the reform and the first few years after. The changes are the results of ongoing institutional work by a range of local actors (especially managers). As the analysis has shown, actors promoting the managerial template have been the most active, persistent, and successful. Internal actors, mostly top and middle-managers, have pushed for the enactment of the managerial template, making the formal hierarchy gradually more accepted and legitimate.

Changes in hiring practices and the assigning of tasks have been instrumental to this end by constructing new managerial identities. The universities have used the new option in the University Act to hire managers from outside the university. Especially the option to hire managers from other Danish universities has been used consistently, and it has become slightly more common over time (as shown in Figure 3).

We found that managers are increasingly given new mandates and cross-cutting tasks, which have strengthened upwards accountability and attention to the interests of the university as an organization. To help managers support the hierarchy, they have hired a range of new types of administrative managers (as shown in Figure 4) and highly educated administrative staff (as shown in Figure 5).

The tendency for managers to be more instrumental and strategic seems to come from the top and trickle down to lower levels. As mentioned, this might be explained by the fact that top managers are more intensely confronted with the institutional pressures from the environment. Top managers routinely interact with various representatives from the ministry, funding agencies, interest organizations, etc. In these relations, they are exposed to the ideas about management that these organizations promote. These non-university organizations operate in an institutional environment dominated by New Public Management ideas about how to govern universities.

The gradual but steady enactment of new managerial roles has not merely been due to the implementation of the new formal roles afforded by the 2003 management reform. Later reforms not directly related to management have also affected the managerial roles in Danish universities. Both the increasing external funding of research throughout the period and the revised PRFS from 2010 have pushed managerial roles further towards the managerial template, especially by inducing logics among the managers regarding budget maximization and management by objectives.

These findings point to an important conclusion in this article: Changing managerial structures by law does not in itself change the practice of university management. Persistent institutional work has been needed from internal

and external actors in order to push for managerial practices to align with the formal changes.

There are, however, also internal actors engaged in institutional work to maintain the collegial template. This is especially salient in the tendencies for both lower-level managers and academics to de-couple from top-down initiatives. The collegial template also clearly remains active, operating on a more taken-for-granted level. While actors still think there are limits to what managers can decide, this analysis has shown how these limits are constantly changing and generally seem to be moving in the direction of the managerial template.

In the introduction, we quote Drori and colleagues for asking the 'open question', whether universities only ritually adopt new concepts and models stressing their actorhood or 'whether they are making fundamental changes in their institutional identities and actual organizational practices' (Drori et al. 2006:21). With the analysis presented in this article, we would argue that the development in Danish universities is closest in line with the latter statement. Our study thus advances current debates about how managerial cultures develop across time in universities due to both shifts in governance regimes at the macro level and institutional work at the organizational level. Further studies, comparative or otherwise, could further illuminate the explanations behind the development of the managerial culture, as it relates to, for instance, university anchored managerial training programs and new managerial career paths.

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Chapter 7.
Are national university systems becoming more alike? Long-term developments in staff composition across five countries (article 3)

By Andreas Kjær Stage, the article is published in *Policy Reviews in Higher Education.*

Abstract

National university systems have traditionally been characterized by major differences in both internal structures and external conditions. However, recent comparative studies show that the global rise of the knowledge economy has made the external conditions of universities change in similar ways. This paper investigates to what extent this convergence has been mirrored *within* the universities by systematically comparing staff changes over more than a decade in five countries: The United States, the United Kingdom, Germany, Norway, and Denmark. Measures of staff changes are partial but tangible indicators, which are reasonably comparable across countries and over time. The empirical analysis isolates and examines two parallel staff trends, which the higher education literature currently highlights as crucial for ongoing university transformations: Proliferation of temporary academic staff and professionalization of administrative/managerial staff. In doing so, the analysis provides a tangible empirical basis for assessing the impact of global trends on historically distinct university systems. Staff compositions have changed in the same direction, but from different starting points and with different intensity. Staff changes have been larger in Europe than in the US, but not in ways erasing major historical differences. The directional similarity rather suggests that dissimilar universities have added a similar layer of certain types of human resources.

Keywords: Staff composition, Organizational change, National university systems, Convergence, Universities as organizations, World Society Theory

7.1. Introduction

National university systems have developed from different historical starting points, but to what extent are they developing in the same direction, and how similar have they become over time? This paper examines these questions by exploring changing patterns of staff composition in five university systems with distinctly different historical legacies: The United States, the United Kingdom, Germany, Norway, and Denmark. It provides a new empirical basis for grounding conceptual claims of long-term university transformation.

Burton Clark' seminal analysis of university systems (1986) clearly established that universities in different countries and over many decades have developed dissimilar *internal structures* as a result of dissimilar *external conditions*. He found the largest variation to be between state- and market-coordinated university systems. Universities were organized more flexibly and with stronger central management when the market-coordinated most external conditions. On the other hand, the universities were organized more rigidly and seemed more internally fragmented in systems mainly coordinated by the state.

In the face of the rising knowledge economy, Clark (1998, 1986) simultaneously observed and endorsed a general shift toward the market-coordinated model of universities: 'The state-led pathway is clearly not one appropriate for change in complex universities in the fast-moving environments of the twenty-first century. System-wide changes are notoriously slow in formation and blunt in application' (Clark 2004, p. 182).

Clark's view resonated with – but also fuelled – a transnational reform movement of university systems initiated in the early 1990s, especially in Europe (Rhoades and Stensaker 2017). Three interrelated developments have been particularly significant globally: Firstly, an "modernization" agenda linked to the development of New Public Management (NPM), demanding a more cost-efficient production of public sector services (Brunsson and Sahlin-Andersson 2000). Secondly, devolution of responsibilities to universities in a 'steering from a distance' governance approach, demanding increased accountability and managerial control at the organizational level (Paradeise et al. 2009). Thirdly, a proliferation of quasi-market solutions compelling universities to compete with one another and participate more directly in the expanding knowledge economy (Slaughter and Rhoades 2004).

Comparative research has rather convincingly shown that these interrelated developments – at a general level – characterize recent changes in the *external conditions* of universities across countries, moving them jointly toward greater market-coordination. This move has been observed both in

countries with a long tradition of market-coordination and state-coordination (Dobbins and Knill 2014; Paradeise et al. 2009; Shattock 2014).

It is a prevalent assumption in the higher education literature that universities across countries become more alike because they face similar pressures, for instance, Leisyte and Dee (2012, p. 124) writes, "[g]iven the isomorphic pressures that research universities face in increasingly competitive institutional environments, we argue that the changes in academic work conditions may be converging in European and US universities, although to various degrees". Focusing on the Australian case, Marginson and Considine (2000) claim that the diffusion of market-coordination makes universities converge on an enterprise model of organization. The general storyline portrays the change as a move away from predominantly collegial institutions toward more professionalized and hierarchically managed organizations. This change is frequently assumed to enable senior staff to take strategic decisions and to be held accountable for general performance (Krücken and Meier 2006; Ramirez 2013; Whitley and Gläser 2014).

It is, however, obvious that several of the major dissimilarities that have set national universities apart historically, as highlighted by Clark (1986), continue to this day to be defining features of each national university system (e.g., the chair system in Germany, huge endowment funds in the US, or elaborate welfare states in the Nordic countries). Therefore, scholars stress that the apparently similar move toward greater market-coordination affects the national university systems differently due to an interplay with dissimilar deep-rooted structures at both the system and organizational level. Hence, universities may develop less uniformly across countries than portrayed by the general storyline (Michelsen and Bleiklie 2013; Musselin 2007; Paradeise and Thoenig 2013; Whitley 2012).

A nuanced understanding of university convergence/divergence across countries requires knowledge about changes in both *external conditions* and *internal structures* (Ramirez and Christensen 2013). Currently, there exists far more longitudinal and cross-country evidence about changing *external conditions* (e.g., national policy regulation, funding mechanisms, and public discourse) than about changing *internal structures* (Rhoades 2017; Seeber et al. 2015). It remains uncertain what the apparently joint move toward a marked-coordinated university model entails in practice within universities. To counterbalance the extensive evidence on external conditions, Dobbins, Knill, and Vögtle (2011, p. 665) posit, 'there is a need for more specific empirically observable indicators'.

7.1.1. Approach: Staff changes as an indicator

This paper proposes staff changes as one such indicator, which targets the internal structures of the universities. Change in the proportional size of staff categories is a tangible indicator, which is reasonably comparable across countries and over time. Although only a partial indicator of organizational change, a division of labor between different role categories is at the heart of the very idea of an 'organization' (Brunsson and Sahlin-Andersson 2000). Hence, this approach provides a tangible empirical basis for assessing the extent to which the five historically distinct university systems move toward a shared organizational model. From this outset, the paper examines whether signs of convergence can be detected when developments in time series of staff composition (covering more than a decade) are compared systematically across five countries: The US, the UK, Germany, Norway, and Denmark.

Many higher education scholars highlight broad patterns of staff changes as a consequence of changing external conditions (e.g., Ginsberg 2011; Krücken and Meier 2006; Maassen and Olsen 2007; Paradeise et al. 2009; Shattock 2014; Slaughter and Rhoades 2004), and the move toward a market-coordinated model of universities (Clark 1998; Marginson and Considine 2000) is generally seen to entail 'a fundamental restructuring of professional employment' (Rhoades and Stensaker 2017, p. 130). The literature highlights, in particular, two parallel staff trends (Fumasoli et al. 2015; Gordon and Whitchurch 2010; Rhoades 2017): Firstly, an expansion of temporary and diverse positions within the bottom strata of the academic hierarchy (Hurlburt and McGarrah 2016; Milojevic et al. 2019) and secondly, a professionalization of the administrative and managerial staff within an extended hierarchy of specialised offices (Kehm 2015a; Krücken et al. 2013).

Although one can infer staff changes by various methods, most scholars evoke at some point a quantitative notion of change in the proportional size of specific staff categories over time. Such claims most often rely rather passively on crude figures produced by national data agencies; surprisingly few researchers work actively with longitudinal staff data (for recent exceptions, see Baltaru 2018; Baltaru and Soysal 2017; Stage and Aagaard 2019). Staff figures are therefore often used and compared as they are without much context when setting the scene for a broader argument. No thorough comparative analysis of proportional staff changes exists (see Fumasoli et al. 2015, for a comprehensive interview- and survey-based study on the changing academic profession; and see Schneijderberg and Merkator 2013, for a broad review of studies on non-academic professional staff).

This paper improves comparison of five national staff datasets a) by outlining their technical differences, b) by presenting them in an 'as-comparable-

as-possible' format, and c) by interpreting them in context by taking national traditions into consideration. The empirical contribution is twofold: An analysis of the databases themselves and a comparative analysis of their content.

A central empirical challenge is to isolate and examine the two parallel staff trends in a comparable way. They represent a restructuring *within* each side of the traditional academic/non-academic divide; however, the possibility to disaggregate these two overarching categories varies between the five countries. Existing single-country staff studies have provided guidance about data possibilities, limitations, and interpretations. This paper draws on the same data sources and the same elementary staff categories as those existing national studies but unpacks, combines, and presents the datasets in a new format and with updated data series. The ambition is to make the relevant cross-country staff trends stand out more clearly when populations are aligned, data details are listed, and figures are formatted as similarly as possible.

This paper is organized as follows: The second section describes how partial convergence in external conditions is presumed to be followed by partial convergence in internal structures. The third section contains an analysis of the five datasets, outlining the possibilities of comparing them. The fourth section subsequently offers an analysis of each national university system, while the fifth section provides a comparative cross-country analysis. The sixth and last section discusses the extent to which convergence has actually occurred *within* the universities across the five countries.

7.2. Dual convergence: External conditions and internal structures

World Society Theory has previously been used to explain a level of convergence between national university systems (Dobbins and Knill 2009, 2014) and broad university patterns such as expanded access, rationalised governance structures, and increased emphasis on social usefulness (Baltaru and Soysal 2017; Logue 2014; Ramirez 2006, 2010, 2013).

According to the World Society Theory, external conditions and internal structures are expected to converge when globalization intensifies (Meyer et al. 1997). The central argument for convergence is that legitimacy, rather than functional efficiency, is the primary determinant for formal structures. It asserts a close link between external conditions and internal structures. Instead of gambling with risky idiosyncratic arrangements, national systems and organizations are presumed to embrace solutions that are already widely valued by their environment (DiMaggio and Powell 1983; Meyer and Rowan 1977).

The claim is that a globalized system impinges on national universities, 'influencing their development by invoking the "best practices" of "world-class" universities [and university systems]' (Ramirez and Christensen 2013, p. 697). Thus, the theory predicts that partial convergence of external conditions will be followed by a partial convergence of internal structures.

However, the thesis of convergence has been contested with reference to local path dependency and decoupling (Hüther and Krücken 2016; Whitley 2012). It is claimed that national university systems differ so much historically that they will continue to follow different pathways of change behind the facade. This contestation does not refute the rise of world models but emphasizes that century-long variation impedes short-term convergence at both the system level and the organizational level. Instead, it is claimed that world models are pragmatically translated and edited on the basis of local traditions and pathways, and actors respond to formally similar conditions in diverse and half-hearted ways, resulting in the continuance of dissimilar structures across countries (Musselin 2007; Paradeise and Thoenig 2013; Whitley 2012).

Such contestations moderate the expectations for cross-country convergence, and from this perspective, a degree of persistent national variation is expected to be evident in conjunction with potential signs of convergence (Hüther and Krücken 2016).

7.2.1. Convergence of external conditions

Claims about a convergent move toward market-coordination trace back to Burton Clark's studies of university systems (Clark 1986; Dobbins and Knill 2014). His 'triangle of coordination' captures both an emerging similarity and an enduring variation in the external conditions of national universities. It depicts the state authority, the market, and the academic oligarchy as the three main dimensions that determine, through their interaction, how a given national university system is coordinated. Countries are located in the triangle by the relative weighting assigned to each of the three dimensions (Clark 1986, 2004).

Scholars have elaborated on Clark's rather basic framework, adding important nuances to comparative university governance research (de Boer, Enders and Schimank 2007; Dobbins et al. 2011; Ferlie et al. 2008; Olsen 2007; Paradeise et al. 2009). However, it is beyond the scope of this paper to unfold these nuances, as its main purpose is to discern changes in university staffing across countries. Clark's well-established framework outlines the major historical differences in external conditions.

In updating Clark's triangle, Figure 1 shows an approximation of the five countries' different starting points and their direction of change over the last

few decades. Their respective location in the triangle is derived from three large comparative projects (Dobbins and Knill 2014; Paradeise et al. 2009; Shattock 2014). In general, it shows a convergent move toward the market-coordinated model. However, it also shows that the countries have had different starting points and intensity of change, and hence that a substantial degree of variation in national external conditions persists (Michelsen and Bleiklie 2013).

Figure 1. The different starting points and direction of change of the five university systems in terms of external conditions surrounding the universities
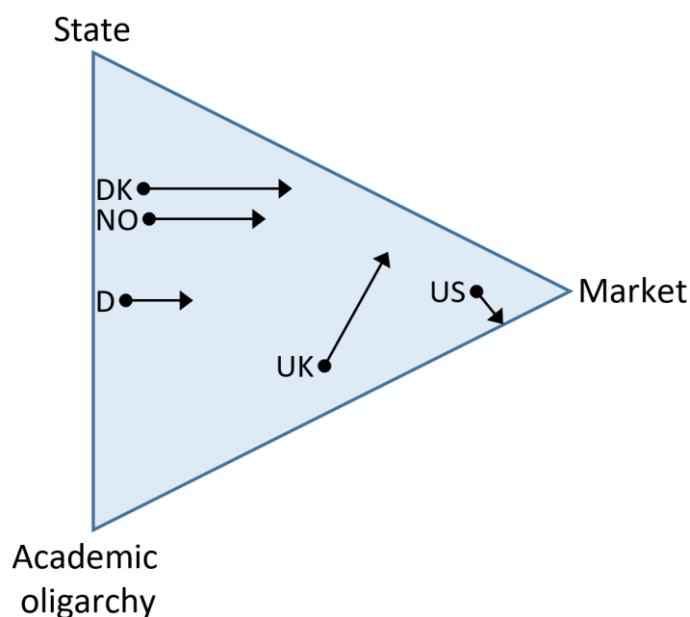
The analysis section will later present a brief description of each country's historical pathways and recent developments in more detail.

7.2.2. Convergence of internal structures

As with the convergence of *external* conditions, claims about converging structures *within* the universities also trace back to Clark (1986). Back in the 1980s, he observed that universities in state-coordinated systems had a different organizational structure than universities in market-coordinated systems. In state-coordinated systems, the central managerial and administrative level played a peripheral role, making the universities pluralistic and bottom-heavy organizations with low potency for collective action. The central level mainly consisted of clerks and local academics elected as temporary managers by their colleagues. The main actors influencing the activities in universities were the state and the academic oligarchies; the state decided on most financial and

administrative matters top-down, and the professor-dominated oligarchies decided on the academic activities bottom-up (Clark 1986).

Contrary to this, Clark observed (1986) that the central managerial and administrative level played a more central role in market-coordinated university systems. Here, the central level consisted of a professional management and a system of specialised offices. In addition to the academic oligarchies, managers and administrators were key actors setting goals, gathering information, formulating and executing plans, and evaluating progress on behalf of larger sub-units or the organization as a whole. Due to withdrawn state bureaucracies, the universities were here responsible for a broader range of operative and strategic decisions as individual organizations. They were mostly free to organize in ways that they deemed right in order to exploit various external quasi-markets. It gave an organizational flexibility that Clark praised (1998).

As the external condition of national university systems since then have moved in the same direction, it has repeatedly been suggested that the internal structures of universities also have moved in the same direction (Bleiklie and Kogan 2007; de Boer, Enders and Leisyte 2007; Krücken and Meier 2006; Marginson and Considine 2000; Paradeise et al. 2009; Rhoades and Sporn 2002). The remaining part of this paper investigates empirically to which extent such a convergent trend can be detected in staff changes across selected countries.

7.3. The five national datasets

The five countries were chosen for analysis partly based on the availability of disaggregated datasets previously analyzed by native scholars and partly based on their distinct historical variation in terms of state/market-coordination and national reform intensity. The small countries, Denmark and Norway, are both included to assess convergence among seemingly similar national university systems.

The five analyzed datasets on staff composition all stem from official registers used for accountability and oversight, but the ways in which they are constructed vary between the countries. However, they overlap sufficiently on important parameters to warrant comparison, most importantly in terms of period, data type, population, and categorization. The datasets are equal in categorizing the totality of employees on the universities' payroll according to their formal job attributes such as title, contract type, education, union, and/or status group. Table 1 provides an overview of the characteristics of the five datasets (see appendices A and B for further technical details).

Cross-country data variation is mitigated by three strategies. Firstly, a key strategy has been to unpack each of the national datasets and match the various staff subcategories into five fairly comparable staff categories (described in the following section).

Secondly, it has been attempted to align the populations and periods of the different datasets as closely as possible, because some of the datasets cover more diverse types of higher education organizations than others (e.g., hospital units and teaching-centered universities have been excluded) and occupational definitions have changed over time. Since cross-country data variation already complicates the analysis, only the longest period of consistent data is included per country in order to avoid adding intra-country data variation.

Despite aligned populations, periods, and staff categories, one still needs to keep cross-country data variation in mind when comparing the 'same' category across datasets. Such comparisons need to be done interpretatively, and to accommodate such reflexivity; a third strategy has been to explicate and discuss the characteristics of the national datasets and the national university systems.

Table 1. Overview of the five national datasets

	US	UK	Germany	Norway	Denmark
Period	2003–2011	2003–2011	2005–2017	1999–2017	2002–2017
Data type	Mandatory audit survey	Membership audit survey	Mandatory audit survey	Compilation of official registers	Payroll register
Frequency	Annual, cross-sectional (Nov.)	Annual, retrospective	Annual, retrospective	Selected years, cross-sectional	Quarterly, cross-sectional
Population	Research universities (Carnegie)	Research universities (Leiden Ranking)	All universities	Four universities	All universities
Categorizer	Local data providers	Local data providers	Local data providers	Researchers	Researchers
Basis for categorization	Job titles and funding records	Job titles, contract type, and highest held qualification	Job titles and status groups	Job titles	Job titles and collective agreements
PhDs on payroll	Ad hoc, part-time	Ad hoc, part-time	Ad hoc, part-time	Full-time	Full-time
Degree-holding minimum	Bachelor or equivalent exp.	Bachelor	Bachelor	Selected high-status job titles	Master
Faculty	Tenure or tenure-track	Open-ended contracts	Professors	Associate professors and above	Associate professors and above
Basis for FTE-computation	Full- (1/1) and part-time (1/3)	Contract duration and workload	Full- (1/1), part- (1/2) and short-time (1/5)	Contract duration and workload	Paid hours
FTEs (latest year)	1,180,000	187,200	212,200	20,020	31,000

148

Source[a)]	IPEDS	HESA	Destatis	NIFU	ISOLA
Key reference	(Rhoades and Frye 2015)	(Baltaru 2018)	(Krücken et al. 2013)	(Gornitzka et al. 2009)	(Stage and Aagaard 2019)

a. The Integrated Postsecondary Education Data System (IPEDS), Higher Education Statistics Agency (HESA), Federal Statistical Office of Germany (Destatis), Nordic Institute for Studies in Innovation, Research and Education (NIFU), and the Danish Agency for Modernization – Ministry of Finance (ISOLA).

7.3.1. Categorization

The main purpose of the categorization is to isolate the two parallel staff trends that seem to be characteristic of the move toward the market-coordinated model of universities: The dual rise of temporary academic staff and professional non-academic staff. Building on the work of Gornitzka and colleagues, these rising categories can be isolated from the totality of university employees by applying four general staff distinctions (Gornitzka et al. 2009; Gornitzka and Larsen 2004):

academic	↔	non-academic staff
permanent	↔	temporary staff
administrative/managerial	↔	technical/manual staff
degree-holding	↔	clerical staff

Following these rather simple distinctions, it is possible to sort the large number of various subcategories in each dataset into five fairly comparable staff categories. It should, however, be kept in mind that the categories are not completely identical across countries, despite efforts to streamline them, because staff structures and reporting categories differ between the countries.

The overarching distinction between academic and non-academic staff is often taken for granted and built into formal systems (Fumasoli et al. 2015). This is also the case for these five national datasets where all subcategories were explicitly marked as either academic or non-academic. The distinction between permanent and temporary applies to academic positions (Figure 2), and it is a tangible distinction that cuts across the different academic career structures employed in the respective university systems (Fumasoli et al. 2015; Teichler et al. 2013). Although an American term, 'faculty' will denote academic staff on open-ended contracts for all the five country-cases.

Figure 2. Permanent/temporary staff distinction
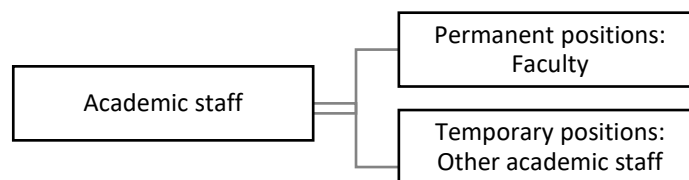
Two distinctions apply to the non-academic positions (Figure 3, Baltaru 2018; Gornitzka and Larsen 2004; Krücken et al. 2013): Firstly, the distinction between 'administrative and managerial staff' and 'technical and manual staff'

applies to all non-academic positions. The 'technical and manual staff' category usually holds quite different educational backgrounds and competencies than the other non-academic positions, and it covers diverse positions that contribute to the comfort, convenience, and hygiene of personnel and students or to the upkeep of the university's property; for instance, caretakers, cleaners, catering personnel, craftsmen, technicians, engineers, laboratory technologists, and librarians. Some technical staff also perform direct research support functions, in particular, laboratory technologists and a subset of technicians and librarians.

Figure 3. Two key non-academic distinctions
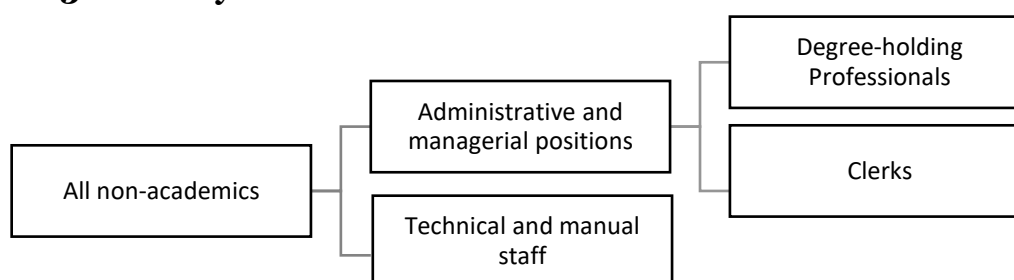
Secondly, the educational distinction between 'degree-holding professionals' and 'clerks' is here only applied to the administrative and managerial staff. Employees with a university-degree are separated from those without. The datasets are not disaggregated in ways that would enable one to specific actual tasks of the two groups of administrative staff. However, several scholars find that degree-holding professionals generally differ from the more traditional administrative clerks in terms of work tasks, attitudes, skill sets, discretion, networks, etc. (Schneijderberg and Merkator 2013). It is usually employees holding a university-degree that perform the new roles conceptualized as 'managerial professionals' (Rhoades and Sporn 2002), 'new higher education professionals' (Klumpp and Teichler 2008), 'third space professionals' (Whitchurch 2013), and 'audit-market intermediaries' (Enders and Naidoo 2019).

7.3.2. Analysis of proportions

Each of the datasets covers the full payroll of the universities and counts in the format of full-time equivalents (FTEs); it is therefore possible to analyze the development in the relative size of staff categories over time. Such an analysis of proportions captures each system as a whole, contrary to studies relying on headcount growth rates of selected categories (e.g., Gornitzka and Larsen 2004). The really interesting thing about staff developments is how a given

category develops *relative to all* other categories. Descriptive statistics of proportions give four main dimensions for analysis:

- Relative size (% of total)
- Intensity (% changed)
- Direction (Up/down)
- Timing (Years)

The cross-country data variation complicates comparison and involves both substantial differences between the national university systems (e.g., no associate professor level in Germany) and technical differences between the national databases. The latter primarily covers variation in the categories' lower threshold of inclusion (e.g. whether PhD students are on the payroll or what the minimum qualification of degree-holding professionals is) rather than principle differences.

