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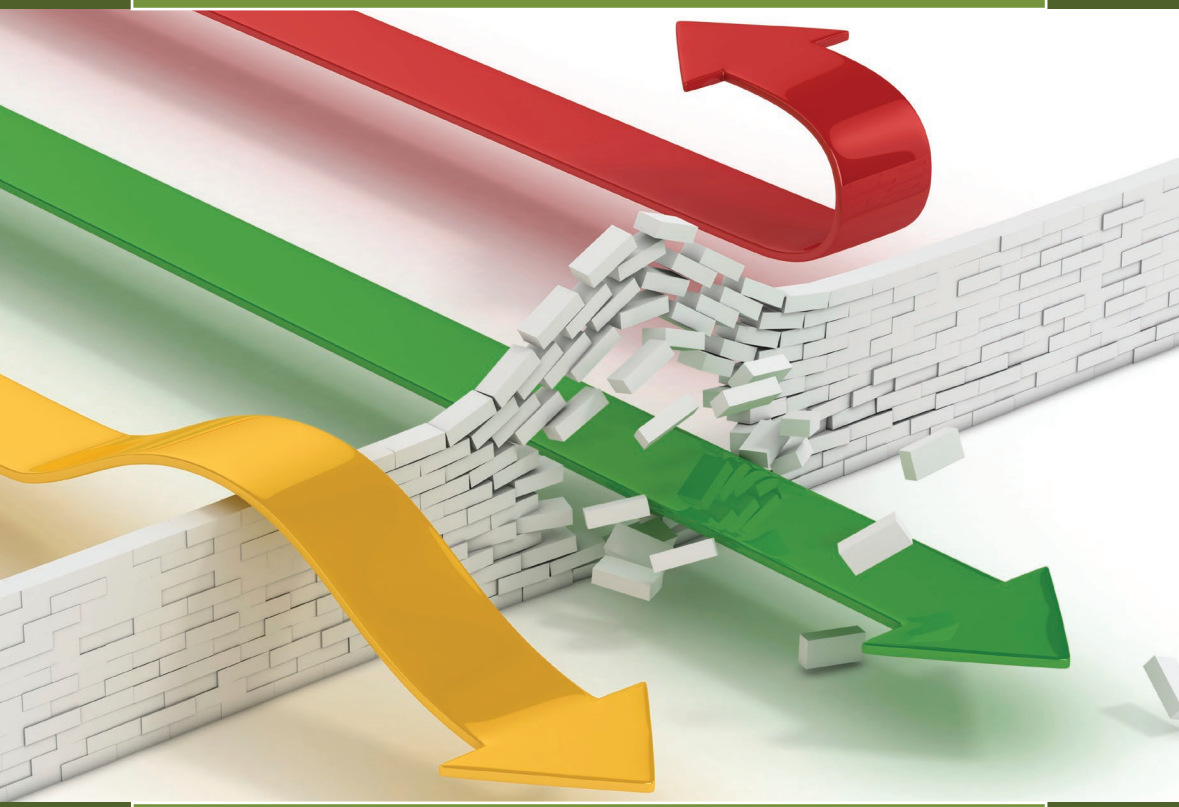
The Transformation of University Institutional and Organizational Boundaries

Emanuela Reale and Emilia Primeri (Eds.)



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The Transformation of University Institutional and Organizational Boundaries

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The Transformation of University Institutional and Organizational Boundaries

Edited by

Emanuela Reale and Emilia Primeri
IRCrES, Research Institute on Sustainable Economic Growth of National Research Council, Rome, Italy

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The book "The transformation of University institutional and organizational boundaries" represents the joint efforts of scientists who joined the 27th Annual Conference of the Consortium of Higher Education Researchers (CHER) in Rome on September 2014. The Conference witnessed that the interest of Higher Education studies community is broadening, crossing geographical boundaries. In fact more than 20 countries were represented at the Conference with their speakers and guests from Europe, United States, Russia, Canada, Africa, Australia and Asia.

Speakers brought at the Conference and into this book different perspectives and approaches related to the topic of institutional and organizational boundaries.

We thank colleagues who contributed to this joint effort and we thank the CHER Consortium for having provided us the opportunity to host this Conference and to welcome participants from around the world.

EMANUELA REALE AND EMILIA PRIMERI

INTRODUCTION

UNIVERSITIES IN TRANSITION: SHIFTING INSTITUTIONAL AND ORGANIZATIONAL BOUNDARIES: INTRODUCTIVE REMARKS

An emerging issue in higher education studies is the extent to which the transformations affecting the organizations, the institutions and the academic profession produce effects on the institutional and organizational boundaries. Several signals of shifting boundaries can be envisaged in higher education and research institutions, such as the replacement of permanent positions for researchers by temporary contracts, the involvement of firms with research groups and university boards, new alliances, collaborations and networking with non-academic organizations (e.g., public or private research organizations, firms), as well as universities participating in private companies or agencies.