Despite persistent data variation, the analysis captures the major shifts between the five staff categories, in particular, when major data-practicalities are taken into account. It provides a tangible heuristic basis, stimulating one to reflect upon the similarities and differences in the development of the five historically distinct university systems.

7.4. National case analyses

The following five national case analyses describe the historical roots and recent developments of each university system. Most importantly, they highlight the distinct historical backdrops against which the cross-country staff changes should be interpreted. In addition, similar formatted charts provide a detailed view of longitudinal staff changes for each country. While this section is mainly descriptive, the subsequent comparative section is more analytical and contains a cross-country summary chart.

7.4.1. The United States: The stable one

The US university system is shaped by the fact that the first universities preceded the emergence of public governments and established professions (Rudolph 1990). The early US universities (private and public) developed independently as highly hierarchical organizations competing with one another for funding from external benefactors and students. In general, they were 'built at the institutional level, from above, by managers; they were not constructed from below by faculty guilds [as in the European countries]' (Rhoades and Sporn 2002, p. 15). The historical importance of university managers and external stakeholders for the US academic profession gave rise to the ideal of

'shared governance' (Dill 2014). Hence, the US system has historically been characterized by self-reliant university organizations competing on market terms.

The US university system is a federal one, which has devolved almost all university governance matters to the individual states. The extensive devolution combined with historically self-reliant universities has resulted in a considerable horizontal and vertical differentiation. 'To date, neither the US federal government nor the states have attempted to regulate the internal governance of colleges and universities' (Dill 2014, p. 192). A comparative analysis of the university systems concludes that 'the most successful university system in league table terms, the US, has also been the most stable in institutional governance and continues to pursue the concept of shared governance' (Shattock 2014, p. 19).

Nonetheless, the financing of US universities, especially public ones, have become even more dependent on third party funding, student tuitions, and revenue generation in recent decades, not least after the world recession (Geiger and Heller 2011). Public universities have faced a relative decline in the state's share of total revenues, from around 43% in 1985 to under 25% in 2015 (Leisyte and Dee 2012; NCES 2016). For-profit universities have accented the revenue competition, comprising 7.7% of all enrolments in 2008 compared with 2.5% in 2000 (Geiger and Heller 2011).

As states have reduced their funding, their relationship to universities has shifted toward accountability and performance measurement, and scholars argue that this heightened market-coordination has increased managerialism within US universities (Bess 2006; Rhoades and Frye 2015). Most academics have thus become more "managed professionals" who are subject to greater division of labor and oversight by various authorities (Finkelstein et al. 2016; Rhoades 1998). In this process, the tenured faculty members that secure revenues have gained more control over core academic activities within their respective branches of learning (Finkelstein et al. 2011; Leisyte and Dee 2012).

Figure 4. Staff composition at US universities, 2003–2011
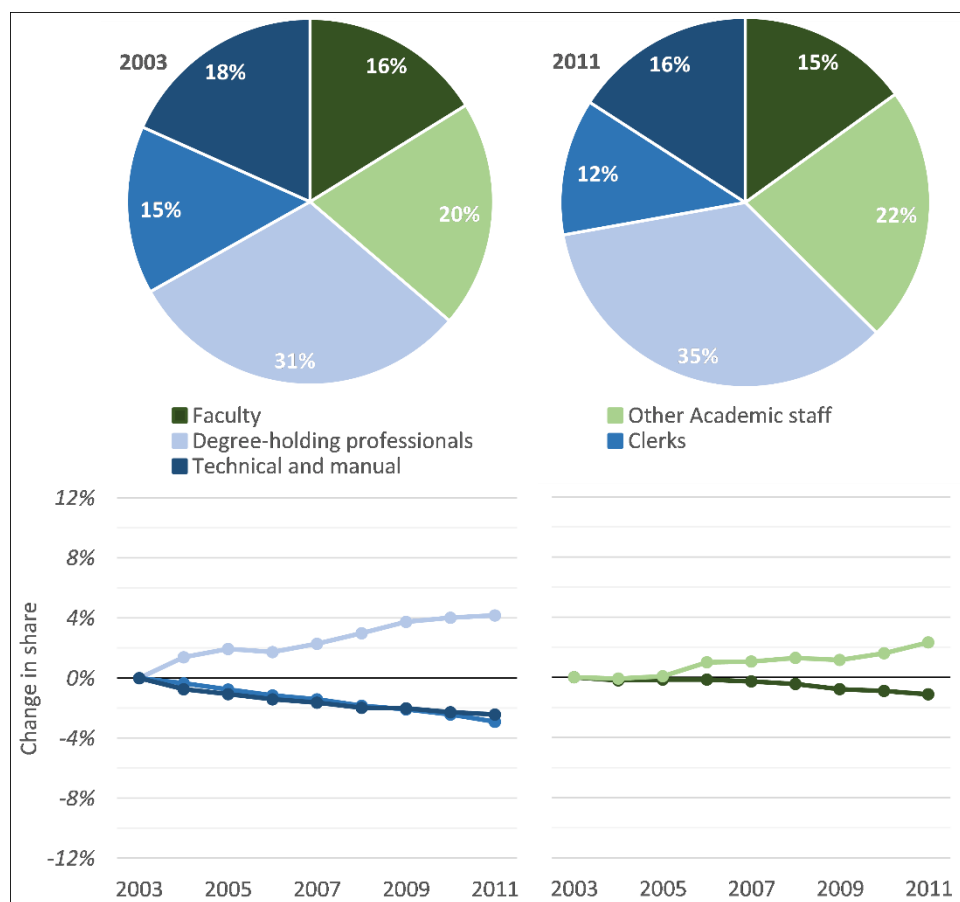
As Figure 4 shows, the share of academic staff in the US universities has grown slightly relative to the non-academic staff. In general, the relative size of the two academic categories has been reasonably stable except for smaller changes in 2006 and during the last few years of the period. Here the share of 'other academic staff' increased, whereas the share of 'faculty' decreased. On the non-academic side, slightly larger changes have taken place. In particular, the bulky category of 'degree-holding professionals' has expanded in relative size, while the two other non-academic categories have decreased side by side.

7.4.2. The United Kingdom: The NPM-pioneer

The UK university system is rooted in the elitist and teaching-centred Oxford-legacy articulated by Cardinal Newman in the 1850s, which idealises the university as a 'cloistered group of intellectuals pursuing the truth for the truth's sake and turning out well-rounded students versed in the liberal arts' (Burnes et al. 2014, p. 1). Since the founding of Oxford and Cambridge around 1200 through the University of London in 1820 to the civic universities in the 1900s, the UK universities 'owe their origins to independent benefactors and to charging fees to students. Even when they became fully funded by the state in

154

1945, they retained their independence and autonomy as if they were privately funded' (Shattock 2014, p. 22). Hence, the UK system has historically been characterized by a strong profession organized in autonomous universities operating largely on market terms.

The UK system is, in principle, a federal one, but the UK government has rather coherently issued the primary governance and funding regulation (tuition fees being a notable exception). The system has a high degree of horizontal and vertical differentiation, mainly brought about by historical privileges and competition. Since the beginning of the 1980s, the UK system has been a 'pioneer' in terms of NPM-inspired reforms (Burnes et al. 2014; Paradeise et al. 2009): 'The UK has been more continuously radical than any other European country in reforming funding mechanisms and in adopting internal structures to respond to changes in funding methodology' (Shattock 2014, p. 210).

A landmark decision in 1981 by the Thatcher government cut university funding by 25% over three years and allocated these funding reductions unevenly across universities using performance criteria. This massive intervention inaugurated an increasingly regulatory approach by successive governments (Burnes et al. 2014, p. 7). In the subsequent decade, funding was further coupled to competition and performance criteria, not least by the Research Assessment Exercise (RAE) (later the Research Excellent Framework). In 1992, the divide between universities and polytechnics was abolished, changing the 'university' landscape considerably by mixing governance models and untying research and teaching. The UK universities' adaption to reformed external conditions has 'radically questioned their traditional governance structures' (Hüther and Krücken 2018, p. 10), diminishing collegial powers in favor of a line management style of decision-making (Shattock 2014).

Figure 5. Staff composition at UK universities, 2003–2011
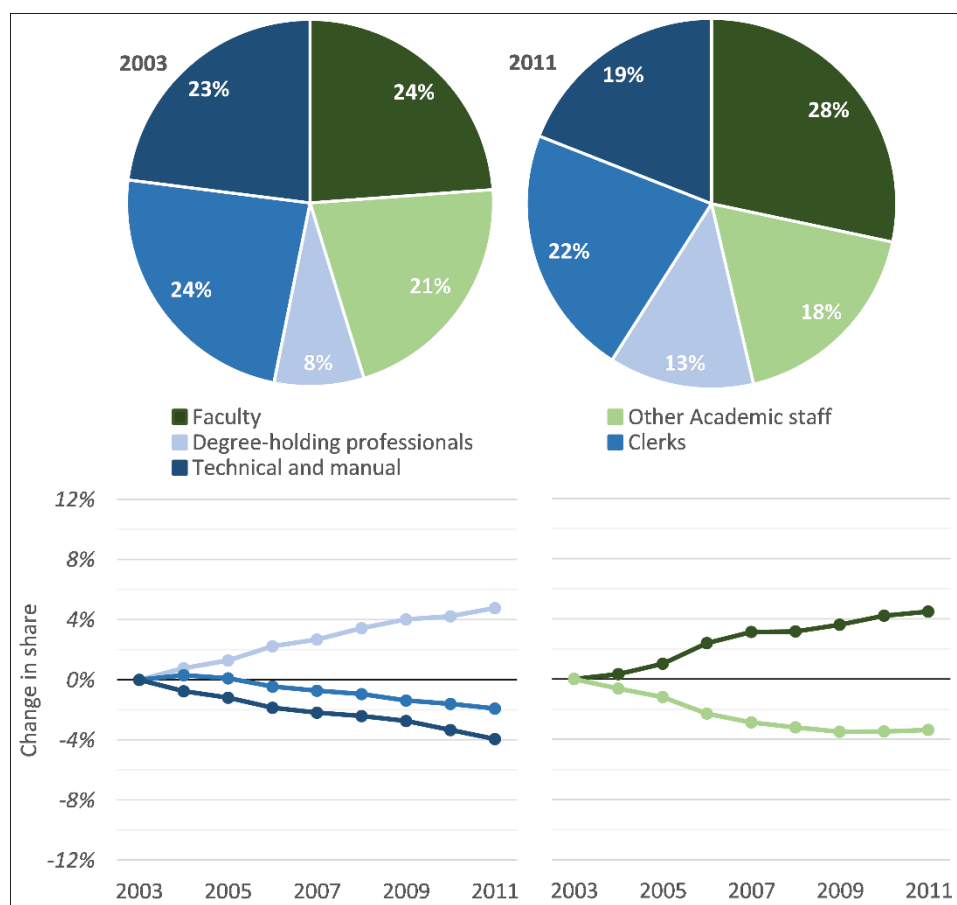
As Figure 5 shows, the share of academic staff in UK universities has grown marginally relative to the non-academic staff. Generally, a change in the share of the two academic categories has developed incrementally except for a larger change from 2005 to 2007. It is noteworthy that the already fairly large 'faculty' share has grown significantly and that the 'other academic staff' category has decreased from 2003 to 2011. The three administrative categories have all developed remarkably incrementally. The 'technical and manual staff' decreased at a faster pace than the 'clerks', while the 'degree-holding professionals' increased steadily at an even faster pace.

7.4.3. Germany: The laggard

The German university system is rooted in the Humboldtian tradition. Humboldt founded the first German university in Berlin in 1810 on the principles: Freedom in teaching, learning, and research; unity of research and teaching; and *Bildung* (self-formation) as integral to education. The Lehrstuhl (chair) was a central pillar whose incumbent had a protected right to teach his/her discipline and had assistants to help. Clark described the German universities as a 'chair-based organization' of 'small monopolies in thousands of parts'

(1986, p. 140). The state was expected to safeguard academic autonomy by funding the universities and ensuring as little interference in academic affairs as possible. In return, the universities had to contribute to state and nation formation (Scott and Pasquolini 2016). Hence, the German system has historically been characterized by a strong academic oligarchy with close links to the state.

The German system is a federal one with the legal configuration on two levels: The state and the länders. The historical effect of this has been a considerable horizontal diversification but hardly any vertical differentiation (Kehm 2013). The actual enactment of the Humboldtian ideal has varied in the light of changing external demands, but the old ideal remains a core characteristic. The German system is often described as conservative and a 'latecomer' or 'laggard' when it comes to university reforms (Schimank 2005). In contrast to neighboring countries, German universities almost avoided significant changes to regulatory, funding, and management structures until well into the 1990s (Hüther and Krücken 2018).

However, several recent reforms have aimed to make fundamental changes to the German universities and devolved responsibilities from the state to the länders, which in turn delegated parts of it further down to the universities. Measures such as performance-based and third-party funding have increased to stimulate a higher degree of market-like competition between universities across länders. Furthermore, the positions and the offices of rectors and deans were strengthened, and university councils were introduced (Schimank 2005). Nonetheless, scholars continue to question whether the powerful and resilient position of German professors has actually been weakened in an overall picture or just complemented by additional processes (Hüther and Krücken 2018, p. 260).

Figure 6. Staff composition at German universities, 2005–2017
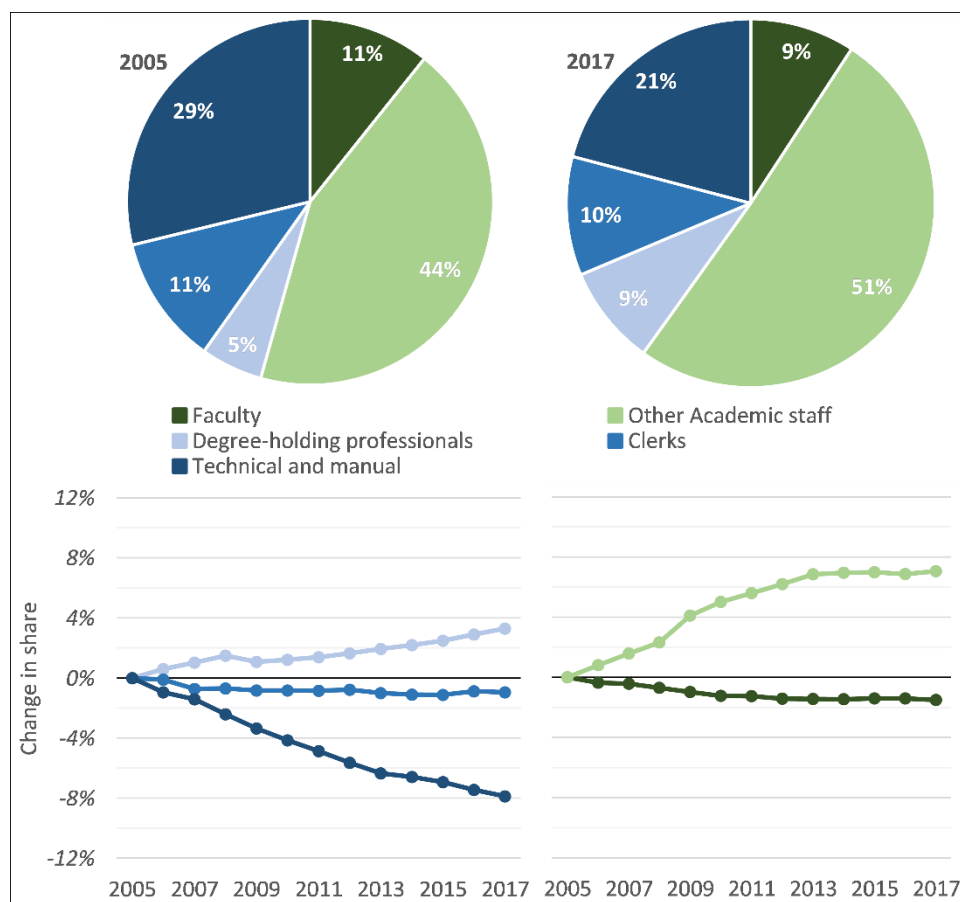
As Figure 6 shows, the share of academic staff in German universities has grown relative to the non-academic staff. At the beginning of the period from 2005 to 2013, the share of 'faculty' decreased, while the share of 'other academic staff' increased. At the end of the period from 2013 and onwards, the relative size of these two academic categories remained more or less stable. On the other side, the share of two non-academic categories changed steadily over the full period (2005–2017). Firstly, the category of 'technical and manual staff' accounts for the largest change as it has decreased by almost one-third in size, and secondly, the share of the 'degree-holding professionals' has increased steadily, especially at the end of the period. The last non-academic category of 'clerks' decreased slightly one year at the beginning of the period but has remained stable since.

7.4.4. The Nordic systems: The eager reformers

The Nordic university systems are rooted in a combination of the Humboldtian tradition and the egalitarian welfare state tradition. Extensive academic freedoms and stable funding were granted to the early Nordic universi-

ties in exchange for professional training for higher positions in the public sector. The universities were almost entirely publicly funded and controlled by the state as higher education policy was perceived to be an essential part of broader regional and social policies (Antikainen 2016; Pedersen 1982). Nonetheless, the Nordic university policy has traditionally been characterized by pragmatism, consensus, and a strong academic orientation (Aagaard and de Boer 2017), which is why the Danish and Norwegian systems have been characterized by collaboration between strong academic oligarchies and strong welfare states.

The Nordic systems are regulated unitarily by their respective states, resulting in a low degree of both horizontal and vertical differentiation. Both the Danish and the Norwegian university systems have been depicted as 'slow reformers' up until the turn of the millennium when far-reaching and successive reforms were introduced. This shift has led Bleiklie to describe Norway as an 'eager and rapid implementer of comprehensive reforms' (2009, p. 127) and Aagaard and de Boer to describe Denmark as 'one of the most reform intensive European countries' (2017, p. 143). Antikainen (2016, p. 239) writes, 'among the Nordic countries, Denmark has been the trailblazer'.

The year 2003 was a turning point for both university systems. In that particular year, the Danish and Norwegian governments each launched a long-planned, path-breaking university reform followed by several complementary reforms in the decade after. The reforms altered both external conditions and internal management structures, and in both countries, the universities faced increased organizational autonomy, stronger accountability measures, and large-scale mergers. A larger part of their budget became dependent on performance indicators and competition, and the changes significantly empowered the board and the executive function at the expense of the traditionally powerful collegiate bodies (Degn and Sørensen 2015; Hansen et al. 2019).

Figure 7. Staff composition at Norwegian universities, 1999–2017
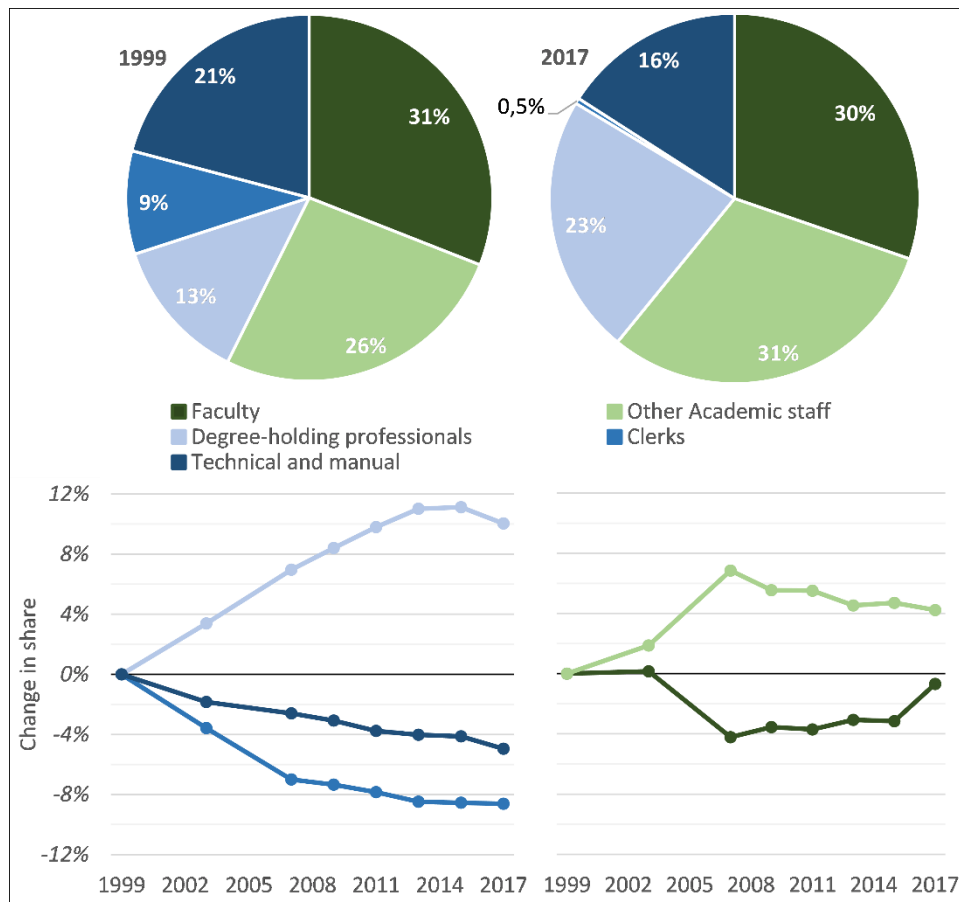
Note**:** The number of 'technical and manual staff' in 1999, 2003, and 2007 has been estimated from the subsequent years, assuming the category has decreased gradually (as in the other countries).

As Figure 7 shows, the share of academic staff in Norwegian universities has grown relative to the non-academic staff. The academic side displays a non-linear development. The share of 'other academic staff' increases strongly until 2007, and then it decreases slowly over the following decade. The 'faculty' line displays a similar, but inverse and more moderate development with an extra rise in the last two years. In 2017, the share of 'faculty' is almost the same as in 1999. The category of 'clerks', which had a significant size in 1999, has almost disappeared in 2017, and the share of 'technical and manual staff' has steadily decreased. Contrary to this, the share of 'degree-holding professionals' has surged extensively and continuously until a breakpoint around 2013–2014.

Figure 8. Staff composition at Danish universities, 2002–2017
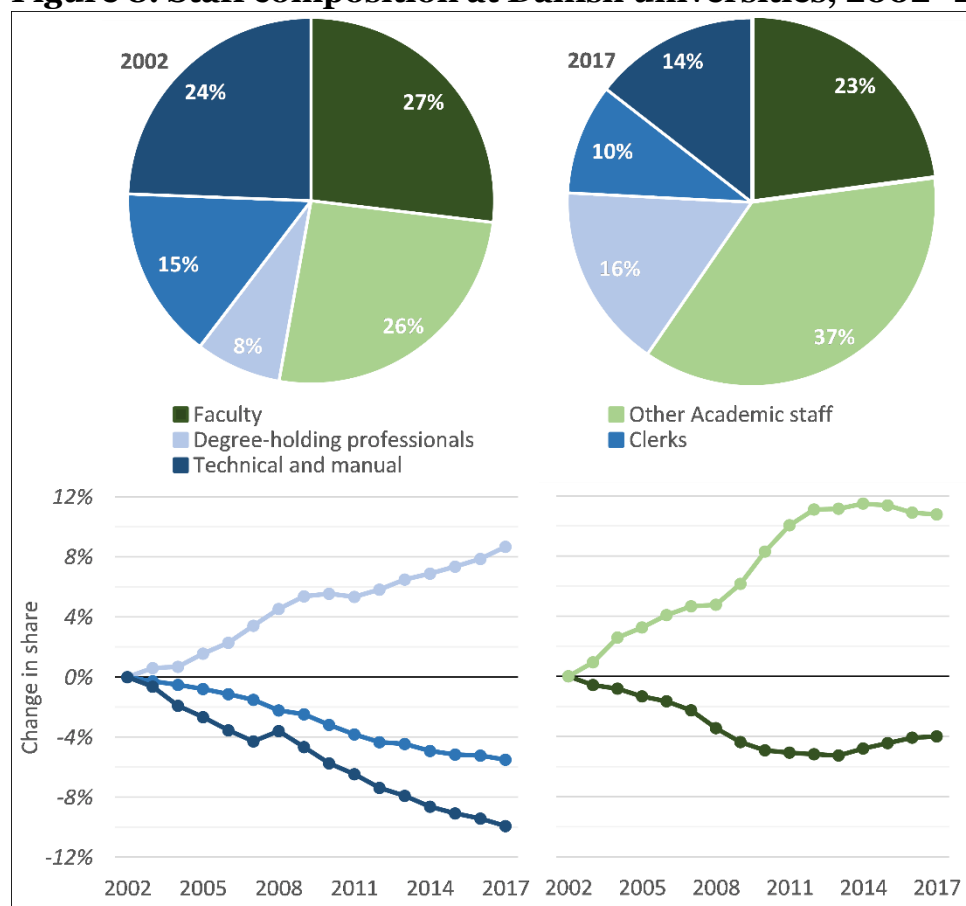
As Figure 8 shows, the share of academic staff in the Danish universities has grown relative to the non-academic staff. In particular, the share of 'other academic staff' grew extensively up until 2012, while its counterpart, the 'faculty' category, decreased in the same period. The development switched around 2012–2013, although not with the same intensity. Since then, the share of the 'other academic staff' has decreased, and the share of 'faculty' has grown slightly. On the other side, all three non-academic categories have changed incrementally year after year; the 'degree-holding professionals' have doubled their share of all employees, whereas the two other categories have decreased considerably from 2002 to 2017.

7.5. Cross-country analysis

Although the staff developments in each country are interesting in their own right, bringing them together side by side reveals some of the complex interplays between the national and global fields. The cross-country summary chart (Figure 9) shows simultaneously a pattern of variation and similarity between the different national systems over time. As described above, it is crucial to interpret the global pattern in light of national differences. However, as

this analysis shows, it is also crucial to interpret national patterns in light of global developments.