The analysis of boundaries also supplies interpretative frameworks for the interactions between the development of professions and disciplines, as well as the relationships of the science with various parts of society such as state, professionals and the market. So it is useful for fuelling further discussion to point out some characteristics of boundaries and their relevance in higher education.

Conceptualizing Organizational and Institutional Boundaries

Institutional and organizational boundaries represent an interesting and fruitful approach to monitor and to interpret the dynamics of change. Lamont and Molnar (2002) explored the concept of boundaries in social sciences, putting into evidence the distinction between symbolic boundaries and social boundaries. The former are conceptual distinctions made by social actors to categorize objects, people, practices, time and space. They allow to capturing the dynamic dimensions of social relations, and to separate people into groups and generate feelings of similarity and group membership.

Social boundaries allow "researchers to develop a relational and systemic perspective on knowledge production sensitive to historical processes and symbolic strategies in defining the content and institutional contours of professional and scientific activity". Thus boundaries are helpful to map how models of knowledge are diffused across countries and impact local institutions and identities.

The authors highlight that studying the interplay between symbolic and social boundaries highlight the dynamic of social processes. Different approaches can be used,

such as studying the properties of the boundaries (permeability, salience, durability, visibility) and why boundaries assume certain characteristics – e.g. salience and demarcation function (Bourdieu, 1984) *vs* tolerance and inclusiveness (Lamont, 1992).

Boundaries do not only serve as markers of differences, they are also interfaces facilitating knowledge production; they not only put an emphasis on some characters, silencing others, but also enable communications across communities (using standardization as one example). The concept of "boundary object" (that are material objects, organizational forms, conceptual spaces or procedures) indicates the interface allowing to develop and to maintain coherence across social worlds. Furthermore the concept of boundary object acknowledges boundaries as conditions not only for separation and exclusion but also for inclusion, exchange and bridging. In this respect, Guston (2001) pointed out the concept of boundary organization, which provides opportunities for the creation and use of boundary objects (and standardized packages). Boundary organizations involve the participation of the actors from both the sides of the boundaries (politics and scientist in the Guston's discussion), and they exist "at the frontiers of the two relatively different social worlds".

Santos and Eisenhardt (2005) provide a deeper understanding of organizational boundaries by developing four conception of boundaries, conceiving them as "demarcation between the organization and its environment. Thus, they "reflect the essence of organization", since "they speak why organization are unique and advantaged, and why they fail", addressing what is outside and what is inside the organization. The four conceptions of boundaries Santos and Eisenhardt elaborated have some distinctive features that ground on the conception of organizations and elements to be considered for the demarcation of the organization; boundary of efficiency, of power, of competence, and of identity points different situations where respectively advantages of fiat, monitoring and incentive alignment, reducing the dependence and exercise the power, delimitate the resources owned by the organization and delineate the dominant mind-set of 'who we are', are the salient organizational boundaries.

Scott (2004) recalled the importance in organizational sociology of theoretical developments related to understanding how and in what way the boundaries of organizations have become more open and flexible. Boundaries are legal, normative and cultural-cognitive; changing boundaries affect how institutions relate to their environment, such as processes eventually linked to strategies for absorbing external elements (workers, technologies, technical and organizational expertise) or using external units to perform activities that are not the core competence of the organizations. Beside the mentioned events, organizations are not necessarily boundary-less despite the fact that significant changes occurred in the "scope, position, duration and enforcement mechanisms" (Scott, 2004).

Other approaches focus on mechanisms associated with the production of boundaries in science -the credibility contexts outlined by Gieryn, or focus on the problem of cultural membership, how social actors build groups as similar

and different and how the notion of boundaries shapes their understanding of the responsibilities toward such groups. Saying differently, boundaries reveals how individuals think of themselves as equivalent and similar to, or compatible with, others (Lamont, 2001), and how they perform their differences and similarities.

Changing Functions, Objectives, and Scope of Higher Education Institutions

A number of theoretical approaches look at shifting boundaries from the perspective of institutional change (Hackett, 2005), which modifies the old academic logic in to a new entrepreneurial one; government policies and policy instruments, such as funding schemes and performance assessment, can support the mentioned shift. Another element contributing to overcome the institutional boundaries is collaborative research, which involves also the overcoming of geographical boundaries, asking for a specific strategy to manage institutional constraints that can hamper the possibility to have an effective inter-institutional knowledge flow.