Figure 9. Cross-country summary of changes in the relative size of the staff categories over time
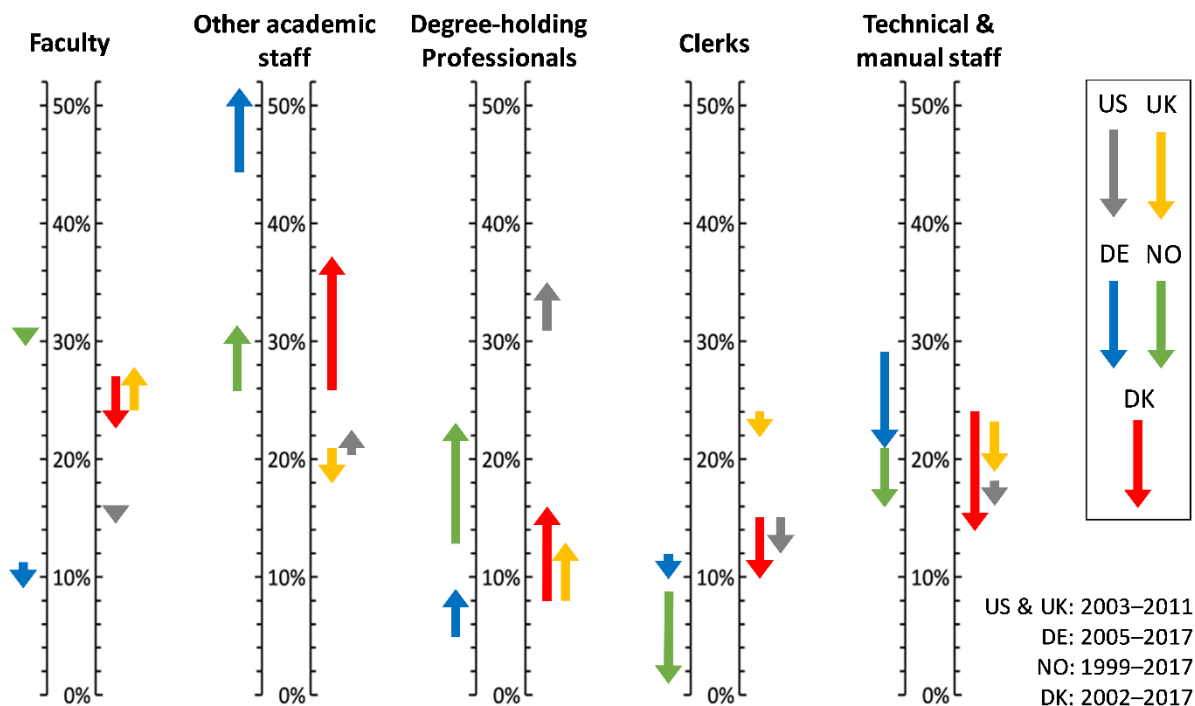
In Figure 9, it is noteworthy that all the arrows in each category point in the same direction, except two. Another overarching observation is that the share of academic staff has grown at the expense of non-academic staff. In other words, in none of the countries have the technical, administrative, and managerial side of the universities grown more than the academic side.

The absolute number of 'faculty' (i.e., the permanently employed academic staff) has increased significantly in the universities in all five countries, but the growth rates have not been high enough to break even in terms of sustaining their relative share. In essence, the cross-country upswing in academic staff relates to an intensified recruitment of 'other academic staff' rather than 'faculty'. The timing of the rise of 'other academic staff' is similar among the continental European countries (Figures 6–8), where the recruitment of these increased significantly in the years leading up to 2008 and after and lessened significantly again in the last years of the covered periods. Although with a shorter overlapping period, the US case also displays a slightly similar pattern but with a lower intensity of change.

While the relative change of the two academic categories has either stabilized or slightly reversed in the last decade of the covered period, the three

non-academic categories have continued to change with no signs of stabilization in terms of intensity and direction of change in any of the countries. Instead, they have kept changing almost linearly in all the countries throughout the period (with Norway as a slight exception). Although with different intensity between the countries, the general picture is that the category of 'degree-holding professionals' has strongly increased, and the 'clerks' and the 'technical and manual staff' in particular have decreased.

In order to understand the cross-country developments in Figure 9, it is necessary to delve into four developments that stand out: The UK academic categories, the German 'other academic staff', the US administrative categories, and the disjointed Nordic development.

7.5.1. The UK academic categories

Firstly, the development of the academic side in the UK stands out as an exception to the rule. The 'faculty' category has grown, and the 'other academic staff' has decreased from 2003 to 2011. Nonetheless, this contrast to the other countries should be interpreted with caution. Aspects related to the data collection in the UK, compared to the other countries, suggest that the contrast is less pronounced than at first glance.

As in most other countries, fixed-term academic contracts received much bad publicity in the UK during the 2000s. However, the UK government has been the only one to incorporate a formal incentive in the funding allocation to limit the use of fixed-term contracts. The RAE encouraged the universities to ensure that researchers with international publications were formally on open-ended contracts at the census dates for evaluation (Madden 2009). It is a well-known issue that the UK universities quickly learned to play the 'RAE game', adjusting arrangements to inflate their scores (Martin and Whitley 2010). Common 'tricks' involved opportunistic use of non-traditional contract types, which was possible due to a non-standardised academic job structure and a sidelined reporting category for so-called atypical staff (UCU 2016).

While the number of fixed-term contracts formally decreased, open-ended contracts diversified, and atypical staff surged at the same time. The open-ended contracts have increasingly become part-time and/or teaching-only, and the atypical staff is basically very fixed-term staff (e.g., hourly paid) that are not counted as such nor as ordinary staff (Bonaccorsi et al. 2007; Madden 2009; Whitchurch and Gordon 2017). This sidelined category covers, for example, 'a significant number of graduate teaching assistants on hourly-paid contracts' (Locke et al. 2016, p. 56).

For instance, some universities reported completely unrealistic shifts between contract types to the UK Higher Education Statistics Agency (HESA).

The academic contracts that were open-ended increased apparently from 35% to 98.5% in University College London and from 44% to 99.7% in the University of Aberdeen. These were two of the particularly extreme and obvious cases, which were excluded from this paper's analysis; however, the universities remaining in the analysis may have done similar in a more discrete fashion.

In contrast to the pressure facing the UK data collection, the US data collection was redesigned in 2002 by an IPEDS taskforce to explicitly capture the emergence of non-traditional and temporary academic jobs (Fuller 2011, p. 126). The opposite development of the academic categories in the US and the UK assumingly reflects these opposite pressures on the data collections of that time. In accordance, the academic profession literature also highlights directional similarity rather than opposite developments in the US and the UK (Fumasoli et al. 2015; Teichler et al. 2013).

An additional important factor, which partly may explain the smaller size of the 'other academic staff' category in the US and the UK compared to the two Nordic countries, relates to how the countries employ PhD students (Bonaccorsi et al. 2007; Fumasoli et al. 2015). In the two Nordic countries, PhD students are employed as full-time employees throughout their 3–4 years of enrolment, while in the other three countries, most PhD students are only employed on an ad-hoc basis as part-time assistants. This constitutes a significant technical difference as well as a substantial difference between the national systems. This paper only captures organizational members on the payroll, so the universally expanding category of PhD students (Cyranoski et al. 2011) affects the here considered staff compositions differently.

7.5.2. The German 'other academic staff' category

Secondly, the German 'other academic staff' category stands out as significantly larger than in the other countries. In contrast to the US and the UK, it has grown almost as much as in the Nordic countries despite PhD students only being on the payroll periodically (Destatis 2016). In explaining this, Krücken et al. (2013) point to national differences in whether PhD students are considered students or academics. This difference is reflected in the German and Nordic universities' larger tendency to employ and remunerate junior academics formally. In the US and the UK, junior academics are more often expected to contribute to tasks and projects either unpaid or casually paid as part of their 'education' (Teichler et al. 2013). Furthermore, Krücken et al. (2013) argue that the German category of 'other academic staff' includes a larger number of non-academic jobs in formal academic positions than in the other countries with longer traditions of university managerialism. In the

qualitative part of their study, they uncovered numerous people in academic positions, such as managers of departments, research clusters, or graduate schools, whose main bulk of work was clearly non-academic.

Despite these moderations, the German system still appears to be the one with the biggest share of temporary academics and the smallest share of permanent faculty. This is less surprising considering the German academic staff structure, which has no permanent mid-level position equivalent to associate professors in the other four countries. The crowd of academic positions below the professor rank are diverse, temporary, and 'at least formally assigned to a professor' (Hüther and Krücken 2018, p. 196). In order to qualify for a professor position, mid-level academics have either to write a second thesis (habilitation) or to secure a junior professorship (six years with evaluations about halfway and in the end).

7.5.3. The US administrative categories

Thirdly, the share of 'degree-holding professionals' in the US stands out as significantly more comprehensive than in the other countries. Its extraordinary size makes the administrative component of US universities much larger than in the continental European countries (with the UK as an in-between case; see Figure 10). This large transatlantic variation is a well-known issue. As Sporn wrote in 2003, 'administrative staff in the United States is often double the size of faculty, whereas in Europe the two are about equal in size' (Sporn 2003, p. 38). She attributes the variation to the different traditions of faculty involvement in managerial activities, pointing to a more established, independent, and elaborate role of administrative units in US universities (see also, Desrochers and Kirshstein 2014; Ginsberg 2011; Goldwater 2010).

Figure 10. Share of academic staff ('faculty' and 'other academic staff')
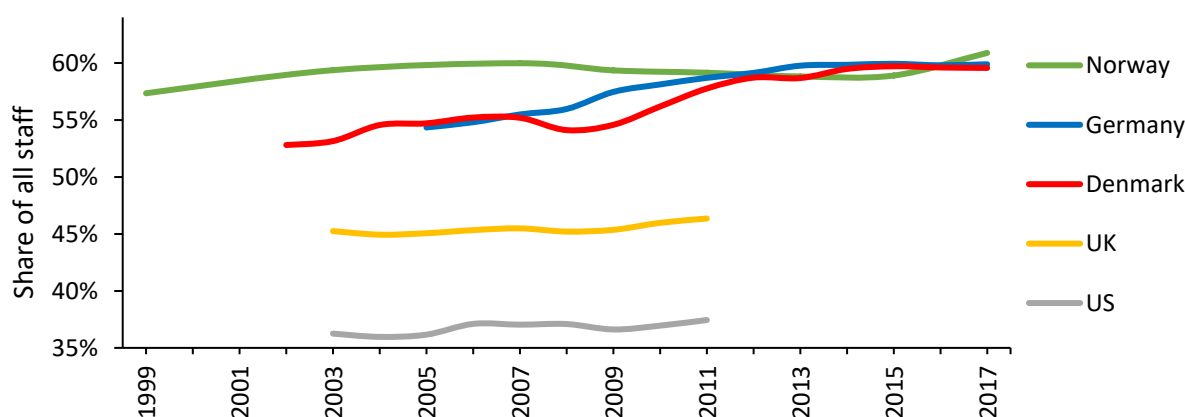
It is distinct for the US case that staff related to the 'degree-holding professionals' category have received much critical attention by US scholars over

several decades (for a review, see Leslie and Rhoades 1995). Snyder and Galambos (1988) drew attention to a disproportional growth of the so-called 'non-teaching professionals' already between 1966 and 1976. Ginsberg (2011) analyzed the following period from 1975 to 2005 in which he found that 'other professionals' had increased five times faster than 'faculty'. Hence, much bigger changes in staff composition have taken place in US universities in the decades leading up to, instead of during, the period covered here. Although less researched, this may also be the case for the UK universities due to the early NPM policies and funding reforms in the 1980s (Logue 2014; Scott 1995).

It should also be noticed that the criterion for being included in the category of 'degree-holding professionals' rather than in the one of 'clerks' is particularly inclusive in the US case. It was left to local data providers (i.e., HR-professionals and managers) to assess whether administrative employees met the minimum criterion of a bachelor's degree or the 'experience of such kind and amount as to provide a comparable background' (IPEDS 2002, p. 4). In comparison, the UK criterion was that the employees had formally reported at least a bachelor's degree as 'highest held qualification' to their employer. Similar rigid criteria are used in Germany (civil servant status groups) and Denmark (collective agreements). The Norwegian criterion is also inclusive; it is a selection of high-status job titles defined by a group of seasoned Norwegian researchers. The reliance on job titles alone makes the category cover people without a university degree in high-status positions.[5] In 2007, only 52% had with certainty a master's degree, while the remaining 48% had 'unspecified' qualifications (Gornitzka et al. 2009).

Because of these different criteria, the two largest shares of 'degree-holding professionals' (the US and Norway) are probably to some extent inflated in comparison to those in the other three countries. If more comparable criteria had been available, some of the US and Norwegian 'degree-holding professionals' would most likely count as 'clerks' instead. This would, however, not change the fact that the combined administrative component ('degree-holding professionals' plus 'clerks') in the US universities is virtually in a league of its own in terms of relative size. The UK in-between position represents an interesting case; its non-academic side is significantly larger than in the continental European countries, yet smaller and somewhat differently composed than

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[5] Specifically, the lowest ranked 'consultant' job title (job code 1065) has over time changed from being a high-status position to being a standard administrative position. It has replaced several traditional secretary positions. The share of the lowest ranked consultants who actually hold a university degree is unknown (Gornitzka et al. 2009, p. 18).

in the US system (smaller share of 'degree-holding professionals' and larger share of 'clerks' and 'technical and manual staff'). This in-between composition may reflect the historically larger faculty involvement in managerial activities than in the US universities and larger organizational independence than in the continental universities.

7.5.4. The disjointed Nordic development

Fourthly, the disjointed developments in the two Nordic countries stand out. It contrasts the common assumption that the Nordic national systems develop side by side. Around the millennium, the two academic categories were, in fact, close to identical in relative sizes in Norway and Denmark. They changed with almost the same intensity until around 2008, where the Norwegian system slowly but steadily reversed the development, while the Danish system further intensified it with a comprehensive PhD reform over the next six years. It was only hereafter that the Danish universities slowly began to reverse the development. As a result, 'faculty' decreased and 'other academic staff' increased more than twice as much in Denmark than in Norway, resulting in significantly non-identical academic compositions in 2017.

On the non-academic side, the two Nordic systems had dissimilar compositions from the beginning of the period. Early studies indicate that Norwegian universities began restructuring the non-academic staff a decade earlier than the Danish universities. Although not directly comparable to recent data (Gornitzka et al. 2009, p. 28), the Norwegian researchers show that the 'degree-holding professionals' began to rise in the early 1990s, and 'clerks' began to drop in the late 1990s (Gornitzka and Larsen 2004). A comparable development did not occur in Denmark until the early and late 2000s. For instance, the Norwegian universities employed close to 10 times as many 'degree-holding professionals' than 'clerks' in 2007, whereas in Denmark, 'clerks' still outnumbered 'degree-holding professionals' by a margin of 800 FTEs in 2007. Furthermore, compared to Denmark, the initially fewer 'technical and manual staff' in Norway may corroborate the observation of an earlier non-academic restructuring. Generally, across the countries, this category tends to decrease parallel to increases in 'degree-holding professionals'.

It should, however, be noticed that the inclusive Norwegian criterion for 'degree-holding professionals' described above stands in contrast to the Danish criterion, which is the most restrictive among the five countries. By combing job titles and collective agreements, the Danish data rigidly isolate non-academic employees holding a master's degree. The Danish category can, therefore, be presumed to include significantly fewer people without a university degree in high-status positions than the Norwegian one. This technical

difference moderates the variation between the Norwegian and Danish non-academic developments, which at first glance appears surprisingly large. However, despite the moderation, the development still seems to have started earlier and to have advanced more in Norway than in Denmark. But, considering the fact that 'degree-holding professionals' hold as a minimum a master's degree in Denmark (compared to a bachelor's degree in the US, the UK, and Germany), both Nordic countries display particularly strong efforts to restructure and professionalize non-academic capacities.

7.6. Discussion and concluding remarks

The comparative analysis shows major differences as well as a directional similarity. The staff compositions have generally moved in the same direction in each country, but with different intensity and from different starting points. The directional similarity increases when considering the technical caveats – not least with regard to the UK exception. Still, significant variation stands out as a key characteristic of the comparative staff analysis.

For the five national university systems, the intensity of staff changes documented here correlates with the intensity of change in external conditions documented by other studies (Dobbins and Knill 2014; Paradeise et al. 2009; Shattock 2014). These studies highlight that external conditions have changed the most in state-coordinated systems, which is also where the universities' staff composition has changed the most.

When comparing the two traditionally market-coordinated systems, the staff composition also seems to have changed more in the UK, where the state has increased its authority, than in the US. It is a common assertion that the US universities have faced the current global conditions and embraced the corresponding structures earlier than their counterparts in Europe (e.g., Ramirez 2013). In line with the view that the US currently has 'the most stable' system (Shattock 2014, p. 19), the analysis generally shows smaller staff changes in the US than in Europe from 2003 to 2011, which were the most change-intensive years in Europe; especially on the academic side.

The claims that the Nordic countries have been particularly reform-intensive in the last two decades (Aagaard and de Boer 2017; Bleiklie 2009) also corresponds with particularly extensive staff changes, especially in Denmark. Compared to these two fellow state-centered systems in the north, the German system may rightly be described as a laggard in terms of restructuring the non-academic workforce (Hüther and Krücken 2018, p. 1). However, the German system has not been lagging behind in terms of restructuring its academic workforce where temporary positions have surged as much as in the Nordic countries.

7.6.1. Major differences

By comparing staff composition throughout more than a decade, the continuance of major differences between the university systems becomes visible in a tangible way (Figures 9–10). The intensity and direction of change are far from erasing major system differences, and the European universities are clearly not developing toward a full emulation of the US organizational model (as it is sometimes implied in the literature). The much larger non-academic component in the US universities, and partly also in the UK universities, likely reflects these countries' very long traditions of organizational independence, market-coordination, and weak states. Contrary to this, it is possible that the continental European universities have smaller non-academic components because several responsibilities have traditionally been handled elsewhere in these countries' large public sectors.

A defining characteristic of the largely self-reliant US universities is that they encompass large in-house capacities for a wide range of non-academic areas. They have, for instance, large local offices responsible for athletics, endowments, alumni relations, tuitions, scholarships, student societies, stakeholders, legal compliance, marketing, dormitories, childcare, insurances, healthcare, and general campus services (Desrochers and Kirshstein 2014; Ginsberg 2011; Ramirez 2010). Naturally, it is an essential task for US university management to tie all these areas together and integrate them with academic activities. In-house capacities for similar areas are not absent in continental European universities, but they exist on a completely different scale than in the US. Although devolution and autonomy have been high on the agenda, the staff composition of the European universities has not at all developed in ways that suggest a move toward a situation similar to the one in the US.

A European move toward emulation of the full US organizational model would have entailed profound relative increases in each of the three non-academic staff categories at the expense of the academic ones. On the contrary, the share of academics increased in each of the European countries as a result of a disproportional growth in the category of 'other academic staff'. The continental European tradition of employing junior academics contribute to the continuance of major differences between the traditional state- and market-coordinated systems. Although people not on the payroll matters (collaborators, students, apprentices, contractors, volunteers, and so forth), the composition of those remunerated as formal employees represents particularly weighty organizational responsibilities. The global move toward a more bottom-heavy and temporary academic workforce, therefore, impacts the continental universities differently than the US and the UK universities.

Hence, the general picture is far from a full global convergence. The major differences between the university systems indicate important national path dependencies well beyond the external conditions that may have converged. National particularities – such as the large-scale athletics and endowments in the US, the chair system in Germany, big tuition fees in the UK, and the Nordic welfare systems – seem to be crucial for understanding the organization of the universities in the respective countries. The major differences extend well beyond a varied implementation or translation of formally similar mechanisms. Clear structural and functional factors seem to be decisive for the variation between the university systems, and some of these factors may lie outside the policy domain of higher education, which tends to be the usual target for convergence studies (Dobbins and Knill 2014). Relevant factors to consider may, therefore, be varieties of public sectors or labor markets.

7.6.2. Directional similarity

Although the major cross-country differences seem fairly stable, significant parallel changes do occur in each of the national university systems. One should not take this for granted since more diverse developments were indeed a hypothetical possibility. For instance, it is conceivable to think of a scenario where a focus on academic productivity results in a relatively larger category of 'faculty' rather than 'degree-holding professionals'.

The results raise the question of how directional similarity relates to convergence (Heichel et al. 2005; Mayrhofer et al. 2011). In this case, the directional similarity may reflect an interplay between path dependency and world models: The universities respond to globally shared conditions in addition to enduring national peculiarities. The directional similarity indicates a level of cross-country agreement about which staff categories one needs to increase in order to respond to recent changes in external conditions. The outcome is thus not an organizational convergence per se, but that dissimilar universities have added a similar layer of certain types of human resources.

In line with the institutionalist arguments of layering (e.g., Aagaard 2017; Capano 2018) or even de-coupling (Bromley and Powell 2012), it is likely that converging changes in external conditions promote *adding* certain organizational capacities on top rather than deeply aligning all parts of the organization to a 'world model'. Researchers have argued that recent globally shared conditions compel an accentuated line management, a flexible academic workforce, and upgraded 'external-facing' capacities (Kehm 2015a; Rhoades 2017; Rhoades and Sporn 2002). The latter includes, for instance, professionalized offices for marketing, accountability, evaluation, stakeholder relations, lobbying, internationalization, technology transfer, grant-writing support,

and communication (Krücken et al. 2009). These capacities have presumably enabled the universities to be – or at least appear to be – more strategic, flexible, and accountable (de Boer, Enders and Leisyte 2007; Krücken and Meier 2006). It is, however, an open question how deeply such changes have been implemented and whether they actually alter core academic processes for the better or worse (Hüther and Krücken 2018, p. 260; Maassen and Stensaker 2019; Whitley 2008b).

The existing in-depth national case studies have previously linked the above described organizational developments to the rise of 'degree-holding professionals' and 'other academic staff' (Baltaru 2018; Gornitzka and Larsen 2004; Krücken et al. 2013; Rhoades and Sporn 2002; Stage and Aagaard 2019; Whitchurch 2013). The directional similar staff changes may corroborate the broad claim that the universities in different countries do face globally shared conditions compelling them to be more strategic, flexible, and accountable. Scholars have previously reached similar conclusions when comparing the existing national studies of staff composition (e.g., Baltaru 2018); however, this paper's comparative and longitudinal approach makes the interplay between national path dependencies and world models more visible than past single-country studies.

The major differences between the university systems may, on the one hand, be left out of sight if one only considers national variation to reflect different stages of a shared path of development: Away from predominantly collegial institutions toward more professionalized and hierarchically managed organizations. On the other hand, the major differences may as well conceal organizational changes as the outcome of merely national developments, although there is clearly a globally shared component involved in the national transformation processes.

7.7. Acknowledgements

7.8. References

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7.9. Appendices

The following two appendixes belong to chapter 7.

7.9.1. Appendix A: Period, data type, population, and categorization

7.9.1.1 Period

The US and the UK data end already in 2011 because a major definitional change was implemented to the Standard Occupational Classification (SOC), which both registers are modeled after. The definitional change entailed, for instance, a merge of non-academic professionals with academic professionals as one category of 'higher education professionals'. The period before this change is chosen over the later because it is longer and employs classifications that are more comparable to the other countries.

The US data begin in 2002/2003 because IPEDS expanded its collection of staff data that year. They implemented the so-called 'Employees by Assigned Position' (EAP) component to get a 'count of the number of employees that provide instruction regardless of their functional classification' (Fuller 2011, p. 126). Compared to past collections, the EAP also distinguishes staff by full- and part-time status, by function or occupational category, and by tenure status. The EAP thus provides a unique data window into the US staff composition between 2003 and the definitional change in 2011, which is particularly comparable to the other countries.

The UK data begin in 2003 because HESA also altered their collection of staff data that year; the German data begin in 2005 because the non-academic staff has since then been differentiated into civil servant status groups suitable for comparison; the Danish data begin in 2002 because staff data only exist for all universities from that year,[6] and finally the Norwegian data begin in 1999 because the researchers maintaining the database amended their categorization in that year.[7]

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[6] In 2007, a far-reaching merger process reduced the number of universities from twelve to eight and transferred twelve out of fifteen Government Research Institutes (GRIs) to the remaining eight universities (Aagaard et al. 2016). Contrary to a previous article using data since 1999 (Stage and Aagaard 2019), this paper includes the absorbed universities prior to the merge for which data are only available since 2002. The GRIs are not included until gaining university status during the mergers.

[7] Two types of positions (section manager and one of the lowest consultant positions) have been moved from the higher administrative category to the clerical category. Furthermore, the administrative staff in the university libraries have been excluded

7.9.1.2. Data type

All the datasets stem from official registers used for accountability and oversight. However, the registers differ in type; the US universities submit aggregated data at the organizational level, while the universities in the other countries submit disaggregated data at the individual level. The Danish and the US datasets draw on payrolls, and the UK one draws on contract portfolios. The German and Norwegian datasets are compilations of several registers compiled by Destatis and NIFU.

The datasets all record staff in full-time equivalents, but how these are calculated vary in level of detail. For instance, the Danish one calculates FTEs by paid hours, while the US one calculates by full-time and part-time only. Furthermore, it is unclear how honorarium paid staff are counted in general, and how hourly paid staff are counted in the less fine-grained datasets. In the UK dataset, the so-called 'atypical staff' (contracts of less than four consecutive weeks) are explicitly excluded (UCU 2016).

7.9.1.3. Population

The focus of the paper is on universities that combine education and research in conjunction with a doctorate-granting authority. This delimitation is somewhat built into the German, Norwegian, and Danish datasets as their higher education systems are organized binary: 'Universities' on the one side, and 'universities of applied science' on the other side. While this is not formally the case in the US and the UK, the same differentiation exists more or less informally (Shattock 2014). Thus, the US and the UK datasets were trimmed down to match the other datasets even though the dividing line is a contested issue. The paper assumes that the UK universities identified by the Leiden Ranking and the US universities identified by Carnegie Classification are fairly structurally equivalent to the universities in the binary systems.

In the US, 185 universities were identified as doctoral research universities by the Carnegie Classification and as consistent data-providers by the Delta Cost Project. According to Carnegie Classification (2010), doctoral research universities grant at least 20 research doctorates per year and have high research activity (measured by R&D expenditures and research staff). Delta Cost Project has constructed a matched set of universities that have consistently reported data to IPEDS from 1987 to 2015. The project identified and excluded universities that changed Carnegie Classification or had inconsistent data or

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from the sample. Gornitzka and colleagues stress that figures prior to 1999 cannot be directly compared to those after (Gornitzka et al. 2009, p. 18, 28).

extreme outliers during the period (see also, Jaquette and Parra 2014). Combining the Carnegie Classification and the Delta Cost Project is a strategy adopted from Hurlburt and McGarrah (2016).

In the UK, 43 universities were identified as research-intensive by the Leiden Ranking and as consistent data providers to HESA. The ranking includes universities that have produced at least 1,000 Web of Science indexed research articles or reviews (co-authored publications are counted fractionally) in the period 2013–2016.

Staff working at integrated university hospitals figure in the German dataset, which accounts for large numbers of medical, nursing, and clerical staff. In the other countries, hospitals figure as separate entities collaborating with universities. To match the datasets, the paper adopts the strategy of Blümel and colleagues (2010, p. 160) and excludes staff associated with hospitals by organizational unit IDs.

Appendix B contains a complete list of included universities in each of the five countries.

7.9.1.4. Categorization

The datasets all categorize staff by combining functional classifications and occupational categories in one way or another. The functional classifications constitute a division of labour at the aggregated level, which is then linked to certain occupational categories and positions at the individual level. Hence, every university employee on the payroll in all five countries has been categorized according to the formal attributes of their individual job position, such as job title, organizational allocation, union, or status group. However, the way in which the categorization has been carried out and which attributes that have been considered differ between the countries.

In Germany, the US, and the UK, the categorization of staff took place as part of the formal data submission process. The respective data-collecting agencies provided comprehensive manuals, FAQs, and exemplars to guide the local data groundwork. Each individual employee was assigned to functional classifications and occupational categories locally. Despite detailed guidelines, the process was not mechanical and included local interpretation. For instance, in the US case, the sentence following the specific rules for what counts as 'faculty' provides ample leeway: 'Faculty is those persons identified by the institution as such' (IPEDS 2002, p. 1).

In Denmark and Norway, the categorization of staff took place as part of two research projects. The projects inferred rules for categorizing staff and imposed them mechanically on the administrative data compiled from across

all national universities. The method ensured consistency but was insensible to variation in local practices.

In addition to the specifications described above in the method section, Tables 2–4 further specify the categorization of the three categories: 'Faculty', 'other academic staff', and 'degree-holding professionals'.

Table 2. Faculty

Country	Indicator	Content
US	Contract type	Tenured or tenure-track faculty positions
UK	Contract type	Staff on open-ended academic contracts
Germany	Job title	All professor positions
Norway	Job title	Professor, Associate Professor, Docent, Academic Leader, Amanuensis, and special professional teachers
Denmark	Job title	Professors, Associate Professors, and equivalent positions, such as Senior Researchers.

Table 3. Other academic staff

Country	Indicator	Content
US	Contract type	Academic staff in non-tenure (-track) positions whose primary responsibility is instruction, research, and/or public service
UK	Contract type	Staff on fixed-term academic contracts
Germany	Job title	Academic positions below the professor-rank, which are diverse, temporary, and 'at least formally assigned to a professor' (Hüther and Krücken 2018, 196)
Norway	Job title	Researchers, Postdocs, PhDs, and Research Assistants
Denmark	Job title	Assistant Professors, Postdocs, Researchers, PhDs, and Academic Assistants

Table 4. Degree-holding professionals

Country	Indicator	Minimum qualification
US	Reported in a category requiring a degree	Bachelor's degree or 'experience of such kind and amount as to provide a comparable background' (IPEDS 2002, p. 4)
UK	Highest held qualification	First-degree level/bachelor's degree
Germany	Civil servant status groups	Bachelor's degree
Norway	High-status job titles	In 2007, 52% had master's degrees; the rest had unspecified qualifications (Gornitzka et al. 2009)
Denmark	Collective agreements	Master's degree

7.9.2. Appendix B: Complete list of covered universities by country

Denmark (2017)	Norway (2017)
University of Copenhagen	University of Oslo
Aarhus University	University of Bergen
Aalborg University	University of Tromsø
The Technical University of Denmark	Norwegian University of Science and Technology
University of Southern Denmark	
Copenhagen Business School	
IT university of Copenhagen	
Roskilde University	

Germany (2016)	United Kingdom (2013–2016)
University of Kassel	University of Oxford
University of Duisburg-Essen	University of Cambridge
University of Paderborn	Imperial College London
University of Siegen	University of Manchester
University of Wuppertal	King's College London
Fernuniversität Hagen	University of Edinburgh
Charité – Universitätsmedizin Berlin	University of Southampton
Europa-University of Viadrina Frankfurt	University of Birmingham
Humboldt-Universität Berlin	University of Nottingham
University of Rostock	University of Sheffield
University of Greifswald	University of Liverpool
University of Halle	University of Leeds

University of Magdeburg	University of Warwick
University of Leipzig	Cardiff University
Technical University of Dresden	Newcastle University
Technical University of Chemnitz	Queen Mary University of London
Technical University of Bergakademie Freiberg	University of Exeter
University of Jena	Durham University
University of Bamberg	London School of Hygiene & Tropical Medicine
University of Bayreuth	Queen's University Belfast
University of Oldenburg	University of York
University of Osnabrück	University of Leicester
University of Passau	Lancaster University
Katholische Universität Eichstätt-Ingolstadt	University of St Andrews
Bauhaus-University of Weimar	University of Sussex
Technical University of Ilmenau	University of East Anglia
University of Erfurt	University of Strathclyde
HHL Leipzig Graduate School of Management	University of Bath
Technical University of Dresden	University of Reading
University of Leipzig	University of Surrey
Jacobs University Bremen	University of Loughborough
European School of Management and Technology Berlin	University of Dundee
	Swansea University
Hertie School of Governance Berlin	London School of Economics and Political Science
Hafencity Universität Hamburg	
Helmut-Schmidt-Universität Hamburg	Brunel University London
University of der Bundeswehr München	University of Plymouth
Deutsche Hochschule der Polizei Münster	University of Kent
Universitätsklinikum Schleswig-Holstein	Heriot-Watt University
University of Vechta	University of Hull
University of Hildesheim	City, University London
University of Lüneburg	Bangor University
University of Kiel	Cranfield University
University of Lübeck	University of Ulster
University of Hamburg	
University of Göttingen	*Universities within the Leiden ranking that are excluded as inconsistent HESA data providers:*
Technical University of Hamburg-Harburg	
University of Bremen	The University of Aberdeen
Bucerius Law School Hamburg	The University of Glasgow
University of Bochum	University College London
University of Bonn	The University of Bristol
University of Düsseldorf	The Open University

University of Köln

University of Münster

University of Dortmund

University of Bielefeld

Deutsche Sporthochschule Köln

University of Frankfurt

University of Gießen

University of Marburg

University of Trier

Technical University of Kaiserslautern

University of Mainz

H für Verwaltungswissenschaften Speyer

University of Freiburg

University of Heidelberg

University of Konstanz

University of Tübingen

University of Koblenz-Landau

University of Erlangen-Nürnberg

University of München

University of Würzburg

University of Regensburg

University of Augsburg

University of des Saarlandes Saarbrücken

Universitätsklinikum Gießen und Marburg

FU Berlin

Universitätsmedizin Mainz

Technical University of Braunschweig

Technical University of Clausthal

University of Hannover

Zeppelin University Friedrichshafen

DIU Dresden International University

TH Aachen

Universität Witten-Herdecke

International Psychoanalytic University Berlin

Technical University of Darmstadt

European Business School (EBS) Oestrich-Winkel

Karlsruher Institut für Technologie (KIT)

University of Stuttgart

Technical University of München

Technical University of Berlin

ESCP Europe Wirtschaftshochschule Berlin

H für Politik München

Medizinische H Hannover

Tierärztliche H Hannover

University of Hohenheim

University of Mannheim

University of Ulm

Priv. wiss. H Stuttgart, Seminar für Waldorfpädagogik

Psychologische Hochschule Berlin

Bard College Berlin, A Liberal Arts University

KLU Kühne Logistics University

H für jüdische Studien Heidelberg

Filmuniversität Babelsberg

EUF Europa-Universität Flensburg

University of Potsdam

Frankfurt School of Finance & Management

Steinbeis-H Berlin

PH Freiburg

PH Heidelberg

PH Karlsruhe

PH Schwäbisch Gmünd

Ludwigsburg PH

PH Weingarten

Augustana-H Neuendettelsau

H für Kirchenmusik der evangelischen Kirche von Westfalen, Herford

Freie Theologische H (FTH) Gießen

Evangelische Hochschule Tabor, Marburg

Theologische Fakultät Fulda

Philosophisch-Theologische H Frankfurt a.M.

Theologische Fakultät Paderborn

Theologische Fakultät Trier

Theologische H Vallendar

Philosophisch-Theologische H St. Augustin

Philosophisch-Theologische H Münster

H für Philosophie München

Kirchliche Hochschule Wuppertal/Bethel

Lutherisch-Theologische H Oberursel

Theologische H Friedensau

US (2011)	US continued
Arizona State University at the Tempe Campus	University of California-Davis
Auburn University Main Campus	University of California-Irvine
Ball State University	University of California-Los Angeles
Baylor University	University of California-Riverside
Boston College	University of California-San Diego
Boston University	University of California-Santa Barbara
Bowling Green State University-Main Campus	University of California-Santa Cruz
Brigham Young University	University of Central Florida
Brown University	University of Chicago
Carnegie Mellon University	University of Cincinnati-Main Campus
Case Western Reserve University	University of Colorado Denver
Catholic University of America	The University of Colorado at Boulder
Claremont Graduate University	University of Connecticut
Clarkson University	University of Dayton
Clemson University	University of Delaware
Cleveland State University	University of Denver
College of William and Mary	University of Florida
Colorado School of Mines	University of Georgia
Colorado State University	The University of Hawaii at Manoa
Columbia University in the City of New York	University of Houston
Cornell University	University of Idaho
Dartmouth College	The University of Illinois at Chicago
Drexel University	University of Iowa
Duke University	University of Kansas
Duquesne University	University of Kentucky
Emory University	The University of Louisiana at Lafayette
Florida Atlantic University	University of Louisville
Florida International University	University of Maine
Florida State University	University of Maryland-Baltimore County
Fordham University	University of Maryland-College Park
George Mason University	University of Massachusetts-Boston
George Washington University	University of Memphis
Georgetown University	University of Miami
Georgia Institute of Technology-Main Campus	University of Michigan-Ann Arbor
Georgia State University	University of Minnesota-Twin Cities
Harvard University	University of Mississippi Main Campus
Howard University	University of Missouri-Columbia
Idaho State University	University of Nebraska-Lincoln
Illinois Institute of Technology	University of Nevada-Las Vegas

Indiana University-Bloomington	University of Nevada-Reno
Indiana University-Purdue University-Indianapolis	University of New Hampshire-Main Campus
Iowa State University	University of New Mexico-Main Campus
Jackson State University	University of New Orleans
Johns Hopkins University	The University of North Carolina at Chapel Hill
Kansas State University	The University of North Carolina at Greensboro
Kent State University-Kent Campus	University of North Dakota
Lehigh University	University of North Texas
Louisiana State University and Agricultural & Mechanical College	University of Notre Dame
Louisiana Tech University	University of Oklahoma Norman Campus
Loyola University of Chicago	University of Oregon
Massachusetts Institute of Technology	University of Pennsylvania
Miami University-Oxford	University of Pittsburgh-Pittsburgh Campus
Michigan State University	University of Rhode Island
Michigan Technological University	University of Rochester
Mississippi State University	University of South Alabama
Montana State University	University of South Carolina-Columbia
New Jersey Institute of Technology	University of South Dakota
New York University	University of South Florida
North Carolina State University at Raleigh	University of Southern California
North Dakota State University-Main Campus	University of Southern Mississippi
Northeastern University	University of Toledo-Main Campus
Northern Arizona University	University of Utah
Northern Illinois University	University of Vermont
Northwestern University	University of Virginia-Main Campus
Nova Southeastern University	University of Washington-Seattle Campus
Ohio State University-Main Campus	University of Wisconsin-Madison
Ohio University-Main Campus	University of Wisconsin-Milwaukee
Oklahoma State University-Main Campus	University of Wyoming
Old Dominion University	Utah State University
Oregon State University	Vanderbilt University
Pennsylvania State University-Main Campus	Virginia Commonwealth University
Portland State University	Virginia Polytechnic Institute and State University
Princeton University	Wake Forest University
Rensselaer Polytechnic Institute	Washington State University
Rice University	Washington University in St Louis
SUNY at Albany	Wayne State University
SUNY at Binghamton	West Virginia University
	Western Michigan University

SUNY at Buffalo	Wichita State University
Saint Louis University-Main Campus	Wright State University-Main Campus
San Diego State University	Yale University
South Dakota State University	Yeshiva University
Southern Illinois University Carbondale	
Southern Methodist University	
Stanford University	
Stevens Institute of Technology	
Stony Brook University	
Syracuse University	
Temple University	
Texas A & M University	
Texas Tech University	
The University of Alabama	
The University of Montana	
The University of Tennessee	
The University of Texas at Austin	
Tufts University	
Tulane University of Louisiana	
University of Akron Main Campus	
The University of Alabama at Birmingham	
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Chapter 8.
National policies as drivers of organizational change in universities: A string of reinforcing reforms (article 4)

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Abstract

Since the turn of the millennium, the Danish university sector has been one of the most intensely reformed in Europe. In parallel, the staff composition of Danish Universities has also changed more than the corresponding compositions in other Western countries. But how direct is the link between the policy reforms and the staff changes? While we expect national policy reforms to have influence on organizational change in universities, we also know that the content and impact of policies often are shaped and modified by global trends as well as local path dependencies. To shed light on this question, this article examines the impact of four major reforms on the staff composition of Danish universities by interpreting long-term staff data at multiple levels. Contrary to the notions of change resistance and path dependency, the empirical analysis suggests that a consistent string of policy reforms has had a profound impact on the Danish universities. However, the analysis also shows that the links between national reforms and actual changes seldom are immediate and straightforward and that the local, national and global levels interact. In doing so they often appear to reinforce the influence of each other.

Keywords: Higher education reforms, Universities as organizations, Resilient universities, Scientific workforce.

8.1. Introduction

Although it is generally acknowledged that universities in most countries are becoming increasingly hierarchically organized entities with altered staff compositions (e.g. Gornitzka & Larsen, 2004; Krücken, Blümel, & Kloke, 2013; Rhoades & Frye, 2015; Stage & Aagaard, 2019), it is still unclear to what degree

these developments are uniform in content and timing across different institutional and national contexts, and how we can understand the underlying drivers of these developments. While evidence regarding the former is starting to emerge (e.g. Baltaru & Soysal, 2017; Seeber et al., 2015; Stage, 2020), we still have very limited knowledge regarding the latter. There is a profound lack of systematic investigations into potential explanations (Baltaru, 2018, p. 3) although research already early on stressed the importance of understanding the factors associated with the observed patterns of change (Gumport & Pusser, 1995). There are thus compelling reasons to examine some of the potential underlying drivers of the transformation of universities as organizations. This study takes one of the first steps in this direction by analyzing long-term developments in Denmark.

Two theoretical perspectives have so far dominated the scholarly debates of both change and inertia related to the development of universities. On the one hand, it is argued that global standards push universities towards transnational convergence (Drori, Meyer, Ramirez, & Schofer, 2002). Based on this perspective, national university systems are argued to become more alike over time as 'global scripts' gain ground (Meyer, Ramirez, Frank, & Schofer, 2007; Ramirez, 2013). On the other hand, it is also underlined that universities are highly institutionalized and change-resistant organizations - and hence that there are clear limits to such convergence due to local path dependencies (Paradeise, Reale, Bleiklie, & Ferlie, 2009; Whitley, 2008, 2012). From this perspective, national and local differences are expected to be reproduced over time in spite of similar external pressures.

However, in both cases national policies can be perceived as intermediary factors which may either reinforce transnational pressures or leave room for local translation – sometimes even both at the same time. On the one hand national policies can, at least in principle, be expected to have a direct and coercive influence as the state can demand a high degree of compliance. On the other hand, this influence may, nonetheless, not always be as linear and immediate as policy reforms often will leave room for local interpretation. The way in which national policies influence organizational changes can hence be expected to be shaped and modified by both global scripts and local path dependencies.

To shed light on such processes, this article investigates the link between selected national reforms and changes in staff composition in the Danish context. In doing so, the present study builds on two recent studies: the first one provides an in-depth analysis of the content of organizational change at Danish universities from 1999-2017, but it does so without touching much on the underlying drivers of such changes (Stage & Aagaard, 2019). The second study

compares the Danish system's transition toward a new university organizational model with the corresponding developments in the United States, the United Kingdom, Germany, and Norway, and shows that Danish universities have changed the most among this group of countries in terms of staff composition (Stage, 2020). Taken together, these two previous studies raise the question of how this particular development in Denmark has come about.

The article proceeds as follows: Section 2 and 3 outlines the theoretical framework and the method of this article, respectively. Section 4 proceeds by characterizing the general development of Danish university policy. Against this background, section 5 examines the role of four major policy reforms as potential drivers of the observed developments in staff composition. In Section 6, the four sub-analyses are discussed in concert, before the article concludes by reflecting upon the interaction between global, national and local drivers of both change and inertia.

8.2. Policy reforms, global scripts, and local path dependency

Branches of institutional theory claim that universities as organizations converge on a global model (Drori et al., 2002; Ramirez, 2013). Transnational scripts, visions, or ideas about appropriate organizing are seen to travel across boundaries and affect the actual organization of local universities (Krücken & Meier, 2006; Olsen, 2007). Such spreading of ideas takes place in global fields through international relations with the OECD and EU as important actors – often in the form of soft law (Amaral, Meek, & Larsen, 2003; Sahlin et al., 2015). But transnational scripts not only affect national policy agendas. They also influence the organizational members of universities (i.e., academics, students, managers, administrators etc.). Hence, while the EU, OECD, and other transnational and intermediary organizations reflect what is happening in a global field; they also shape and disseminate visions of best practices (Sahlin et al., 2015, p. 410) and through normative pressure influence how universities are organized (King, 2009; Sauder & Espeland, 2009). At the same time, universities are also shaped and pushed towards convergence by their members' hunt for reputation in the stratified global scientific communities, where prestigious centres, departments or universities function as organizational blueprints for others to follow (Drori et al., 2002; Ramirez, 2013).

Other institutional scholars stress, however, that universities in general only change reluctantly and incrementally. According to this perspective, historical characteristics specific to individual organizations tend to work as buffers against external pressures. While many countries have granted universities increased formal autonomy to accentuate their competitive profiles (de

Boer, Enders, & Leisyte, 2007), not all universities 'want to nor can imitate the model of the US research university' (Hüther & Krücken, 2018, p. 69). For some, it is more important to be appropriately organized in the eyes of self-selected peer-organizations, national constituencies, or in accordance with traditions linked to scientific disciplines, which have varied preferences (Paradeise & Thoenig, 2013; Schmid & Wilkesmann, 2015). Due to these competing logics in the environment and varied organizational characteristics, the path dependency perspective thus suggests that external policy pressure may have limited impact on individual organizations and that differentiation and diversity tend to be reproduced over time. As organizations often have leeway to strategically select, translate, and edit external pressures, they will seek to implement elements that fit into their local cultures and pathways and decouple the rest from actual work practices (Brunsson, 2009). Hence, in this view, institutionalized organizations are relatively resilient and change less uniformly and way more incrementally than implied by the transnational convergence thesis (e.g. Ramirez, 2013).

However, national policies play an important role in between these levels. On the one hand they can function as a vehicle for the transnational pressures, which via various policies influence organizational structures. On the other, they are also in most cases leaving room for local translation at the organizational level. As such, national policies both set out an overall direction of change and provide sets of possibilities and limitations for individual organizations. Regarding the first: As most universities first and foremost are publicly funded and formally regulated organizations, they are often highly dependent on one focal resource provider in their environment. In such a situation, organizations are expected to have little power to bargain or to act against the state's mandate (Pfeffer & Salancik, 1978). In addition, although granted some autonomy, a substantial part of universities' organizational setup and activities are explicitly mandated by laws and decrees. Hence, policy reforms can be expected to effective in generating organizational change, because the state can require a high degree of compliance (Greenwood, Oliver, Suddaby, & Sahlin-Andersson, 2008; Tolbert & Zucker, 1983). As national policies are used to steer public universities, and as different national politico-administrative systems translate transnational pressures differently, policy differences will from this perspective be expected to, at least partly, explain the differences in organizational models across countries (Michelsen & Bleiklie, 2013). While few scholars will claim that there always is a clear and direct link from policies to implementation, most will nonetheless acknowledge that universities are highly resource-dependent organizations and that major policy pressures can be expected to have at least some influence on their organization. This link between the content of policies and the actual organizational changes can,

however, in many cases be expected to be indirect, delayed, and somewhat restricted due to policy leeway for local adaption, symbolic implementation or even blocking of intended changes (Capano, Pritoni, & Vicentini, 2019).

8.3. Methods and data

As outlined above, different theoretical perspectives highlight coexisting dynamics of change and stability, and when taken together, underline that universities develop in multilevel governance systems with competing logics. Hence, national policies can be expected to both mediate and be mediated by global scripts and local path-dependencies. By using detailed descriptive statistics to match staffing changes with reforms, this study sheds light on some of these complex interactions. Acknowledging their interconnectedness also implies that modesty is required in terms of drawing simple causal claims. Clear causal relationships between individual reforms and observed staff changes are in most cases difficult to detect. Rather changes are in most cases the result of parallel, mutually reinforcing developments at different levels.

Hence, by carefully assessing the correspondence between reforms and staffing in both timing and content at different levels of detail, it is possible to improve our understanding of how state-led policies in interaction with transnational pressures impact the organization of universities. This analysis is made possible by combining data from a comprehensive payroll database containing all university employees' job titles, contract types, salary frames, and working hours, with two public databases containing longitudinal funding data at the national and organizational level. These data sources are further complemented with analyses of policy documents and previous studies.

8.3.1. Data on staffing

The ministry granted temporary access to payroll data for all Danish universities from 1999 through to 2017. In total, it covers 256,320 individuals who received a salary payment from a Danish university at least once. These data provide a fine-grained and consistent picture of universities' staff composition over time. Although only a partial indicator, staffing changes are relevant for studying the consequences of reforms as human resources are the main means of production at universities (Rhoades & Frye, 2015). We use formal assigned 'job titles' to isolate staff within different areas of responsibilities; 'collective agreements' to isolate staff holding at least a master's degree; and 'salary frames' to isolate staff on formal managerial contracts. As for the latter, the

salary frames from 36-41 are with few exceptions[8] devoted to public managers and determines their rank as specified in Table 1. Table 2 lists the most general staff categories applied in this article, as well as in the two it builds upon.

Table 1. Salary frames for Danish public sector managers

Salary frame	Rank	Basic salary, 2019 (excl. supplements)
36	Minor manager/team leader	516,132 DKK
37	Section/office manager	570,080 DKK
38	Division manager or vice director	648,649 DKK
39/40	Director	712,191 DKK / 796,883 DKK

(Dansk Magisterforening, 2020).

Table 2. Applied staff categories

Academic	**Faculty**: Permanent academic staff, e.g., Professors, Associate Professors, and Senior Researchers **Other Academic Staff**: Predominantly temporary academic staff, e.g., Assistant Professors, Postdocs, PhDs, Academic Assistants, and teaching positions usually not requiring a PhD degree
Non-academic	**Degree-holding Professionals**: Administrative staff with a university degree, e.g., Managers, Officers, Coordinators, and Consultants **Clerks**: Administrative staff usually with vocational education, e.g., Sectaries, Clerical Officers, and Section Managers **Technical & manual staff**: A diverse set of employees usually with a quite different educational background and competencies than administrative staff. The technical and manual jobs are usually *not* performed at an office desk, e.g., Janitors, Laboratory Technologists, and Engineers

8.3.2. Data on funding

The available, disaggregated data on the funding of Danish universities over time are limited and patchy. We therefore combine data from the two most-used Danish databases, the Statistics Denmark agency and the Universities Denmark association, which are complementary but not entirely consistent. They are, however, sufficiently consistent to highlight the main national and organizational trends. In the analysis, we first distinguish between funding for education and funding for research (see figure 1). The funding for educational

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[8] Full Professors, together with judges, are placed at salary frame 37 as an exception. In line with most other records of public managers, we do not count them as such (e.g., MS, 2019).

activities in Denmark is almost exclusively activity-based, determined by the number and composition of passed exams for each student. As a result, the number of students provide a solid indicator for the otherwise poorly documented educational funding stream.

Figure 1. Types of funding streams
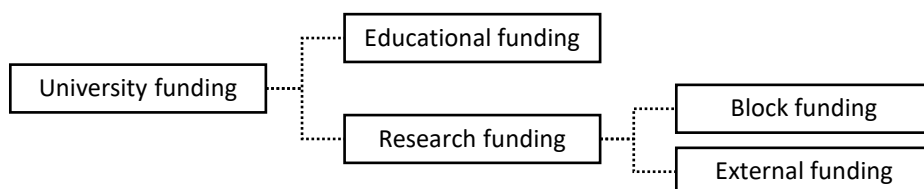
The funding for research activities is further separated into two streams: One of block grants, which is mainly allocated based on historical criteria, but with a growing performance-based share, and one of external research funding from both public and private, national and international sources (Aagaard, 2017). How to quantify this distinction in the Danish case is not straightforward as detailed disaggregated data are unavailable. In this article, we combine a seasoned estimate from Statistics Denmark (1999-2011) with a new one from Universities Denmark (2012-2017), which with sufficient detail shows the contours of the development during the period in question.

8.4. The Danish development in a comparative perspective

As a backdrop to the empirical analysis in Section 5, this section outlines the main staff composition developments of Danish universities from 1999 to 2017 and compares them to the corresponding developments in four other countries. This cross-country comparison enables us to examine the Danish development in a broader context, where both general international trends towards convergence and more specific national developments play a role.

8.4.1. The transformation of Danish universities

A previous study examining the development of Denmark's university system (Stage & Aagaard, 2019) documented a strong overall growth in personnel at all eight Danish universities.

As can be seen in Figure 2, the strong overall staff growth was, however, highly uneven across categories and have over time led to a high degree of intra-organizational change. At the most aggregated level, the result has been a strengthening of the academic side of the Danish universities – at least when

measured by the sheer number of employees in different categories. This observation stands somewhat in contrast to a popular narrative according to which the administration is outgrowing the academics. But as soon as the aggregated categories are opened up, important nuances surface. Most notably, it is shown that the growth on the academic side to a large extent is the result of substantial growth in the use of junior academics in temporary positions. On the administrative side, the balance has also shifted between different categories, but here the direction has been almost the opposite: the strongest growth has taken place among the higher categories in the internal hierarchy, while nearly all other categories have decreased in relative terms. Overall, we thus observe a weakening of the middle and a strengthening of the bottom layers of the career hierarchy on the academic side of the universities, while the strengthening on the administrative side is found at the middle and top layers. In regards to salaries, these trends reflect the growth of the relatively low-wage academic positions and the growth of the more expensive administrative positions. Further, a detailed examination of job titles on the administrative side shows a proliferation of new, specialized management functions that are added on top of the (now shrinking) traditional administrative support functions.

Figure 2. Staff composition across all current Danish universities, 1999-2017. The growth rate is in percentage and change in share of the total is in percentage points, calculated from 1999 to 2017
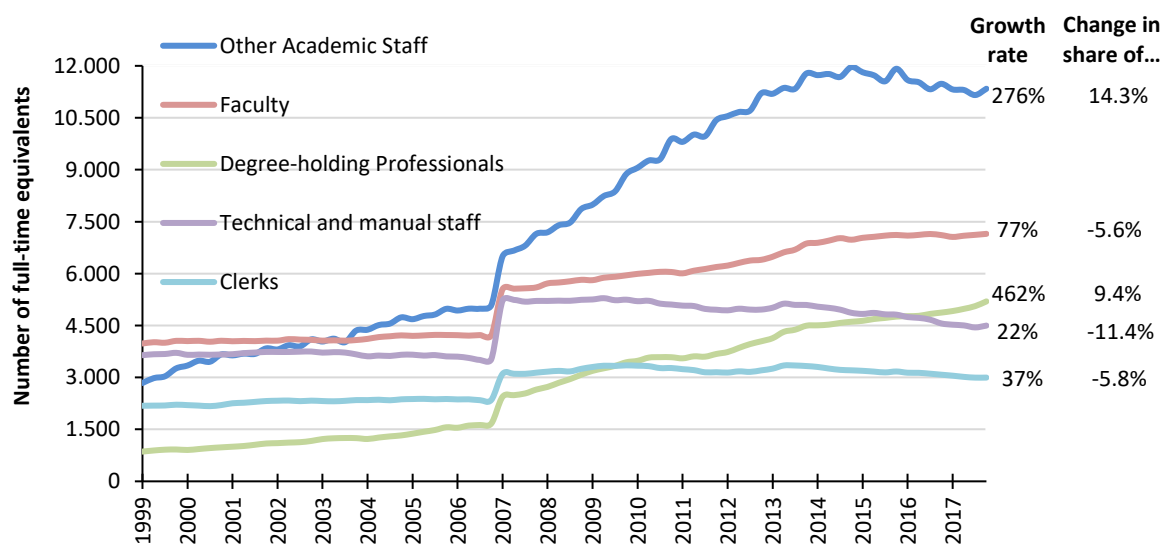
8.4.2. The Danish development in a comparative perspective

In order to examine the role of specific national policies and their interaction with more general transnational drivers, it is also necessary to compare the Danish development to corresponding developments in other countries. This

aspect is addressed in detail in (Stage, 2020) and briefly summarized here. Figure 3 shows selected patterns of both variation and similarity between the staff compositions of five different national university systems over time.

Figure 3. Cross-country summary of changes in the relative size of the staff categories over time
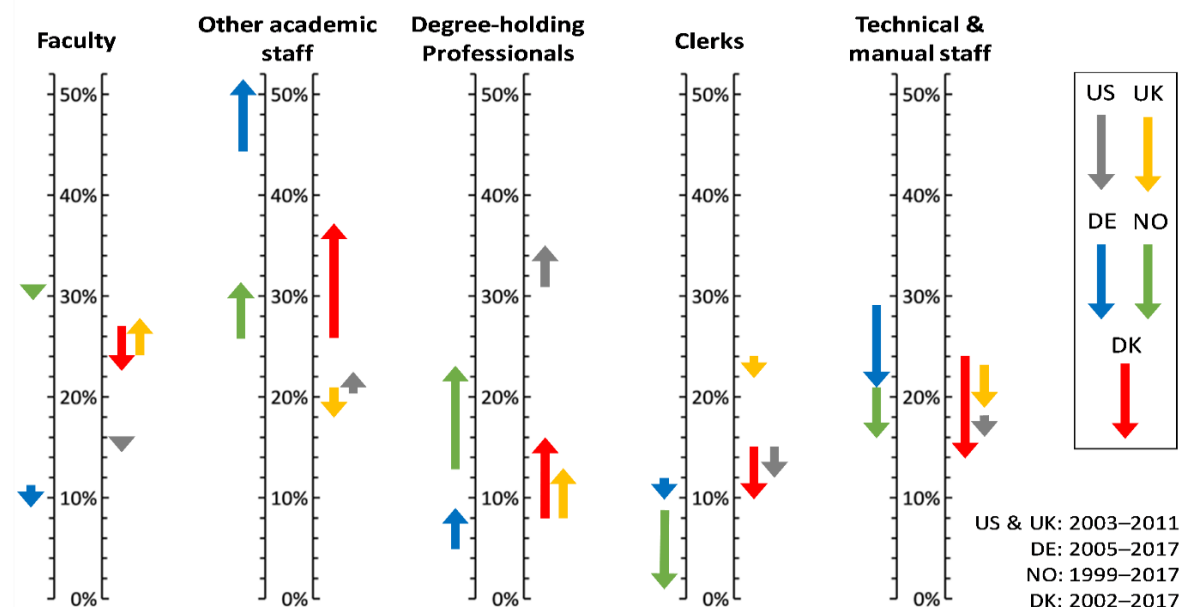
In Figure 3, it is noteworthy that the direction of changes overall is similar across countries, and that the academic staff categories have grown more than the categories of non-academic staff in all the examined countries. Although from quite different starting points and with different intensity, the cross-country academic growth uniformly relates to the 'other academic staff' category rather than to 'faculty'. Likewise the category of 'degree-holding professionals' has everywhere increased at the expense of 'clerks' and 'technical and manual staff'. The timing of these developments has been similar in the continental European countries, where the 'other academic staff' category increased in the years leading up to and after 2008 and decreased again around 2012. In contrast, the three non-academic categories have developed incrementally across all the countries throughout the period. There are, however, also differences across countries. Overall, Stage (2020) concludes that staff composition seems to change the most in the countries where the state reforms the external conditions of universities the most (e.g., regulation, funding, discourse).

Among these, Denmark is the country with the most comprehensive staff changes across the board. During the last two decades, the staff changes in Denmark stand out in comparison with the otherwise similar egalitarian sys-

tem in Norway and the fellow Humboldtian system in Germany. The restructuring of the academic workforce stagnated in Norwegian universities halfway through the period but intensified in Denmark alongside the implementation of new policy initiatives. At the same time, the restructuring of the non-academic workforce clearly lagged behind in German universities although facing reforms and the same transnational pressures as those in Denmark. These variations aligns with assertions that the Danish university system is one of the most intensively reformed in Europe (Aagaard & de Boer, 2017), making Denmark an interesting case for an examination of the links between transnational pressures, state-led reforms, and local staff changes (Flyvbjerg, 2006).

8.5. Danish policy reforms as drivers of organizational change

Denmark, previously characterized as a slow and pragmatic adopter of international research policy ideas (Aagaard & Mejlgaard, 2012; Hansen, 2002), has during the latest decade repeatedly been singled out as a trailblazer among the European countries (Aagaard & de Boer, 2017; Bleiklie & Michelsen, 2019; Hansen et al., 2019; Kallerud, 2006). The reform intensity, in particular, accelerated after a change of government in 2001, which led to a sweeping reform process with the aim of transforming Danish universities into key players in the global knowledge economy. As a result, several reforms were launched with both direct and indirect implications for the organization of universities (Aagaard & Mejlgaard, 2012; Ejersbo, Greve, & Pihl-Thingvad, 2019). Strengthened steering capacity, increased competition for funding, higher student numbers, large-scale mergers, more comprehensive evaluation activity, and renewed focus on responsiveness and social responsibility were seen by the government as essential means to modernize the universities.

Four elements in this wave of reforms can be seen as particularly important: the University Act (2003), the PhD reform (2004-2013), the changes in the funding system (2002-2012), and the merger process (2007). The first three of these are presented briefly in their respective subsections, but since the merger reform is discussed within these sections, rather than separately, it is presented briefly here.

The Danish university merger process, launched in 2007, was a far-reaching structural reform that reduced the number of universities from twelve to eight and transferred almost all the existing Government Research Institutes (GRIs) to the eight remaining universities (Aagaard, Hansen, & Rasmussen, 2016). One of the results was a large concentration of resources within the three largest universities, University of Copenhagen, Aarhus University, and the Technical University of Denmark, which today receive close to two-thirds

of the public research funding. In addition, the reform represented a clear break with the former division of labor between academic research and applied GRI research (Aagaard, 2011).

Figure 4. Timeline of the investigated policy reforms
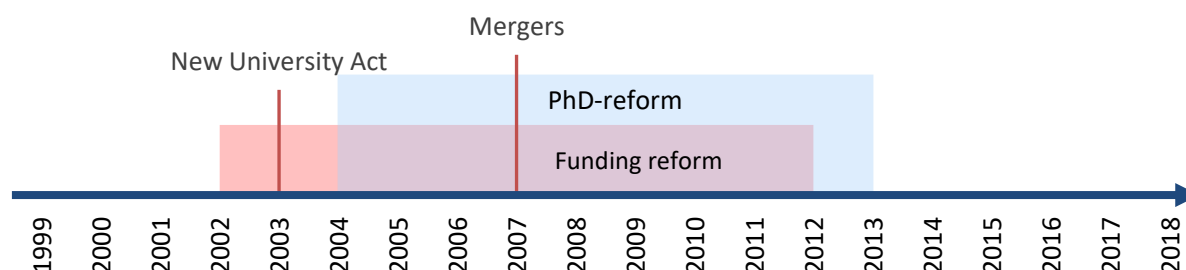
In the following subsections, the relationships between these reforms and changes in staff compositions are analyzed one by one.

8.5.1. The University Act

In 2003, a new University Act, labelled by the responsible Minister as the most fundamental change to the organization of research and education since the establishment of Copenhagen University in 1479, substantially reformed the governance structure of Danish universities (Andersen, 2006). Firstly, the reform removed the universities from the formal state hierarchy and turned them into 'self-owned entities' with the power to draft their own statutes. The ministry was still to set policy goals, define budgets, and perform audits, but the universities were given more freedom to decide how to organize and manage their activities (Degn & Sørensen, 2015; Wright & Ørberg, 2008). Secondly, the reform instilled university boards with an external majority, replaced elected academic leaders with appointed managers, and reduced the power of the collegial senates. Hence, after the reform a clear line management structure was introduced, where the university boards appoint rectors, who appoint deans, who in turn appoint heads of departments (Christensen, 2012). Hence, the new leaders are now appointed downwards and responsible upwards. This new managerial structure was expected to lead to professionalized management, enable strategic decision-making, and to strengthen external accountability (Wright & Ørberg, 2008).

The large-scale impact of this reform on the organization of Danish universities has been highlighted repeatedly (e.g., Aagaard & Mejlgaard, 2012; Christensen, 2012; Degn & Sørensen, 2015; Ejersbo et al., 2019; Paldam, 2015; Wright & Ørberg, 2008), but despite common references to expanded man-

agement and increased top-down steering, it remains uncertain how the reform was implemented in practice and how it influenced the staff compositions. Based on policy texts and public staff data, Christensen (2012) highlights two ways in which the 2003 reform changed the traditional managerial structure:

1. The Act turned academic 'manager roles' into full-time 'line manager positions'.
2. The professionalization efforts led to specialized 'administrative manager positions'.

The actual scale and pace of these developments is, however, far from evident in the study by Christensen (2012) or any other (e.g., Boden & Wright, 2010; Paldam, 2015). Both the development of the line management (rectors, vice-rectors, deans, vice-deans, department heads, and research directors) and the administrative management structures are examined in the following.

8.5.1.1. Growth of line managers

Prior to the 2003 reform, few departments and faculties had a formal manager position. Instead, most decision-making was carried out by academics placed in temporary 'manager roles'. These roles circulated among senior colleagues on the basis of collegial elections and were, as a general rule, only part-time and secondary to one's main position usually as a professor (Christensen, 2012). Contrary to the former informal management roles, the incumbents of the new line manager positions became employed on formal manager contracts with dedicated job titles. Figure 5 shows this development.

Figure 5. The number of 'line managers' (FTEs) at four salary frame levels, 1999-2017
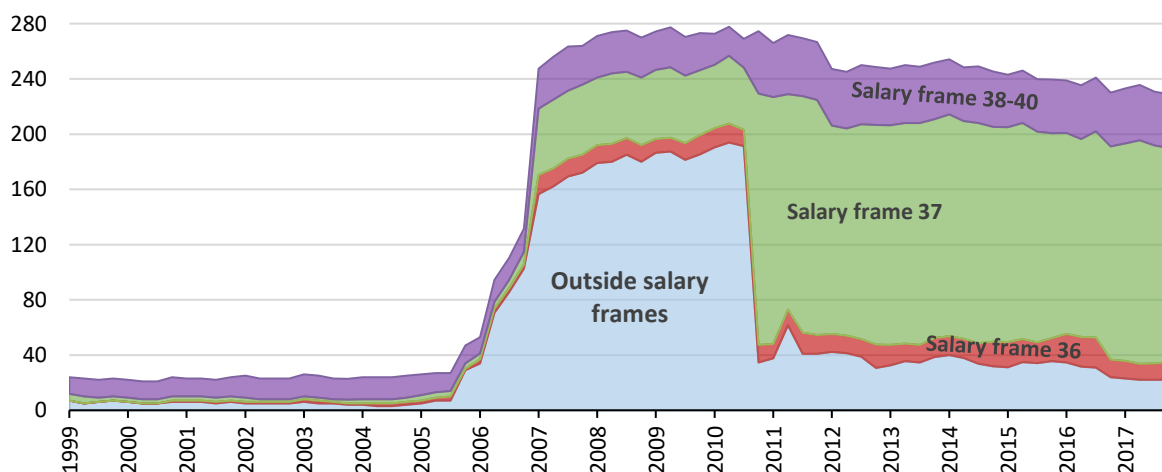
The increases in top line managers (Frame 37 and above) in particular accelerated around the academic year 2006/2007. This timing corroborates previous research showing that the first steps of the implementation of the reform were quite slow. Hence, it took 3-5 years from the formal adoption of the 2003 reform until the appointed line managers had replaced the elected leaders at all levels of the universities (Lind & Aagaard, 2017). Figure 5 reveals, in addition, that a large share of the appointed line managers was employed 'outside salary frames' during the first 4-5 years.

Table 3. The number of 'line managers' (FTEs) at Danish universities in 1999 and 2017

Type	1999	2017
Rectors	8	8
Vice-rectors	2	8
Deans	6	25
Vice-deans	0	24
Heads of departments	2	143
Center/research managers	5	34

Table 3 shows the composition of the rising numbers of FTEs (full-time equivalents) in job titles related to the manager roles that today constitute the line management. While in 1999 only a few, beyond the rectors, were employed in dedicated manager positions, the situation had become markedly different in 2017. The largest change is found in the number of deans/vice deans and among the heads of department. The number of centre/research managers, which are in charge of smaller academic units associated with a department, has also grown. However, the increases shown from 1999 to 2017 are obviously somewhat misleading as it is unknown how many de facto FTEs that were spent in manager roles prior to implementation of the Act. But while the exact figures are uncertain, it is still clear that the overall increase has been substantial. This increase also reflects the broader set of responsibilities introduced with the act. In comparison with the former manager roles, the new line managers hold considerably stronger decision-making power and have a more explicit and much broader strategic steering responsibility. And to an increasing degree they are not only holding this stronger decision making power, but also using it actively. In other studies this is observed at the central level where several universities have engaged in large reorganizations championed by rectors, vice-rectors and deans, and at the department level, where department heads are taking a more active role in the strategic steering (Degn, 2015a, 2015b; Lind & Aagaard, 2017; Lind, Hansen, & Stage, 2020).

However, the new University Act not only resulted in the explicitly required clearer and more expanded line management structure; it also influenced the traditional administrative side of the universities. The next section examines this development.

8. 5.1.2. Growth in the number of administrative managers

As shown in Stage & Aagaard (2019), it is particularly among the *pure* administrative positions that an increase in the number of new, specialized managers can be detected. Figure 6 shows the development in the number of administrative management positions outside the line management.

Figure 6. The number of 'degree-holding administrative managers' (FTEs) at four salary frame levels, 1999-2017
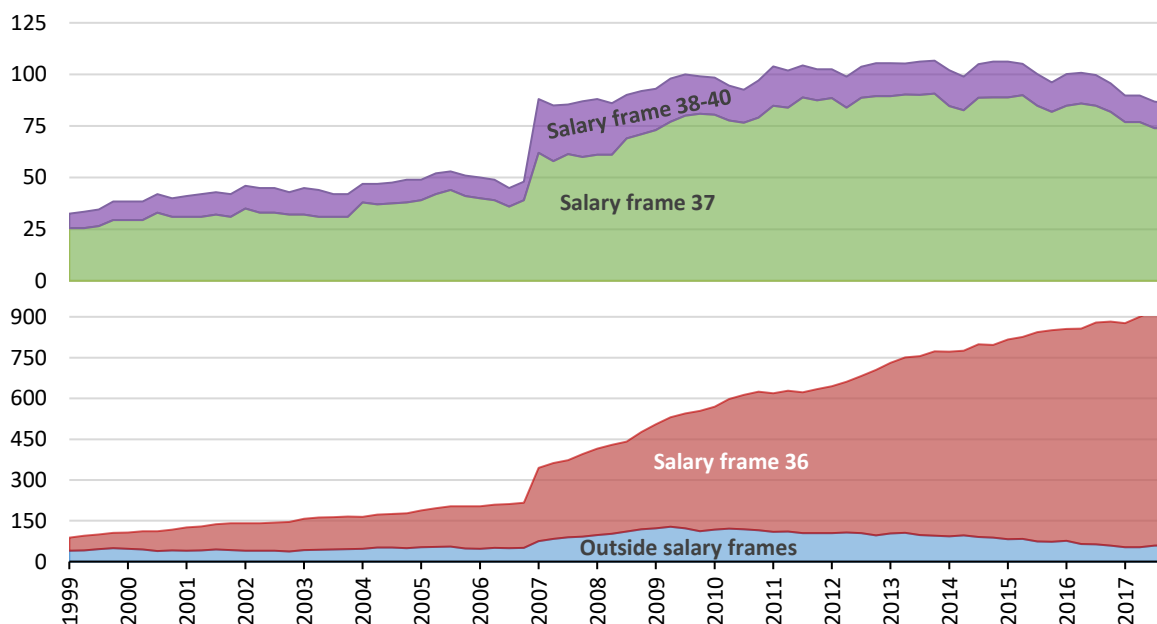
In addition, Table 4 shows the development of four types of manager positions within the top salary frames from 1999 to 2017. In the Danish nomenclature, there is a hierarchical relationship between the job titles of Director (*Direktør*), Manager (*Chef*), leader (*Leder*), and senior consultant (*Chefkonsulent*). Similar to the development of line managers, Figure 6 and Table 4 show that 'degree-holding managers' have developed in the direction of an elaborated pyramid shape with a wider middle and bottom layer. Hence, there has been a substantial increase in the number of lower-level managers.

Table 4. Types of degree-holding managers (FTEs) at Danish universities in 1999 and 2017

Salary frames	Type	1999	2017
38-40	Directors	8	11
	Managers	1	1
	Leaders	0	1
37	Directors	1	44
	Managers	19	27
	Leaders	4	4
36	Directors	0	10
	Managers	29	133
	Leaders	7	115
	Senior consultants	10	580

However, the strong growth in the number of manager positions in the highest salary frames around 2006/2007 was not exclusively linked to the implementation of the University Act. 2007 was also the year of the mergers between universities and GRIs. Initially, half of the new top managers at the universities came from the absorbed units (four small universities and nine GRIs). But while some of these incoming top managers were phased out over a few years (due to redundancy as a result of merging previously self-contained administrations), the total number of top manager-positions did not decrease. Figure 7 shows the different volumes of top managers at merged and non-merged universities.

Hence, the reduction in the number of top managers that was expected to be achieved by economies of scale due to the mergers did not materialize. Rather, new types of top managers were employed in exchange for the ones that became redundant. Part of the explanation of this pattern is most likely linked to the fact that the number of top managers (Salary frame 37 and above) at Danish public institutions is restricted by a quota assigned by the Ministry of Finance (MS 2019a). As a result of the mergers, the three largest universities' had their quotas expanded overnight. In the following decade, these universities continued to use the new full quotas, probably because it was available to them, and partly because it was contractually difficult to downgrade redundant top managers. Instead of restricting the number, it appears that the quotas in this particular case actually led to a lasting increase in the number of top university managers.

Figure 7. Top administrative managers (Salary frame 37 and above) at merged and non-merged universities, 1999-2017
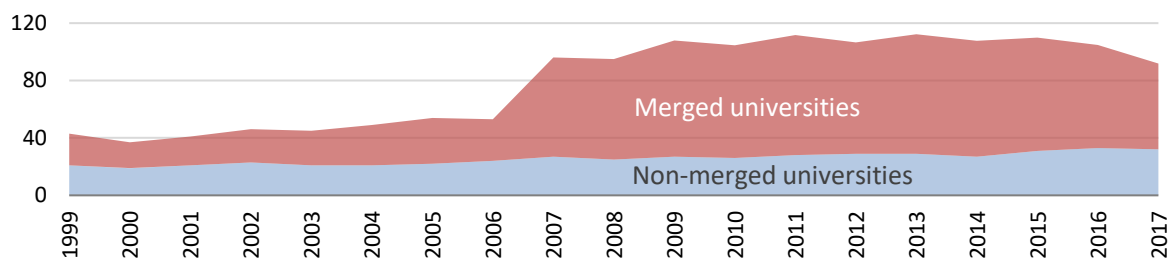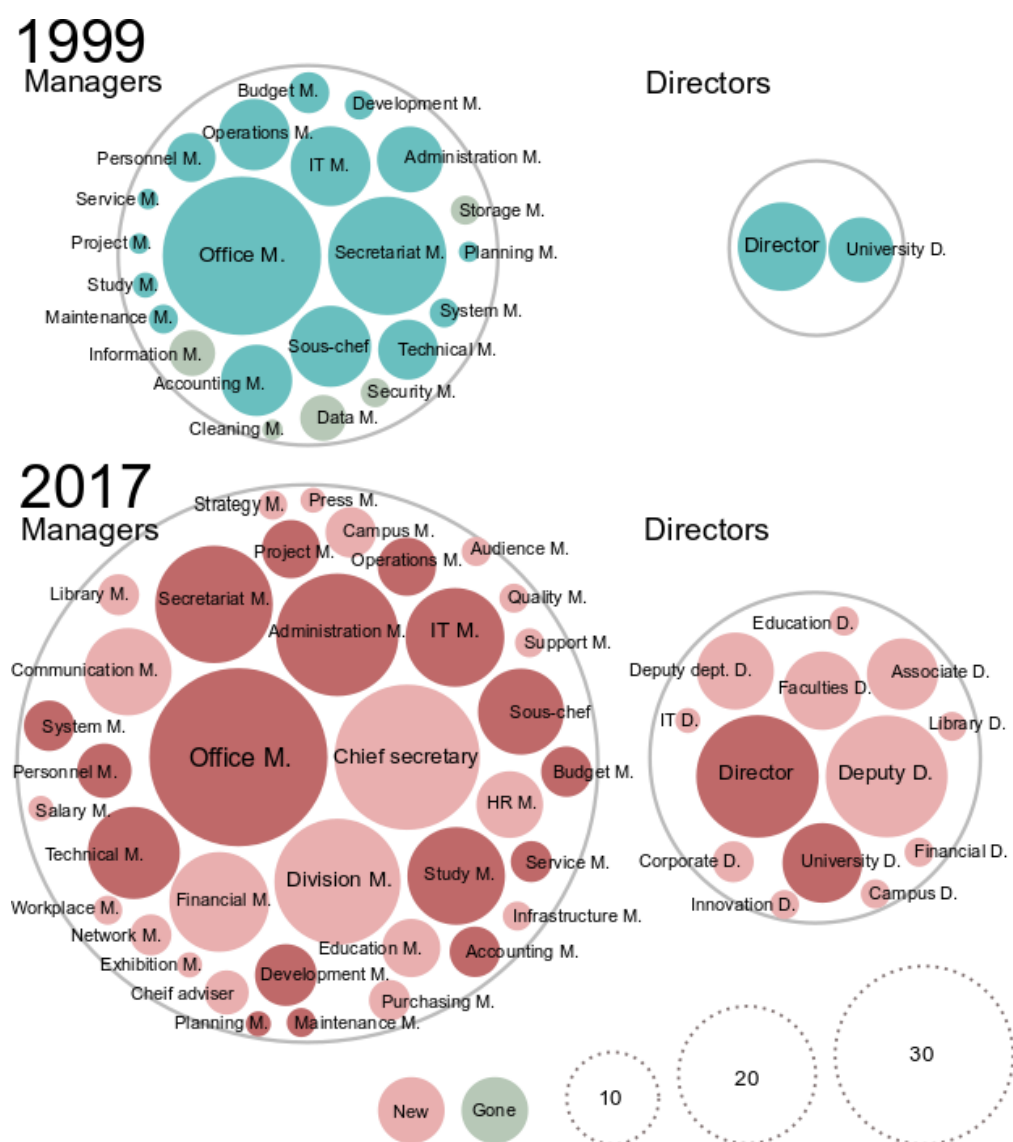

Contrary to the abrupt development in the management positions with the highest salary frames in the three largest universities, the number of managers in Salary frame 36 (which is outside the control of the Ministry of Finance) has steadily increased over the full period at all universities, from less than 100 in 1999 to more than 900 in 2017 (Figure 6). The development of this category shows, on the one hand, that the change processes were well underway before the 2003 reform, but also that the move towards a more comprehensive and specialized management system was accelerated after the appointed line managers took office around 2006/2007.

Around 75% of the administrative leaders in Salary frame 36 hold the job title of 'senior consultant', which is formally a minor manager or team leader position, which is also increasingly used as a final career advancement step for degree-holding specialists. The remaining 25% generally hold job titles such as 'head of secretariat' or 'head of unit'. Overall, the stark expansion of lower-level managers indicates a move towards a university administration composed of an increasingly fine-grained system of specialized offices. The large lowest level of (middle) managers, especially the senior consultants, also reflects a move toward more project- or team-based public administration, with many new leaders of relatively small teams.

Figure 8 shows that the administrative hierarchy has not simply been upscaled from 1999 to 2017, but also expanded with new administrative layers and divisions. While the overall number of staff doubled, the size of the administrative hierarchy tripled, which is a conservative estimate as many omitted senior consultants also act as managers. Those manager and director categories that were large in 1999 (the red circles, e.g., Office manager, Secretariat Manager, and Director) remained large in 2017 although new, equally large categories had emerged (the pink circles, e.g., Financial Manager, Division Manager, Communication Manager, Deputy Director, Associate Director). The few small manager categories that ceased (the green circles) do not represent discontinued but rather outsourced or merged responsibilities. Above all, the new managerial titles are hyphenated with rank or area, revealing the

contours of an extended hierarchy, and its increasingly fine-grained system of specialized offices. Hence, the administrative hierarchy has obviously been expanded and elaborated.

Figure 8. The volume and composition of the administrative top manager and director job titles[a)] at Danish universities in 1999 and 2017

1999
Managers

Budget M.   Development M.
Operations M.
Personnel M.   Administration M.
Service M.   IT M.
Project M.   Storage M.
Office M.   Secretariat M.   Planning M.
Study M.
Maintenance M.   System M.
Information M.   Sous-chef   Technical M.
Accounting M.   Security M.
Cleaning M.   Data M.

Directors

Director   University D.

2017
Managers

Strategy M.   Press M.
Campus M.
Project M.   Operations M.   Audience M.
Library M.   Secretariat M.   Quality M.
Administration M.   IT M.
Communication M.   Support M.
System M.   Sous-chef
Office M.   Chief secretary
Personnel M.   Budget M.
Salary M.   HR M.
Technical M.   Service M.
Division M.   Study M.
Workplace M.   Financial M.   Infrastructure M.
Network M.   Education M.   Accounting M.
Exhibition M.   Development M.
Cheif adviser   Purchasing M.
Planning M.   Maintenance M.

Directors

Education D.
Deputy dept. D.   Faculties D.   Associate D.
IT D.   Library D.
Director   Deputy D.
Corporate D.   University D.   Financial D.
Innovation D.   Campus D.

New   Gone

10   20   30

Note: Job titles containing either 'Direktør' (Director) or 'Chef' (Manager). The figure do not include senior consultants although many act as managers.

Overall, this part of the analysis thus supports the claim that the University Act has contributed to changing Danish universities as organizations. A new and more elaborated hierarchy of both line managers and administrative managers has developed over time. This development sheds light in particular on the emergence of a changed managerial structure in the form of a large-scale

influx of employees working on tasks that previously were not regarded as part of the core administrative and managerial responsibilities. There is a fairly clear correspondence between these positions and the implementation of the policy agenda behind the University Act, but not a one to one relationship. Firstly, the development started even before the reform and secondly also other reforms are likely to have played a role. So while the University Act most likely accelerated the observed development, it does not fully explain it. The following sections examine other important factors.

5.2. The PhD reform

In parallel to the University Act, also the Danish PhD system was reformed. Where the University Act mainly influenced the composition of the non-academic side of the universities, the PhD reform first and foremost targeted the composition of the academic staff. The first part of the reform was implemented in 2004, where the parliament decided to increase the PhD uptake with an additional 460 students per year. This ambition was subsequently significantly strengthened with the Globalization Strategy of 2006, which among other goals aimed to double the entire PhD uptake before 2010. This target was incorporated into the funding allocation and the development-contracts between universities and the Ministry in the period from 2007 to 2010. One-third of the additional PhD expenditure was granted in block funding, while the remaining two-thirds were to be covered by expected increases in external research funding (Aagaard, 2011, p. 392).

As shown in Figure 9, the number of PhD students did, in fact, grow as fast and as extensively as the reformers demanded. It even outpaced the target. The termination of the PhD reform also had a delayed but clear effect (since a PhD grant lasts three years in Denmark). The PhD population peaked in early 2014 with no less than 5,200 FTEs. Since then, the number has decreased consistently by around 70 FTEs every quarter.

Figure 9. Index of FTEs in academic sub-categories at all current Danish universities, 1999-2017. The start and end of the PhD reform are marked by vertical lines
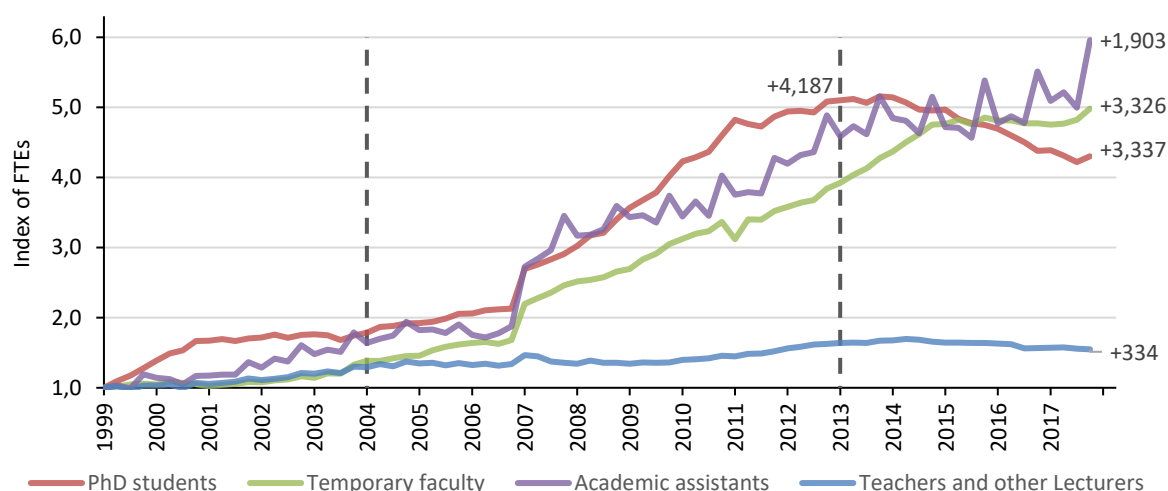

It is, however, noteworthy that the two categories of 'academic assistants' and 'temporary faculty' (e.g., postdoctoral researchers in particular) grew almost as quickly as the PhD students, even though they were not covered by the PhD reform's formal instruments. Moreover, these two categories did not start to decrease after the termination of the reform. Although the temporary faculty numbers stagnated for three years after 2015, the absolute numbers did not decrease. The spiky[9] line of academic assistants also continued its irregular rise, reaching a new high in 2017. The abrupt increases for most categories in 2007 reflect the mergers, which brought additional staff into the current universities from the absorbed units.

Regardless of whether they were affected by the mergers in 2007, all Danish universities had a similar ratio between PhD students and faculty in the first five years of the period; but this ratio began to increase more rapidly at the merged universities towards the end of 2005 (Figure 10). This likely reflects that the merged universities already from the outset were more research-intensive than the non-merged. The further concentration of research resources at the three biggest Danish universities as a result of the mergers in 2007 further accelerated this trend (Aagaard et al., 2016). In addition, the merged universities also benefitted from field-specific requirements in the PhD reform.

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9 The spikiness reflects that employment of research assistants is concentrated in the end of each year.

**Figure 10. PhD students per permanent academic position at merged and non-merged universities**
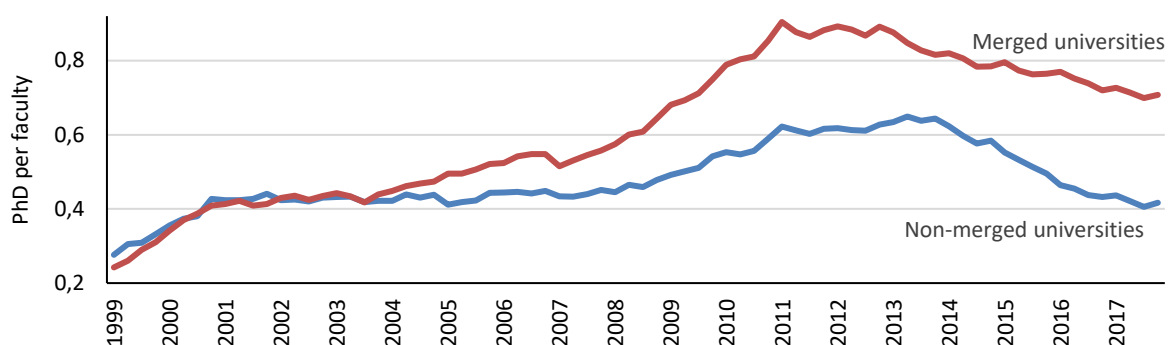
A more detailed insight into the effect of the PhD reform can be gained by looking at the developments within two selected universities. Here variation can be expected between universities with different profiles as the PhD reform primarily aimed to increase the uptake within the medical, technical, and natural sciences (90 per cent of the increase was to take place within these fields according to the reform agreement (Pedersen, 2015, p. 21)). Hence by comparing the Danish Technical University (DTU), a Natural Science/Technical Science university, with Copenhagen Business School, a Social Science/Humanities university, it is possible to see the effects of the reform at a disaggregated level.

As can be seen in Figure 11, the pattern here is very much in line with the reform's intention. DTU had a very strong increase in PhD students under the reform period, while the pattern at CBS appears to be almost unrelated to the reform. In fact, the strongest fluctuation in the number of PhD students at CBS can be observed after the reform's termination and as the growth levels off at DTU.

Hence, overall the correlation between the PhD reform's content and timing and the actual developments within the PhD category suggests a relatively clear relationship between the two. However, the fact that the number of PhD students outgrew the target and the fact that the two other temporary academic sub-categories surged simultaneously shows that also in this case there appears to have been other coinciding, reinforcing factors. Funding is likely to be one of the most important of these. Hence, the role of changed funding streams is examined in the next section.

Figure 11. The number of FTEs in four subcategories of 'other academic staff' and the total number of academic FTEs at The Danish Technical University and Copenhagen Business School, 1999-2017. The dotted lines mark the start and end of the PhD reform
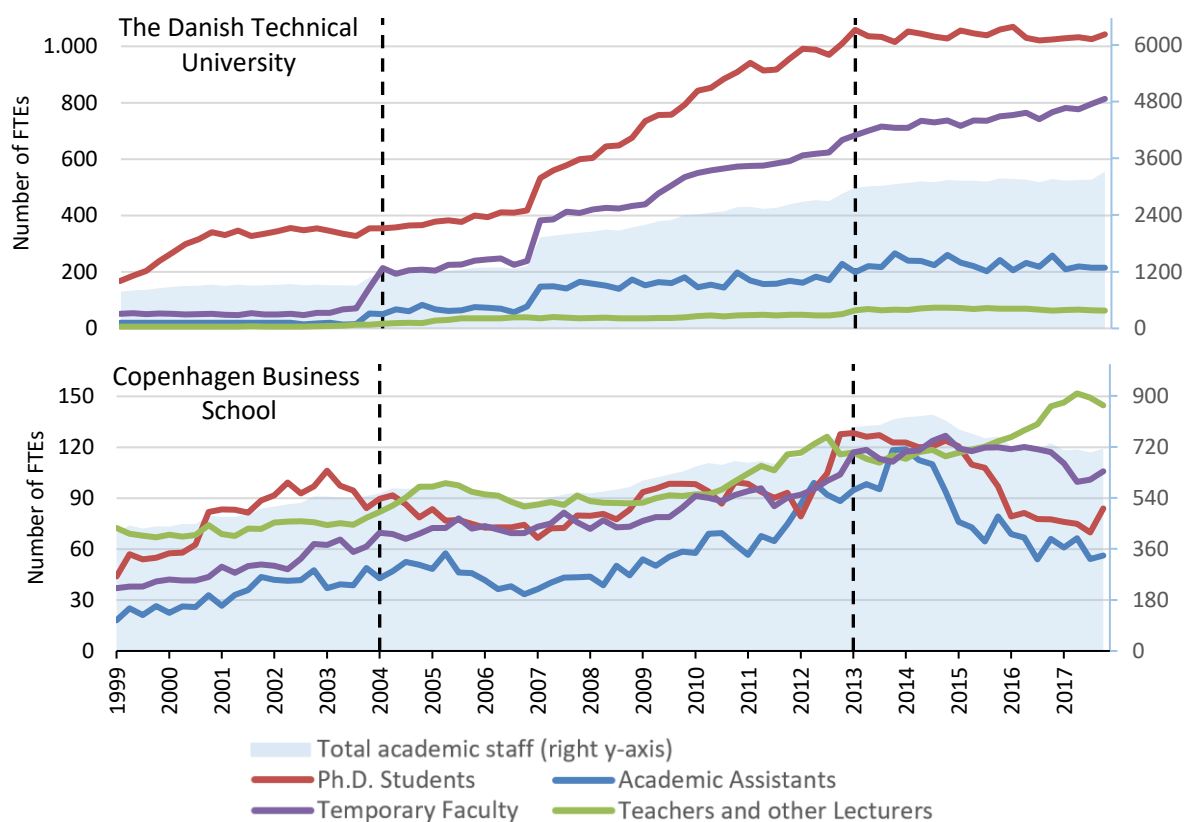
8.5.3. Changes in the volume and composition of funding

While both the University Act, the PhD reform and the mergers influenced staff compositions, it cannot be disregarded that the reforms were implemented in a period characterized by strong overall growth in the funding of universities (see Figure 12). This growth, however, was not evenly distributed across different funding streams or across individual universities. Hence, both the overall growth in itself and the changed funding composition can be expected to have played a role in the restructuring of university staffing.

The general funding changes were initiated in the early 2000s where a number of new funding organizations were established, but accelerated sharply as a result of the Globalization Strategy, which led to an unparalleled investment in the university sector from 2007 to 2012. The link between changes in specific funding streams and specific staff categories is, nonetheless, far from straightforward. Due to a combination of a high degree of financial autonomy and substantial complementarity between different 'university missions' (teaching, research, and outreach), the different funding streams cannot be clearly disentangled within the universities. Hence, organizational

changes can rarely be attributed directly to changes in a single funding stream. Still, some funding streams can be expected to be more closely linked to some staff categories than to others. In particular, it is often assumed that increased external research funding gives rise to temporary academic positions (e.g. Milojevic, Radicchi, & Walsh, 2019; Yudkevich, Altbach, & Rumbley, 2015).

Firstly, the funding for educational activities in Denmark is almost exclusively activity-based, determined by the number and composition of passed exams for each student. As a result, there is a very close relationship between the number of students and the educational funding stream. As can be seen in Figure 12, there has been a substantial increase in the number of students, which increased by 42 per cent from 2004 to 2014. These numbers, however, dropped again over the last four years of the period under study due to state-led quotas in certain fields of study.

Secondly, the funding for research activities consists of two streams: one of block grants (which are mainly allocated based on historical criteria, but with a growing performance-based share), and one of external research funding from both public and private national and international sources (Aagaard, 2017). Figure 12 shows these two streams combined as 'annual R&D expenditures as a percentage of GDP,' which increased in particular from 2007 and onwards.

A disproportional part of this increase in R&D expenditures has, however, been allocated through the external stream, and often with special strings attached (Aagaard, 2017). Figure 12 shows the contours of the development during the period in question. The main increases in external funding here again took place in the years after 2007, where its relative size grew from around 30% to 45%.

Figure 12. The development in three selected staff categories, compared to indicators of changes in the three funding streams, at all Danish universities 1999-2017
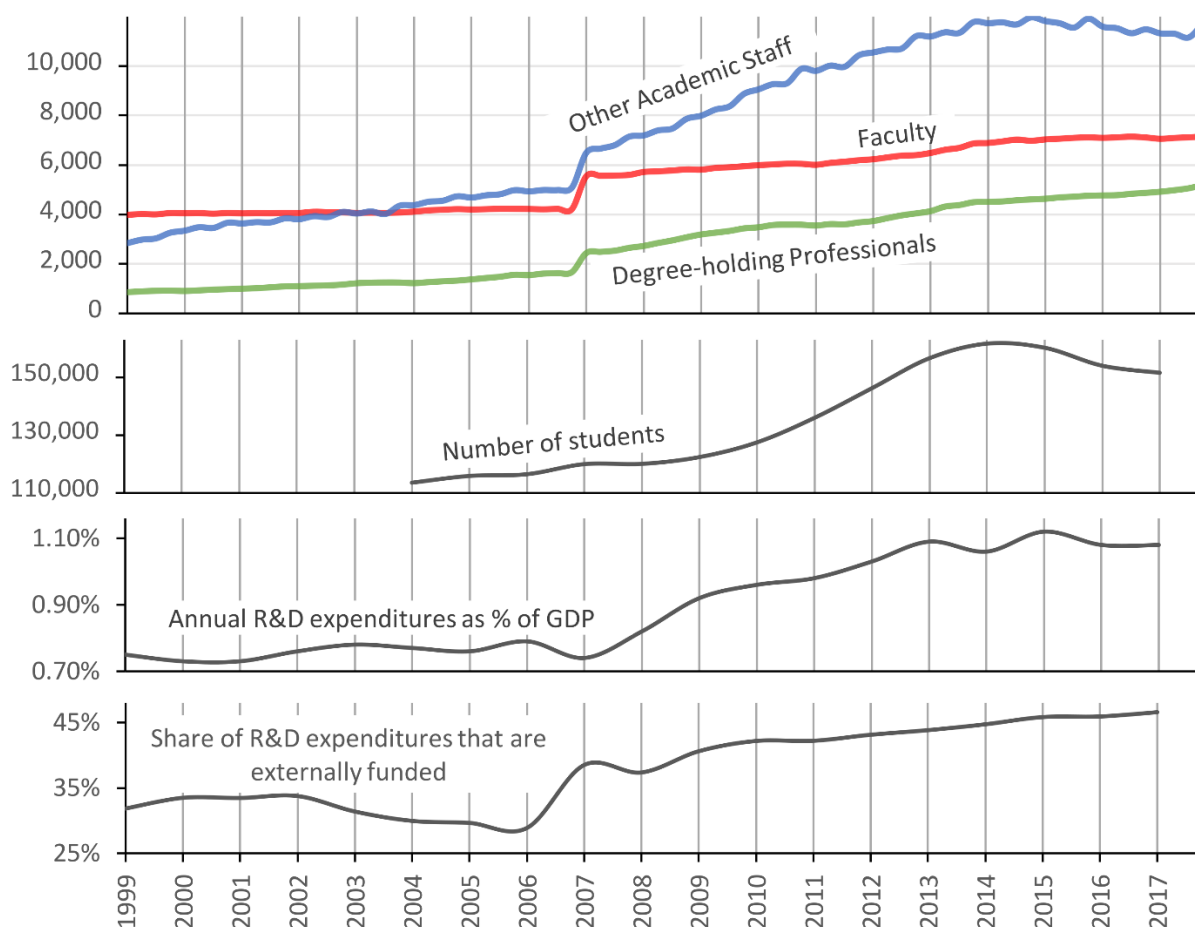
Source: Statistics Denmark (1999-2011) and Universities Denmark (2012-2017).

As shown in Figure 12, we will in the following sub-analysis focus on the relationships between these funding streams and three selected staff categories: 'other academic staff', 'faculty', and 'degree holding professionals'.

As stated above, it is generally assumed that there is a close link between external research funding and the number of mainly junior academics in temporary positions. In reality, however, this link is less visible than one could expect – at least at the aggregated sector level. While the share of temporary academic staff obviously grew in the period when the share of external funding increased the most (from 2007-2010), it also grew (although at a slower pace) in the period from 2002-2006, when the share of external funding was decreasing. Likewise, it can be seen that the number of academic staff in temporary positions started to drop from around 2015, although the share of external research funding continued to increase. However, as shown in the previous sub-analysis, the drop first and foremost relates to the termination of the PhD reform, which effectively decreased the number of PhD students, but not so

much the other temporary staff groups. With regard to the other two staff categories (faculty and degree-holding professionals), the relationship between individual funding streams and changes in size is even less detectable at the aggregated sector level. The developments here appear to be more closely associated with the overall growth in resources than to fluctuations in specific funding streams.

Since the eight Danish universities have rather different compositions of funding, it is possible to further disentangle the relationship between funding types and staff categories by examining selected universities separately. Figure 13 shows just how different the funding compositions of the universities are. The distributions are shown for just one year because the major institutional differences have been fairly stable from 2007 to 2017.

Figure 13. Funding composition of Danish universities on a tentative continuum from teaching-intensive to research-intensive, exemplified by three selected universities in 2017
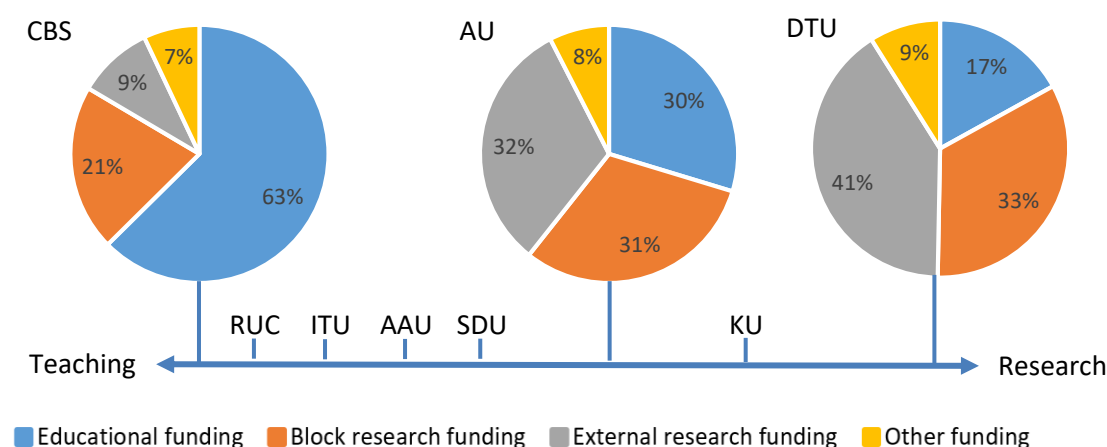
Source: Universities Denmark.

The research-intensive universities receive significantly more external funding and larger block grants for research activities than the teaching-intensive ones, which rely mostly on the activity-based educational funding stream. These institutional differences in funding compositions are increasingly reflected in the academic staff composition. From around 2003, a divide began to grow in the ratio of temporary to permanent academic positions across the continuum above. All universities had a similar ratio at the beginning of the period, but the size of the temporary academic workforce clearly increased at a faster pace at the research-intensive universities during the period where the share of external research funding increased. Figure 14 shows the contrast between the two universities that are located closest to each end of the continuum.

External research funding accounted for respectively 41% (DTU) and 35% (KU) of the two most research-intensive universities' 2017-budget, and they employed two 'other academic staff' for every 'faculty' member. In contrast, external research funding accounted for only 10% of the two most teaching-intensive universities' 2017-budget, and they employed only one 'other academic staff' for every 'faculty' member. Conversely, the teaching-heavy universities have a relatively larger share of 'faculty', for instance, RUC had almost twice the share as DTU in 2017 (33% vs 18%).

Figure 14. 'Other academic staff' per permanent academic staff at the two most research-intensive and two most teaching-intensive universities, 1999-2017
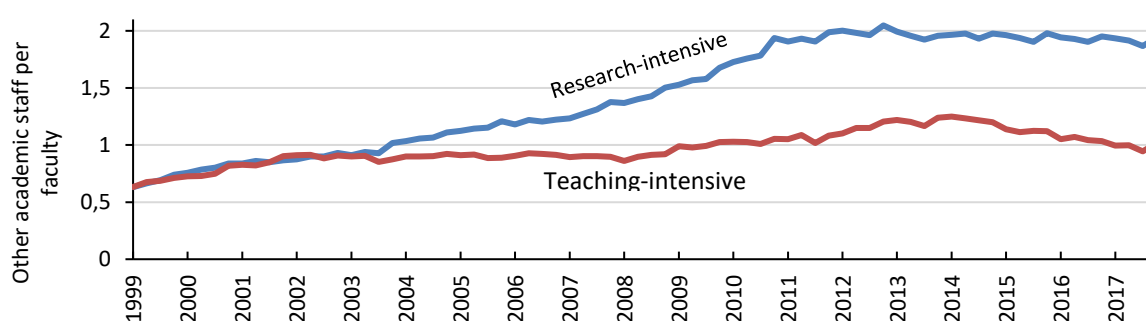
Contrary to these developments within the academic workforce, no clear link emerges between specific funding streams and changes in the administrative/managerial workforce from the analysis of separate universities. The category of degree-holding professionals (as well as the categories of line managers and administrative managers examined above) increased with surprisingly uniform intensity and persistence across the rather differently funded universities. This group of specialized managers and administrators increased no less at RUC than at AAU, even though these universities have had the smallest and largest changes in the level and composition of funding respectively. In the same vein, the degree-holding professionals group grew only slightly more at CBS and DTU than it did at the other universities, even though they have contrasting academic profiles (social science vs technical science) and funding bases (teaching vs research funding).

However, the number of technical & manual staff for every academic staff member has developed unevenly across the continuum of differently funded universities. The research-intensive universities have gone from 0.71 to 0.26, compared to 0.23 to 0.13 at the teaching-intensive universities. Obviously, CBS and RUC, with their predominantly Social Science profiles, employ considerably fewer craftsmen and technicians for performing experiments. The high reduction at the research-intensive universities signals a link between

these research-supporting technicians and the stark increase in temporary junior academics, and hence also a link to the increases in external research funding. 'Technical and manual staff' is, however, a many-sided category that is also influenced by the other reforms examined above. The move to larger, more professionally managed and 'self-owned' entities were explicitly intended to lead to economies of scale and to outsourcing of manual tasks, of which these reductions may also be a weak indication.

8.6. Discussion and concluding remarks

There is little doubt that the sum of the major national policy reforms of recent decades have had a profound influence on the staff composition of Danish universities. Overall, there is a relatively clear correspondence between the scope, direction, and content of the reforms on the one side, and the type and magnitude of organizational changes observed on the other. Hence, instead of change resistance and path dependency, the general development has been characterized by a comprehensive change of Danish universities as organizations – at least seen through the lens of relative growth and decline of different staff categories. It is, however, equally evident from the analysis that the relationships between most of the individual reform elements and the observed changes in staff developments seldom have been immediate, direct and straightforward.

Only in few instances do we observe a relatively clear correspondence between the individual reform elements and the changes in staff composition. Elements of the University Act and the PhD reform are examples of such elements with an almost one-to-one relationship between reform content and staff changes (although with time lags), but these relationships are rather exceptions than the rule. Notably, these two reforms had strong coercive elements and left limited room for local adaption. But even here it is highly plausible that at least parts of the observed developments in staff composition would have occurred anyway. For the rest of the reform elements, the opposite has typically been the case. Most of the reform elements examined in this article provided substantial leeway for the universities regarding how to implement them. As a result, the direct effects of these reform elements in isolation are much more difficult to disentangle.

For two decades now, the staff composition of Danish universities has nonetheless consistently moved in the same overall direction. It thus makes sense to think of the national policies in question, together with other minor reforms not covered in this article, as a 'string of reforms' with a relatively coherent vision of how to organize Danish universities. Moreover, these different

reform elements have, in general, interacted and reinforced one another's effects. This finding also corresponds to previous policy studies (Degn & Sørensen, 2015; Greve & Ejersbo, 2019; Lind & Aagaard, 2017), which highlight that reforms 'tend to come in packages or in strings' (Brunsson, 2009, p. 54). Our empirical analysis accordingly shows that the substantial staff changes eventually took place in correspondence with the content of the reform package as a whole, but that the changes in most cases only manifested themselves slowly over time and often with considerable time lags. A related and important fact was that most of the reforms came without additional funding. The University Act and the mergers were expected to be budget neutral in the long run, and the PhD reform was only partially funded through increased institutional funding. However, the reforms were implemented in a period of general growth, and the university leaders were under the impression that compliance with the unfunded reforms would increase the chances of getting a good share of the additional resources that were simultaneously allocated through other strings in the funding system (Aagaard, 2011).

The national development can, however, not be fully understood without also taking the global and local levels into account. On the one side, the consistency in the direction of the string of reforms suggests that the vision of change has been strongly inspired by the transnational discourse on the organization, role and missions of universities, which flourished during the period under examination (Paradeise et al., 2009). Developments with similar direction have thus been observed in many other countries during the same period. Stage (2020), for instance, shows that transformations similar to those observed in Denmark also happened in the United States, the United Kingdom, Germany, and Norway. This convergence shows how perceptions of legitimate practices within the global field of universities have opened room for new types of strategic decision-making about recruitment and division of labor. As a result, a bottom-heavy academic workforce and top-heavy administration appear to have become the "new normal" across countries. This appears to be both the result of national policies shaped by transnational pressures and local implementation influenced by normative pressure from the organizational field of universities.

Hence, the reform's high impact on Danish universities has also to some degree been reinforced by the universities themselves. The apparently close congruence between the overall policy-vision and the 'models' that are either in place or being praised in countries where "world-class" universities are based (e.g. the United States, the United Kingdom) have also created a normative pressure at the local level, urging the Danish universities to implement and translate the reforms in certain ways. In the opposite scenario, if the reforms had contradicted transnational trends in the global field of universities,

the Danish universities would have been more likely to resist or modify the policy demands – and given the flexibility related to most of the reform elements, other paths could have been possible to pursue. At the same time, it should also be noticed that, while the different Danish universities all have changed in a similar direction, they have also maintained some of their initial differences. Most importantly, it should be noticed that the string of reforms appears to have led to increased homogenization at the administrative side of the universities, but to increased differentiation at the academic side. Where the administrative hierarchy has developed in uniform ways across all universities, the differences in staff composition between teaching and research intensive universities, respectively, appear to have widened on the academic side.

But as Stage (2020) also shows, the transformation of the organizational model of universities has gone further in Denmark than in any of the other examined countries. Hence, the transnational pressure and local adaption outlined above cannot fully explain the Danish case. As the present analysis has shown, the more far-reaching Danish staff changes appear to have been driven by specific national policies and actor constellations. This observation is opposite to what Hüther and Krücken (2018) observe in neighboring Germany, where policy reforms apparently have played a minor role in university change. They argue that their federal system have led to many disconnected and contradictory university reforms and their constitution have curbed reforms by protecting full professors' autonomy. Our Danish case, therefore, raises a second-order question: How were Danish policymakers successful in bringing about changes that have been difficult to carry through in other countries? While a thorough analysis of such questions is beyond the scope of this article, Aagaard (2011) and Aagaard & Mejlgaard (2012) suggest a number of possible explanations.

Firstly, the Danish reform agenda has since the turn of the millennium been characterized by a high degree of consensus among policymakers and central stakeholders. Hence there has been limited opposition to the development outside of the universities. Secondly, the Danish universities have at the same time had difficulties finding consensus among themselves and have therefore had limited veto power. Thirdly, the reformation of the Danish university system has been a long, relatively unitary, and gradual process with many layers of reinforcing reforms. Hence, through different layering and displacement processes taking place over a prolonged time period, the Danish policymakers have succeeded in bringing about change that would otherwise be difficult to implement in fewer steps over a shorter time period. As Streeck and Thelen (2005, p. 23) argue, when institutions defy radical change, differential growth of selected elements can eventually lead to the desired changes.

Hence, the Danish string of reinforcing reforms seems to have circumvented parts of the change-resistant nature of universities. And fourthly, but not least, it is important to highlight that the period as a whole has been characterized by strong financial growth. Generally, it is easier to implement layering and displacement strategies when additional money is allocated to the system (Aagaard, 2017).

Hence, policies do matter, and national political-administrative systems can not only be seen as mediators of transnational ideas, but also as systems that continue to translate, modify, or even amplify general trends into policies with distinct national colors (Gornitzka & Maassen, 2014; Michelsen & Bleiklie, 2013). In the case of the Danish universities, the global pressures quite clearly shaped and empowered the impact of policy reforms, which again empowered hierarchical structures, which in turn further empowered the impact of policy reforms and global pressures. Hence, the empirical evidence supports the notion that global pressures, the state authority, and the university management have all simultaneously had a substantial impact on the trajectory of Danish universities, but also that the string of reinforcing reforms has been the key catalyzer.

8.7. Disclosure statement

8.8. References

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Chapter 9.
Addressing the contribution

This dissertation contributes to an emerging literature on a claimed organizational turn in which universities as communities of professors have been transformed toward more fully-fledged organizations with a more diverse staffing model (Bleiklie, Enders, et al. 2017; Bleiklie and Kogan 2007; de Boer, Enders and Leisyte 2007; Krücken and Meier 2006; Marginson and Considine 2000; Whitley and Gläser 2014; Woelert 2019). The whole notion of a transformation implies that contemporary universities are significantly different organizations than earlier ones. Hence, transformations are more than just superficial changes intended to please external stakeholders (Meyer and Rowan 1977). Rather, they contain fundamental changes that are affecting the fulfillment of core missions (de Boer, Enders and Leisyte 2007). It is the assertion of a transformation away from a traditional organizational model of universities toward a new model.

The preceding eight chapters have illuminated the university transformation in Denmark through the lens of long-term staff changes. The four embedded articles have empirically explored the character and pace of these changes at different levels of resolution.

- Paper 1: An all-around analysis of staff changes at multiple levels in Danish universities.
- Paper 2: An in-depth analysis of the increasingly influential staff category of managers.
- Paper 3: A wide-angled analysis of the international development of five staff categories.
- Paper 4: A fine-grained analysis of the correlation between detailed staff changes and the timing and aim of four important policy reforms.

This final chapter brings the central findings together and discusses how, in concert, the articles contribute to answering the overall research question: How far have Danish universities transformed from a professor-dominated model to a more diverse staffing model?

9.1. Main findings

Before proceeding to the concluding discussion, this section recapitulates the four articles' different but complementary levels of analysis and empirical findings.

9.1.1. An all-around analysis: Multiple levels of staff changes

As a first step toward understanding organizational transformation, Paper 1 provided an all-around analysis of staff changes at multiple levels in Danish universities. It empirically investigated staff categories' development in terms of full-time equivalents, salary profiles, and job titles, using the payroll data. By gradually opening up the multi-tiered staff categorization, the paper illustrated how a fine-grained view on staffing is indeed necessary to grasp the character and extent of the changes that have occurred. Particular emphasis was placed on unfolding the changes within the non-academic staff, which have largely been black-boxed hitherto.

At the most aggregated level, the paper showed that the overall share of academic staff increased at the expense of the non-academic staff. This observation stands in contrast to a popular public narrative of an administration outgrowing the academic part of the universities. Nevertheless, this binary level of analysis only reveals a superficial aspect of the development. Important nuances surface when the aggregated categories are broken down into sub-categories. These nuances have clear implications for understanding universities as organizations: Most notably, the growth on the academic side is, to a very large extent, focused on the bottom strata of the academic hierarchy, where the number of temporary junior positions has surged. The balance between permanent and temporary academic staff has tilted dramatically during the two decades under examination. On the administrative side, the analysis also shows a very significant shift in the balance between different categories, but here the direction is almost the opposite: The strongest growth has taken place amongst the higher categories in the non-academic hierarchy, while almost all of the other non-academic categories have decreased in relative terms. Furthermore, a detailed examination of job titles on the administrative side showed the contours of a proliferation of new, specialized functions that are added on top of the (now shrinking) traditional administrative support functions.

Hence, on the academic side, there has been a weakening of the middle and a strengthening of the bottom layers of the career hierarchy, while the strengthening on the administrative side is found in the middle and top layers. Noticeably, these trends appear to be fairly uniform across very different university types in Denmark.

9.1.2. An in-depth analysis: Changing managerial roles

Paper 2 provided an in-depth analysis of the increasingly influential staff category of managers. It zoomed in on the character and extent of changing man-

agerial roles by complementing the payroll data with interview data. The paper described how the shift from a collegial model toward a managerial model has been a lengthy but steady process in Danish universities. One major element in this shift was the policy-led expansion and empowerment of appointed line managers in 2003, which has by no means been simple to enact in practice. The interview data highlighted that the lengthy process of formally establishing the new managerial positions did not in itself realize the full effect of the reform. The importance of these positions has increased over time, where subsequent policy reforms have strengthened them and succeeding managers have carved out a widening space for decision-making and enacted the new line management into organizational structures (e.g., establishing secretariats, leadership teams, recruitment procedures, and official strategies)

The paper also pointed to "generation effects" of both managers and academics. On the one hand, the first generation of appointed line managers took parts of the mindset of the collegial model with them, while those appointed later were perceived to have a more instrumental and strategic mindset. On the other hand, the share of the academic workforce that has experienced the collegial model firsthand has become a minority in relation to those who have never experienced anything other than the managerial model. Such generation effects may have contributed to an apparently growing "taken-for-grantedness" of the managerial model. The paper concludes that successive actors promoting the managerial model have been the most active, persistent, and successful over a long period, adding substantial changes beyond the initial creation of the many new formal manager positions.

9.1.3. A wide-angle analysis: Staff changes across countries

Paper 3 provided a wide-angled analysis of the international development of five staff categories. It compared the emergence of a more diverse staffing model in Danish universities with the corresponding developments in the United States, the United Kingdom, Germany, and Norway. More specifically, it assessed whether these five historically distinct university systems displayed signs of organizational convergence. The paper brought five national staff datasets together and facilitated the comparison of them by outlining their technical differences, by presenting them in an "as-comparable-as-possible" format, and by considering variation in national traditions. The results showed that the different university systems all changed in the same direction, but that the changes reproduced rather than erased the major historical differences. A common trend across all of the countries was that the share of academic staff grew while the share of non-staff academic staff declined.

The two categories of temporary junior academic staff and degree-holding administrative/managerial staff have uniformly increased the most by far – at the expense of the other categories of faculty, clerks, and manual and technical staff. The direction, and to some degree, the timing of staff changes have been similar across the countries, but they have nonetheless developed from very different starting points and with different intensity of change. The paper shows that staffing changed the most in the countries where state authorities have changed the conditions of universities the most (e.g., regulation, funding, discourse), for instance, more in the UK than in the US and more in Denmark than in Norway and Germany. In many respects, the Danish universities have evidently had the highest pace of change among this group of countries in recent decades.

However, the paper does shed light on the continuation of major differences. On the one hand, the non-academic side of universities in the US—and partly the UK—has long been larger and more elaborate than in their continental counterparts. On the other hand, the continental European universities have traditionally employed more juniors as part of the formal academic workforce than the Anglo-Saxon universities. The directionally similar developments have not reduced such major differences, which indicates national path dependencies that go well beyond university-specific practices, discourses, and policies (e.g., the general character of the public sector in the countries in question). Still, the directional similarity indicates a level of cross-country agreement about which staff categories are "needed" to respond to a globalized university environment.

The outcome is, therefore, not a cross-country organizational convergence per se, but rather dissimilar universities adding a similar layer of certain types of human resources. This may corroborate the claim that universities face globally shared models compelling them to become more strategic, flexible, and accountable.

9.1.4. A fine-grained analysis: The impact of reforms on staffing

Paper 4 provided a fine-grained analysis of the correlation between detailed staff changes and the timing and aim of four important policy reforms. The reforms in question introduced a line management structure, doubled the PhD-uptake, transformed the financing system, and merged several organizations. In order to examine their organizational impact, the paper combined with the payroll data with funding data and document-based information on the content of the selected reforms. The relationship between reform elements and changes to specific staff categories was not straightforward. The coercive

management- and PhD reforms forcefully affected the staff categories that they targeted as well as adjacent staff categories (e.g., degree-holding professionals and postdoctoral researchers). The two other reforms were less coercive and less explicitly targeted. Although they clearly affected staff changes broadly, their relationships to specific staff categories were less straightforward. The paper found, for instance, the link between external research funding and temporary academic staff to be more complex than often assumed.

By analyzing all four reforms side-by-side, the paper provided fine-grained insights into the drivers of university transformation in Denmark and highlighted how the different reform elements interact and mainly reinforce rather than weaken the effects of each other. The selected policy reforms do not explain the full extent of staff changes, but they clearly gave the development a certain direction, momentum, and legitimacy, which may in turn have shaped the influence of other concurrent and more generic drivers of change (e.g., rankings, audits, and accreditations). The paper argued that the linkage and consistency between successive Danish policy reforms and their congruence with the development in major countries might be two of the explanations for the apparently high policy impact on Danish universities. Hence, it makes sense to think of the Danish university reforms as a "string of reforms" enacting a relatively clear vision of how to organize and manage universities.

9.2. Concluding discussion

By approaching staff changes from different angles and at different resolutions, the four embedded articles have together contributed with a new empirical basis for grounding conceptual claims of university transformation. The central features of the traditional university model (for details, see Chapter 3) obviously continue to matter, but to which degree should an adequate understanding of contemporary Danish universities include a conception of a new university model that, in some respects, stands in contrast to the traditional one? The articles have illuminated in different ways the character, pace, and drivers of staff changes in Danish universities; however, does it amount to a level where it makes sense to talk about university transformation and the prevalence of a new organizational model? While this dissertation has naturally not answered this question fully, it has pointed out some long-term and large-scale changes, which most certainly have implications for universities as organizations.

9.2.1. A more diverse staffing model in universities

Importantly, this dissertation has shed new light on the obvious but oft-forgotten fact that Danish universities consist of a wide variety of employees.

Contemporary universities are huge, multi-purpose organizations. The vast diversity of university jobs extends far beyond what most people imagine—hundreds of distinct job titles. A disaggregated view on academic staff is common, so a significant contribution has been to reconcile it with a disaggregated view on non-academic staff. Changes in specific staff categories have been analyzed as parts of a greater whole. This approach assumes that categories have their full effect in concert with other categories, making their relational standing relevant. A major step has been to develop a coherent, multi-tiered categorization that could break down conventional staff categories effectively across time and universities, enabling the detailed and longitudinal analyses in the four embedded articles.

By exploring the job diversity in a longitudinal, cohesive, and bottom-up approach, the dissertation has illuminated detailed staff changes in Danish universities that the traditional university model cannot explain. The traditional model predominately explains the practices of professors dating back to the time when they were the main professionals in universities numerically and practically. This dissertation has shown that professors are less and less the only important staff category in Danish universities. A new organizational model is required to understand the coexistence of multiple, important staff categories in universities. The purpose of this dissertation has not been to develop such a model theoretically, but to contribute to its development empirically. The articles provide an empirically grounded view on the development of internal staff categories, which the more theoretical literature often has taken for granted.

Contrary to notions of resilience and change-resistance, the categorization reveals that considerable staff changes have increased the relative importance of certain staff categories. The articles have shown in detail how the two overarching staff categories—which the international literature describes as becoming less clearly subordinate to the professors—have steadily grown in importance: temporary junior academic staff and professionalized administrative and managerial staff. In this sense, Danish universities have clearly become characterized by a more diverse staffing model. This shift can be interpreted as the outcome of formalization and delegation of tasks previously conducted informally as integrated elements in academic culture: On the one hand, a process of moving tasks and responsibilities out of a fragmented academic arena into an administrative and managerial sphere, which is expected to be more consistent and accountable. On the other hand, a process of spreading academic tasks among a more diversified academic workforce, which is expected to be more productive, flexible, and responsive to society.

The documented staff changes make Danish universities look more akin to other hierarchically managed organizations—at least from a distance. Both

the academic and non-academic workforce have come to resemble the classic organizational pyramid-shape of low- and high-status employees. Academic activities are organized in increasingly larger formal teams, sections, departments, faculties, and universities. The managerial roles have been accentuated into an official, cohesive line management structure that is appointed downwards and responsible upwards. Numerous appointed mid-level line managers formally tie separate departments and units together via the empowered upper management. New professional capacities have been created around the various line managers and around crosscutting service functions, which all together complement each other in an increasingly fine-grained and formalized system of designated offices. These developments go beyond the traditional university model, implying a new, competing organizational model.

9.2.2. Empirical strengths and weaknesses

Previous empirical studies of staff changes have researched similar overarching conclusions (Baltaru and Soysal 2017; Christensen 2012; Fumasoli et al. 2015; Ginsberg 2011; Gornitzka and Larsen 2004; Krücken et al. 2013; Rhoades and Sporn 2002), but what distinguishes this dissertation from previous research is its empirical scale, resolution, and the consistency in which staff changes have been analyzed. It has embraced the multi-level and longitudinal nature of university transformation by holistically documenting staff changes at very different levels of resolution over a significant period of time. The staff data has been processed at the most disaggregated level available with the aim of comprehending and harmonizing staff categories as closely as possible over time, universities, and countries. In order to understand university transformation through staff changes, this dissertation provides an empirical middle position between quantitative studies using over-aggregated categories and qualitative studies using partial cross-sectional cases: An approach that maintains the quantitative overview of proportionality and temporality and incorporates the qualitative realization that staff categories have fuzzy boundaries and content.

The empirical backbone of the dissertation is Danish payroll data, which has uncovered staff changes over two decades at an unprecedented level of detail. The key strength is its individual-level information about job title, affiliation, contract type, and salary – together with identifiers tracing persons across universities and time. Indeed, these are "only" formal attributes of employees, and not their *de facto* assigned tasks and authority relations. It may be impossible to know the individuals' exact jobs, but it is possible to know generalized staff categories. The opportunity to combine the various individual-level details and enrich them with complementary inquiries provided a

firm foundation for categorizing staff in ways that capture variations in work conditions, tasks, and competences better than any previously available staff categories. Here, higher-level categories can be transparently understood as aggregations of lower-level categories and specific job titles and work conditions.

The payroll data provided in itself few clues about the drivers behind the observed staff changes, but it was well suited to combine with other data types that could help explain the development. The multi-tiered categorization made it possible to break down staff categories so that they closely complement manager interviews, funding figures, policy documents, and foreign staff data. The combination of these other data types and discrete staff figures provided fresh insights into the long-term drivers and consequences of university transformation. It was particularly apt to illuminate how various changes have slowly but steadily developed over two decades, resulting in significant organizational restructuring. It made clear that drivers of change at different levels (e.g., local managers, national policy reforms, and global models) have interacted but mainly reinforced one another's effects throughout the period.

Seasoned professors who have previously investigated similar developments in Danish universities never really went into empirical detail, concluding that they exhausted the possibilities in the data available at the time (Boden and Wright 2010; Christensen 2012; Paldam 2015). In comparison, this dissertation has uncovered numerous additional layers of empirical detail and concludes that so much more can still be learned from the data now available. For example, the articles did not fully examine "where" in the organization (e.g., departments, faculties, central units) the staff changes occurred (e.g., Gornitzka et al. 2009); the categorization still portrays positions as either academic or non-academic, not capturing the "hybridness" of certain positions (e.g., Whitchurch 2013); and the empirical analyses drew distinctions neither in terms of gender, age, nor nationality, which hide important changes in the academic and non-academic groups alike (e.g., Hüther and Krücken 2018).

This dissertation would have benefitted from a closer examination of selected staff categories. Beyond generalized patterns, very little is known about the work of most staff categories. This is especially the case for the non-academic staff with generic job titles, but also partly for different temporary academics (e.g., external lecturers or assistants). It is pertinent to investigate how the work of different categories has changed over time; and not least how they contribute to the core missions of the university. Whether the decline in clerks has resulted in academics doing more clerical tasks, whether the increase in managers has resulted in academics doing less coordination, or whether the

increase in junior academics has resulted in senior academics doing less teaching. A closer examination should illuminate how the considerable changes in staffing correspond to changes in work.

9.2.3. Local, national, and global drivers

This dissertation has found that national policy reforms have prompted the new organizational university model in Denmark, but also that the reforms should not be understood in distinctively national terms. They have clear ties to global models, which simultaneously imping on the Danish universities directly. In combination, there has obviously been significant national and global pressure on Danish universities to change in the last two decades. The congruence between policy reforms and global models seems to be one of the explanations of the apparently high policy impact on Danish universities. Hence, the observed changes reflect both organizational adaptations to specific external pressures (e.g., reforms) and to a general situation with increased external pressures (e.g., the knowledge economy discourse). This has prompted the construction of the Danish universities as more coherent and managed organizations. The articles have illuminated how processes of formalization and delegation have been the result of simultaneous drivers at the global, national, and organizational levels.

This might sound somewhat contradictory, as an increase in one is often seen as a rebuttal of the others; some perceive globalization to disempower national governments, and policy reforms to disempower public organizations. Sociological neo-institutionalism highlights how, in some cases, the relationships between these three levels are not a zero-sum game, where gains equal losses (Krücken et al. 2007, p. 11). Instead, the global, national, and organizational levels may increase their influence simultaneously: Increases in higher-order drivers may reinforce lower-order actors as the legitimate and capable agent of change. "[T]he provision of guidance assumes that there is an addressee who is enabled to receive advice and to act on it" (de Boer, Enders and Leisyte 2007, p. 31). This is the case both at the national and organizational levels. When universities are constructed as coherent and managed organizations, external pressures (e.g., policies, global scripts, or best practices) can be directed to a more distinct and formal addressee, who can mediate to the range of academics and be held accountable for performance.

> [A]t the same time that national policy-makers feel obliged to react to perceived shortcomings made visible by international comparisons, transnational actors typically address the nation-state as the legitimate actor [which in turn addresses the managerial level of universities]" (Krücken et al. 2007, p. 11).

The articles in this dissertation argue that global pressures empowered the impact of policy reforms on Danish universities, which again empowered their hierarchical structures, which in turn further empowered the impact of policy reforms and global pressures. The empirical evidence supports the notion that global pressures, the state authority, and the university management have simultaneously all had an impact on the trajectory of Danish universities. An obvious question becomes whether their recent authority has come at the expense of the local faculty. Again, this does not have to be a simple zero-sum game. Whitley and Gläser (2014), for instance, argue that the rise of managers and policy instruments may empower scientific elites as they rely on their advice and prestige. Other accounts in the literature argue that the Danish faculty members may, in fact, be on the losing side—most clearly with the abolishment of the collegial decision-making bodies and the rise of commissioned research (e.g., Andersen 2017; Ejersbo et al. 2018).

9.2.4. Co-existing models and core practices

The various loose couplings of the traditional university model sustain(ed) the authority of professors over core academic practices. However, the new organizational model—with its formalization and delegation—holds the potential to offset parts of the traditional model. For example, the expanding junior academics may have reduced the "loose coupling" at the individual level, because seniors increasingly supervise and employ groups and juniors have reached a critical mass to unionize and collaborate. The expanding corps of professional managers may have reduced the "fluid participation" in decision-making and straightened out "problematic preferences". The expanding specialist-units and secretariats at all levels may have reduced the "information deficit" of managers by somewhat converting "unclear technologies" into apparently objective knowledge that is manageable. And, the expanding line management may have reduced the "loose coupling" between organizational units and thus increased the effects of central policies.

On the contrary, parts of the higher education literature continue to describe the core practices of (senior?) academics as highly institutionalized, path-dependent, and loosely coupled (if not de-coupled) from the work of others in the organization (e.g., Hüther and Krücken 2018; Maassen and Stensaker 2019; Musselin 2007; Thoenig and Paradeise 2016; Whitley and Gläser 2014). They posit that there are severe limits to which core practices in universities that actually *can* be formalized and delegated successfully. The possibilities to formalize procedures that ensure scientific progress and student learning and allow strategic decision-making at a managerial level are allegedly restricted to rather superficial matters. At the end of the day, it is

argued, contemporary universities still rest on the scientific competence and creativity of individualistic academics, owing their primary allegiance to scientific communities. Despite formal cutbacks, collegial and individual self-governance are still perceived to be core features of academia (Gornitzka et al. 2017; Krücken et al. 2013; Seeber et al. 2015). Hence, formalization does not necessarily mean actually delegating responsibilities, but rather the construction of parallel or additional capacities.

Hence, it is an important theoretical point that the gradual rise of a new organizational model does not *automatically* reduce the traditional one correspondingly. Scholars highlight that the two somewhat conflicting models may co-exist and only partially mix (Bleiklie, Michelsen, et al. 2017; Bleiklie and Kogan 2007; Kleimann 2018). This relates to persistent loose couplings and unclear technologies, which allow a distance between core and non-core practices. It is possible that the traditional model continues to resemble core practices and that the new model has primarily transformed non-core practices aimed at legitimacy. Bromley and Powell (2012, p. 498) argue that it is increasingly necessary for complex organizations to thoroughly implement and direct substantial resources toward non-core practices with "a tenuous link" to core practices in order to sustain legitimacy. Non-core practices can be adjusted to external pressures more readily and visibly than the resilient core practices of elite professionals. In this way, the new model may even be preserving parts of the traditional model by buffering external pressures.

Along this line of reasoning, Hüther and Krücken (2018) concluded a book on German universities with the following:

> We were also able to show that there are indicators pointing to the development of *German* higher education institutions as complete organizations, breaking with previous organizational models. However, if we take an overall picture—especially in terms of organizational practice—we can clearly see that the construction of complete organizations is primarily a discursive 'construction'. Be that as it may, in comparison, this model plays much less of a role at the level of formal regulations and practice (Hüther and Krücken 2018, p. 260).

This conclusion is noteworthy because the book describes multiple ways in which the German university system has changed (personnel, management, incentives, etc.): "We are witnessing a myriad of changes in all the areas we investigated" (Hüther and Krücken 2018, p. 262). Nonetheless, the conclusion above implies that the formalization and delegation of tasks—making new staff categories less clearly subordinated to the professors, according to other, narrower studies—have not occurred in ways that have changed the core practices in an overall picture. Instead, Hüther and Krücken mainly describe the

many changes as core practices given new "forms" or "names" and complemented with new non-core practices. They reaffirm German universities as highly institutionalized and resilient organizations resembling the traditional university model, although they adopt a new organizational model on the surface.

However, the German and Danish university systems differ on a number of parameters despite common historical anchoring in the Humboldtian tradition. In Germany, for instance, the constitution protects the authority of professors, the chair-system organizes activities around the professors, and the federal system has reduced the consistency between consecutive university reforms. As the comparative Paper 3 describes, German universities are generally conceived to be developing somewhat more conservatively than in Denmark.

9.2.5. Universities are more than just their professors

The question is, then, to what extent should the Danish staff changes documented in this dissertation be interpreted in a similar way to the German case? Such accounts of the resilience and loose coupling of core practices are important counterweights to popular claims regarding the total transformation of universities (e.g., Ginsberg 2011; Readings 1996). Striking the right balance between change and stability is not easy in the case of universities. Much in today's Danish universities certainly bears resemblance to past eras. However, the accounts of historical stability "naturally" overemphasize the centuries-old practices of professors, because the historical record of other staff categories first really gained weight in recent years. A rather static and narrow view on the core missions of the university is common and easily but mistakenly equated with the work of professors.

The core practices of professors may rightly be some of the activities in Danish universities that have changed the least, but the work of other staff categories—which have clearly changed extensively—do increasingly contribute to core missions of the university as a whole, albeit to varying degrees. Equally, all staff categories perform some non-core practices that relate to secondary but worthy purposes (e.g., order, convenience, legitimacy, or justice) (Ramirez 2006). The distinction between core and non-core practices is, of course, highly controversial, and this dissertation does not provide sufficient criteria. At a basic level, core practices rather directly contribute to the official missions of teaching, research, and public service, but what they cover in practice has been stretched considerably over the years (Enders and de Boer 2009). Public outreach, adult education, and industry partnerships are examples of new priority areas. Hence, the distinction between core- and non-core

has been blurred because the variety of practices that now relates to core missions has greatly expanded.

Junior academics obviously contribute to core missions but do so differently than do professors. The sheer extent of their rise means that they play a defining role in relation to university output (even being output themselves). Academic assistants, PhD students, and postdocs have each increased 300-400%, which is disproportional to associate professors (56%) and full professors (160%). Technical and clerical staff seem to contribute to core missions to a lesser extent today than they did in the past. Professors report less support for their immediate concerns from these rapidly diminishing staff categories. Degree-holding professionals contribute to core missions in very different degrees. Some have very loose couplings to core missions (e.g., branding, legal compliance, budgeting); others have tighter couplings (e.g., technology transfer, science communication, teaching training). The sheer extent of their rise (462%) makes it necessary to take their contribution (or lack thereof) to core missions seriously. Managers contribute to core missions on an overarching level; for instance, they hire and fire. The appointment of hundreds of line managers, each backed by professional secretariats, have tightened their coupling to core missions.

However, the contribution of most staff categories to core missions and the "value" of non-core practices are poorly understood. In most other countries than Denmark, the interest in the work of staff categories other than professors is slowly growing. Qualitative studies describe, for instance, that some degree-holding professionals contribute positively to core missions (e.g., Kehm 2015b; Ryttberg and Geschwind 2017; Whitchurch 2013), but the scale of this contribution is uncertain. Danish research has thus far focused on the work of professors and partly the line managers (e.g., Degn 2015a; Lind 2019). Sweeping conclusions regarding de-coupling imply an overview of the variety of practices in universities and their couplings to the stretched core missions. There is clearly a lack thereof. People (including scholars) tend to assume that if something does not matter for the professors, it does not matter for the core missions. A whole lot of assuming and guessing is certainly going on regarding the contribution of different staff categories—and non-traditional positions are clearly not given the benefit of the doubt.

A balanced understanding of the competing traditional and new organizational model requires a more fine-grained approach to the core and non-core practices that take the diversified workforce and the stretched university missions into account. This dissertation has taken the first steps toward such a holistic understanding of Danish universities as huge, multi-purpose organizations by analyzing staff changes at very different levels of resolution. Despite a notorious reputation for being change-resistant, the contemporary Danish

universities are different entities than was the case just a few decades ago. They must increasingly be considered as organizations composed of multiple, important staff categories. The results of this dissertation raise fundamental questions about the roles that different types of staff (ought to) play in Danish universities. My hope is that it will contribute to a deeper, more well-rounded understanding of universities as organizations. However, in order to fully understand the practical implications that this organizational transformation certainly has had, the approach applied throughout this dissertation needs to be further complemented by other types of data and methodologies.

Summary

This dissertation has illuminated how Danish universities have developed as organizations over decades. The days when largely self-reliant professors dominated the universities numerically and practically have long passed. Universities have been transforming into more fully-fledged organizations with a more diverse staffing model. While the literature agrees on the characteristics of the traditional university model, it disagrees on the character, pace, and drivers of the new model's emergence. This dissertation has addressed the need for empirical research into the organizational consequences of long-term pressure on universities, the lack of which stands in contrast to the magnitude of change that has occurred. It provides a new empirical basis for grounding conceptual claims of university transformation.

Important contours of the new model become visible when the spotlight is thoroughly turned from the professors to the totality of university employees. This dissertation has shed light on the obvious but oft-forgotten fact that Danish universities consist of a wide variety of employees. The variety of university jobs extends far beyond what most people imagine—hundreds of distinct job titles. This dissertation has holistically examined staff changes at very different levels of resolution over a significant period, embracing the longitudinal and multi-level nature of university transformation. The used staff data has been processed at the most disaggregated level available with the aim of comprehending and harmonizing staff categories across time, universities, and countries. For the Danish case, a multi-tiered categorization was created, allowing higher-level categories to be transparently understood as aggregations of lower-level categories and specific job titles and work conditions. The scale, resolution, and consistency in which staff changes have been analyzed make this dissertation stand out.

Contrary to notions of resilience and change-resistance, the empirical analyses have revealed in new detail how two overarching staff categories have steadily grown in importance: Temporary academic staff and professionalized administrative/managerial staff. These developments have made the academic and non-academic workforce resemble the classic organizational pyramid-shape of low- and high-status employees. Numerous newly appointed mid-level line managers increasingly tie separate departments and units together via the empowered upper management. New professional capacities have emerged around the various line managers and around crosscutting service functions, which all together complement each other in an increasingly

fine-grained and formalized system of designated offices. Hence, Danish universities have come to increasingly resemble other hierarchically managed organizations—at least from a distance.

This shift reflects efforts to formalize and delegate tasks previously conducted informally as integrated elements in academic culture: On the one hand, a process of moving tasks out of a fragmented academic arena into an administrative and managerial sphere, which is expected to be more consistent and accountable. On the other hand, a process of spreading academic tasks among a more diversified academic workforce, which is expected to be more productive, flexible, and responsive to society.

While the Danish staff data in itself provided few clues about the drivers behind the organizational transformation, it was well-suited to be combined with other data types that could help explain the development. The multi-tiered staff categorization made it possible to break down staff categories, so they closely complement manager interviews, funding figures, policy documents, and foreign staff data. This combination provided fresh insights into the long-term drivers and consequences of university transformation. It was particularly apt to illuminate how various changes have slowly but steadily built up over two decades, resulting in significant organizational restructuring. It showed that drivers at different levels (e.g., local managers, national policy reforms, and global models) have interacted but mainly strengthened one another's effects.

The organizational transformation is an adaptation to both specific external pressures (e.g., national policy reforms) and to a general situation with increased external pressures (e.g., from external stakeholders). National policy reforms have clearly prompted the new organizational university model in Denmark, but the development cannot be understood in distinctively national terms. The reforms have clear ties to global pressures that have simultaneously impinged on the Danish universities directly. Global pressures empowered the impact of national policy reforms on Danish universities, which again empowered their hierarchical structures, which in turn further empowered the impact of policy reforms and global pressures. National policy reforms clearly gave the development a certain direction, momentum, and legitimacy, which in turn shaped the influence of other concurrent and more generic drivers.

This dissertation has cast light on developments that the traditional university model cannot explain. The traditional model owes its origin to the time when self-reliant professors dominated universities numerically and practically. To a growing extent, a new organizational model is required to understand the coexistence of multiple, important staff categories in universities.

The formalization and delegation have potentially offset parts of the traditional model. However, scholars continue to argue that (senior?) academics are very loosely coupled, limiting universities' formalization and delegation to rather superficial matters. Hence, the growing weight of the new model does not *necessarily* reduce the traditional one correspondingly. The two somewhat conflicting models can co-exist and only partially mix.

However, accounts of historical stability "naturally" over-focus on the centuries-old practices of professors, because the historical record of other staff categories first gained real weight in recent years. A rather narrow and static view on the core missions of the university is common and easily but mistakenly equated with the work of professors. A balanced understanding of the competing traditional and new model requires a fine-grained approach to core and non-core practices, which takes the diversified workforce and the stretched university missions into account. This dissertation has taken the first steps toward a holistic understanding of Danish universities as huge, multi-purpose organizations by analyzing staff changes at very different levels of resolution. Despite a notorious reputation for being reluctant to change, today's Danish universities are different entities than what they were a few decades ago.

Dansk resumé

Denne afhandling har belyst, hvordan danske universiteter har udviklet sig organisatorisk over to årtier. Før i tiden dominerede professorer universiteterne både numerisk og praktisk, men de dage er for længst omme. Danske universiteter er blevet organisationer med en mere differentieret og hierarkisk opdelt arbejdsstyrke. Mens forskere typisk er enige om kendetegnene ved den traditionelle universitetsmodel, er der stor uenig om, hvad der kendetegner den aktuelle universitetsmodel, og tempoet og årsagerne for dens fremkomst. Denne afhandling imødekommer behovet for empirisk at undersøge de organisatoriske konsekvenser af det langvarige forandringspres, der har været på universiteterne de seneste årtier. Den tilbyder et nyt empirisk grundlag til at vurdere konceptuelle påstande om en generel transformation af universiteter.

Fra dette udgangspunkt har afhandlingen afdækket det åbenlyse, men ofte glemte faktum, at danske universiteter rummer et væld af forskellige stillingstyper. Væsentlige konturer af den nye model bliver synlige, når rampelyset flyttes fra professorerne til den samlede skare af universitetsansatte. Diversiteten af stillingstyper strækker sig langt ud over, hvad de fleste forestiller sig – der er hundredvis af forskellige jobtitler. Afhandlingen har analyseret personaleudviklingen på forskellige detaljeringsniveauer og over en betydelig tidsperiode. Der er anvendte registerdata, som er behandlet på det mest detaljerede niveau, der er tilgængeligt, med det formål at forstå og ensrette personalekategorier på tværs af tid, universiteter, og lande. For danske universiteter er der konstrueret en niveauopdelt kategorisering på baggrund af specifikke jobtitler og arbejdsvilkår, således overordnede kategorier kunne opsplittes til forskellige detaljeringsniveauer efter behov.

De empiriske analyser har i detaljer belyst, hvordan to overordnede personalekategorier er blevet væsentligt mere toneangivende: Midlertidigt akademisk personale (f.eks., ph.d.-studerende, postdocs, og videnskabelig assistenter) og professionelt administrativt eller ledende personale (f.eks. institutledere, kontorchefer, og AC-medarbejdere). Denne udvikling har gjort, at sammensætningen af både den akademiske og den ikke-akademiske arbejdsstyrke har udviklet sig i retning af den klassiske pyramideformede fordeling mellem lav- og højstatus stillinger. Talrige nyudnævnte mellemledere knytter i stigende grad separate institutter og enheder sammen via en styrket topledelse. Nye professionelle kapaciteter er blevet oprettet omkring de forskellige mellemledere og tværgående servicefunktioner, som komplementerer hinanden i et stadig mere finmasket og formaliseret system af specialiserede sekretariater. Danske universiteter er af den grund i højere grad kommet til at ligne andre hierarkisk styrede organisationer - i det mindste på afstand.

Skiftet mod den nye organisationsmodel afspejler bestræbelser på at formalisere og delegere opgaver, der tidligere blev udført uformelt som integrerede elementer i den akademiske kultur: På den ene side en proces hvor opgaver flyttes ud af den fragmenterede akademiske arena og over til en administrativ og ledelsesmæssig arena, der forventes at håndtere dem mere konsekvent og dedikeret. På den anden side en proces hvor akademiske opgaver spredes blandt en mere differentieret akademisk arbejdsstyrke, der forventes at være mere produktiv, fleksibel, og samfundsorienteret.

De danske personaledata afslørede i sig selv kun lidt om årsagerne for den organisatoriske forandring, men de var velegnede til triangulering med andre datatyper, der bedre forklarer udviklingen. Den niveaudelte kategorisering gjorde det nemlig muligt at koble personaledataene relativt præcist til interviews med ledere, opgørelser over finansieringskilder, politiske dokumenter, og personaledata fra andre lande. Triangulering belyste særligt, hvordan forskellige forandringsimpulser langsomt men støt har bygget sig op i løbet af to årtier med tungtvejende forandringer som resultat. Trianguleringen viste, at forandringsimpulser på forskellige niveauer (f.eks., universitetsledere, nationale politiske reformer, og globale modeller) har spillet sammen og hovedsageligt styrket hinandens effekter.

Den organisatoriske forandring afspejler derfor en tilpasning til både specifikke eksterne krav (f.eks., reformer eller fonde) og til en generel situation med øgede generiske krav (f.eks., fra en bred vifte af interessenter). Nationale politiske reformer har klart bidraget til at rodfæstne den nye universitetsmodel i Danmark, men udviklingen kan dog ikke forstås strengt nationalpolitisk. Globale udviklingstendenser har påvirket, både hvordan reformerne er designet, og hvordan universiteterne implementerer dem. Denne dobbelte kobling kan sandsynligvis forklare reformers overraskende store gennemslagskraft, som analyserne af personaleudviklingen dokumenterer. Afhandlingen viser, at politiske reformer har givet udviklingen på danske universiteter en bestemt form, fart og legitimitet, der har været retningsgivende for effekten af andre samtidige og mere generiske forandringsimpulser.

De aktuelle organisatoriske realiteter på danske universiteter kan ikke længere forklares med den traditionelle universitetsmodel, som stammer fra dengang, hvor professorerne dominerede universiteter numerisk og praktisk. Formaliseringen og delegationen af opgaver udfordrer vitale dele af den traditionelle universitetsmodel, så hvis man vil forstå samtidens universiteter, kræver det i tiltagende grad en organisationsmodel, der tager højde for samspillet mellem forskellige, tungtvejende personalekategorier. Internationale forskere på området argumenterer dog for, at akademikere fortsat er meget specialiserede og løst koblede til deres kollegaer og overordnede. Dette begrænser efter

sigende universiteternes formalisering og delegation til nogle afgrænsede opgaver. Den nye models trinvise fremkomst svækker derfor ikke nødvendigvis den traditionelle model entydigt. De to delvist modstridende modeller sameksisterer og blandes kun delvist.

Det er dog kendetegnende for udsagn om historisk stabilitet, at de overfokuserer på professorenes århundrede gamle praksis og undervurderer andre personalekategoriers praksis, der først rigtigt har opnået momentum de seneste år. Det hænger sammen med et snævert og statisk syn på universitetets kerneopgaver. En balanceret forståelse af forholdet mellem den traditionelle og den nye model kræver en ny tilgang til universiteternes kerneopgaver, der tager højde for den differentierede arbejdsstyrke og de udvidede krav fra omverdenen. Denne afhandling har taget de første skridt mod en holistisk forståelse af danske universiteter som store, komplekse organisationer ved at analysere personaleændringer på meget forskellige detaljeringsniveauer. Trods et ry som bagstræberiske er nutidens danske universiteter nogle væsentligt anderledes organisationer, end de var for bare 20 år siden.

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Appendix 1:
Basic cross-validation of payroll data with official statistics

Table A1. University of Copenhagen

Year	Annual reports	Payroll	Dif.
1999	5011	4685	-6.50%
2000	5012	4723	-5.75%
2001	5089	4820	-5.28%
2002	5190	4894	-5.71%
2003	5213	4966	-4.75%
2004	5333	5052	-5.28%
2005	5451	5272	-3.28%
2006	5530	5285	-4.43%
2007	7836	7576	-3.32%
2008	8263	7994	-3.25%
2009	8600	8436	-1.91%
2010	9087	8860	-2.49%
2011	9185	8872	-3.41%
2012	9272	9056	-2.33%
2013	9652	9402	-2.59%
2014	10059	9688	-3.68%
2015	10140	9907	-2.30%

Table A2. Aarhus University

Year	Annual reports	Payroll	Dif.
1999	3343	3106	-7.09%
2000	3306	3168	-4.18%
2001	3305	3193	-3.39%
2002	3360	3263	-2.88%
2003	3409	3302	-3.13%
2004	3615	3492	-3.41%
2005	3663	3582	-2.21%
2006	3734	3662	-1.92%
2007	6216	6047	-2.72%
2008	6569	6270	-4.55%
2009	6877	6673	-2.97%
2010	7192	6939	-3.52%
2011	7504	7171	-4.43%
2012	7992	7522	-5.88%
2013	8217	7880	-4.10%
2014	8028	7928	-1.25%
2015	7866	7732	-1.71%

Table A3. Aalborg University

Year	Annual reports	Payroll	Dif.
1999	1714	1545	-9.87%
2000	1808	1679	-7.11%
2001	1863	1808	-2.93%
2002	1956	1913	-2.21%
2003	2016	1985	-1.56%
2004	2090	2060	-1.42%
2005	2147	2115	-1.47%
2006	2153	2218	3.01%
2007	2143	2188	2.08%
2008	2296	2275	-0.91%
2009	2395	2404	0.37%
2010	2549	2564	0.58%
2011	2826	2802	-0.85%
2012	3169	3190	0.67%
2013	3379	3399	0.58%
2014	3325	3316	-0.28%
2015	3307	3304	-0.10%

Table A4. Technical University of DK

Year	Annual reports	Payroll	Dif.
2004	2139	2149	0.48%
2005	2251	2217	-1.50%
2006	2316	2267	-2.10%
2007	4141	4054	-2.10%
2008	4255	4225	-0.71%
2009	4555	4550	-0.11%
2010	4910	4780	-2.65%
2011	4988	4853	-2.71%
2012	5227	5049	-3.40%
2013	5721	5540	-3.17%
2014	5813	5640	-2.97%
2015	5832	5665	-2.87%

Table A5. University of Southern Denmark

Year	Annual reports	Payroll	Dif.
1999	1775	1625	-8.47%
2000	1859	1736	-6.60%
2001	1895	1820	-3.94%
2002	1940	1858	-4.21%
2003	1982	1905	-3.90%
2004	2059	1971	-4.27%
2005	2144	2061	-3.89%
2006	2384	2099	-11.96%
2007	2594	2503	-3.51%
2008	2883	2742	-4.90%
2009	3061	2964	-3.17%
2010	3194	3093	-3.16%
2011	3248	3154	-2.90%
2012	3388	3244	-4.24%
2013	3627	3456	-4.72%
2014	3794	3641	-4.03%
2015	3838	3715	-3.21%

Table A6. Copenhagen Business School

Year	Annual reports	Payroll	Dif.
2000	987	854	-13.51%
2001	1018	928	-8.83%
2002	1110	1009	-9.09%
2003	1140	1033	-9.38%
2004	1201	1084	-9.74%
2005	1245	1121	-9.93%
2006	1201	1080	-10.11%
2007	1218	1084	-11.01%
2008	1263	1148	-9.07%
2009	1378	1271	-7.74%
2010	1428	1328	-6.97%
2011	1395	1294	-7.23%
2012	1445	1330	-7.96%
2013	1528	1440	-5.75%
2014	1598	1499	-6.20%
2015	1552	1457	-6.15%

Table A7. Roskilde University

Year	Annual reports	Payroll	Dif.
2006	884	854	-3.34%
2007	861	829	-3.68%
2008	881	840	-4.62%
2009	919	896	-2.47%
2010	961	948	-1.38%
2011	1011	976	-3.43%
2012	1022	977	-4.39%
2013	1020	968	-5.13%
2014	1058	1017	-3.90%
2015	1028	994	-3.28%

Table A8. IT University of Copenhagen

Year	Annual reports	Payroll	Dif.
2000	62	51	-17.52%
2001	102	85	-16.67%
2002	125	115	-7.94%
2003	159	144	-9.14%
2004	167	150	-10.42%
2005	166	151	-8.81%
2006	155	139	-10.58%
2007	148	135	-8.98%
2008	170	154	-9.52%
2009	215	195	-9.30%
2010	257	232	-9.57%
2011	271	251	-7.40%
2012	284	258	-9.05%
2013	307	277	-9.78%
2014	322	296	-8.08%
2015	310	282	-9.07%

Table A9. The number of professors[1] at selected universities

University		2008	2009	2010	2011	2012	2013	2014	2015
Copenhagen University	Board note[2]		450	486	534	592	624	667	
	Payroll		488	536	555	589	616	655	
Aarhus University	'AU i tal'	293	300	342	359	371	399	409	407
	Payroll	280	294	325	349	366	384	409	405
Aalborg University	'AAU i tal'				166	194	232	243	246
	Payroll				161	191	222	235	238
University of Southern DK	SDU[3]	135	162	161	165	182	187	205	217
	Payroll	132	153	160	164	179	186	202	214
Technical University of Denmark	Annual reports	136	139	139	150	167	190	216	223
	Payroll	136	142	148	160	190	218	225	227

1: All professors except visiting (stiko 1676, 42840) and clinical professors (stiko 12075. 2217). 2: Bestyrelsesmøde nr. 78. d. 28. april 2015. Pkt. 5. Bilag 4 (2012-2014). Tilsynsrapport (2009-2011). 3: Facts and Figures 2016. 2012

Table A10. The three academic levels according to the ministry

	Professors		Associate professors		Assistant professors	
	Ministry report	Payroll	Ministry report	Payroll	Ministry report	Payroll
2009	1690	1442	4147	4384	2625	2520
2010	1798	1552	4137	4424	2855	2822
2011	1810	1621	4269	4448	2999	2928
2012	2020	1742	4309	4575	3598	3197
2013	2157	1857	4443	4818	3598	3530
2014	2264	1993	4474	4989	3900	3918
2015	2320	2059	4451	5047	3981	4117

Source of Ministry report: http://ufm.dk/forskning-og-innovation/statistik-og-analyser/forskere-ved-universi-teterne/videnskabeligt-personale-ved-universiteterne.pdf

Table A11. Non-academic salary expenditures at Aarhus University and University of Copenhagen

	University of Aarhus[1]			University of Copenhagen[2]		
	Official	Payroll	Dif.	Official	Payroll	Dif.
2007				1,517	1,473	2.90%
2008				1,626	1,632	-0.40%
2009				1,748	1,774	-1.50%
2010				1,822	1,843	-1.20%
2011				1,846	1,799	2.50%
2012				1,871	1,820	2.70%
2013				1,953	1,891	3.20%
2014	1,536	1,520	0.10%	2,023	1,929	4.60%
2015				2,002	1,969	1.60%
2016	1,491	1,490	0%			

[1] Official AU note regarding overhead calculation regarding external funding (2014, 2016): http://medar-bejdere.au.dk/fileadmin/www.medarbejdere.au.dk/Institutter/AU_oekonomi/OEkonomimanual/Ek-sterne_projekter/Overhead/Notat_vedr__beregning_af_IV_OH_for_2016.pdf. [2] Official KU note to the ministry regarding non-academic salary expenditures: https://www.ft.dk/sam-ling/20151/almdel/ufu/spm/252/svar/1341871/1663192.pdf