Laudel and Glaser (1998) investigating the institutional boundaries and the way to overcome them, pointed out that institutions as systems of social rules have some features that characterize them, namely they govern the actions of individual, corporate or collective actors, they link attributes to an actor's situation with forms of expected behaviour, and sanction deviant behaviour.

The authors show that scientific community is governed by the institutions of two social systems, namely the scientific community they belong to, which define research problems, provide knowledge and collaboration, evaluate the results, and the formal organization, which provide resources for research and links the research to that of other scientists working in the organization. Institutions of both social systems caused collaborations and institutional prerequisites for collaboration exist. The prerequisites observed as necessary conditions to realize collaboration are:

- The provision of resources from research organization to cover the costs (financial resources and time) needed to build a collaborative effort;
- The coherence of research processes in the scientific community -perceptions of cognitive links, development of a shared language, development of trust in potential collaborations' skills,
- The institutionalization of communications between institutions and communities;
- Framing good rules of collaboration within research organizations (e.g., joint use of equipment and supply of services)
- The presence of diffuse reciprocity between the scientific communities
- A set of shared rules for distributing the outcome of collaboration within the scientific community as well as rules for rewarding the collaboration.

The authors also depict a hierarchy of collaboration difficulties, with increasing difficulty for boundary-spanning collaboration:

1. Collaboration from the same community working in the same institute;
2. Collaboration from the same community working in different institutes;
3. Collaboration from different communities working in the same institute;
4. Collaboration from the different communities working in different institutes.

The possibility to overcome growing difficulties of institutional boundaries depend by the presence of the prerequisites; institutional boundaries, although important are "only one factor affecting collaborations and its influence can be changed or even overridden by others." Moreover, once established, boundary-crossing collaborations tend to become permanent, since the hindering conditions tend to hinder mostly the emergence of collaboration.

Collaborations have a cost (money and time) that might impede the scholars to engage in boundary-spanning. Thus policies toward collaboration are useful to overcome institutional boundaries, overlapping the existing the institutional frameworks of both scientific communities and research organizations. The reverse effect is also expected: the emergence of a new institution creates a new set of boundaries between those belonging to those institutions and the outsiders. "Collaboration network seems to be one institutional solution for crossing institutional boundaries. They allow the scientists to retain to their traditional social systems (the research institutes and the scientific community) and simultaneously to establish new links to members of other social systems. The means by which a collaboration network promotes collaboration are the same as the means working in the traditional social systems – scientific communities and research organizations" (Laudel & Glaser, 1988).

Interestingly enough the network's institutional framework of universities and non-university research institutes, which includes rules promoting collaborations, necessarily spanning the original institutional boundaries, also affect the networks between universities and firms (Meissner, 2009).

Moving beyond Sectoral and Disciplinary Boundaries

Heinze and Kuhlman (2008) explored institutional boundaries emerging in highly differentiated research systems such as Germany, and in emerging research domains such as nanotechnology. The exploration allows to deepening constraints to collaboration coming from established cognitive boundaries, which are broken down in nanotech research, and the collaboration across organizational boundaries in different university and non-university research entities. Using three governance dimensions of research collaboration – thematic interdependence, organizational dimensions and resource endowment- they found that organizational dimensions impeding cross boundary collaboration are stereotypes and prejudices based on reputation of scientific communities belonging to different research organizations, incompatible working routines anchored to different organizational missions; lack of interface managements to organize follow up when they results can be of interest

for researchers working in other organizations; funding cuts and restrictions, which has the immediate effect of blocking on-going cooperation, a fact that is especially visible in the case of universities, with other emerging effects linked to status hierarchies between the university and the extra-university sector.

One interesting result of the quoted investigation is that cross-boundary collaboration emerging from the observation of the co-authorships are less pronounced than those emerging in research contracts and cooperative relationships, often informal relationships. Rationales for collaborations at individual level are expanding and improving the research capacity, benefit from institutional complementarities, and enhancing visibility in the research field, which goes beyond the curiosity intellectual companionship and sharing the research area with other colleagues, which emerged in the literature (Beaver, 2001). Thus institutional conditions are conducive to inter-institutional research collaborations, which move beyond institutional boundaries.

In the same line, Cummings and Kiesler (2005) focused on scientific collaboration across disciplines and university boundaries, and show some constraints that are related to the management of communication between different partners belonging to diverse organizations even when these organizations are all universities. Collaborations in large cross-institutional networks have some costs that are not actually faced by funding agencies and require a dedicated strategy. Coordination mechanisms can reduce the negative impact of putting together researchers that are physically distant.

Moreover, shifting boundaries are also investigated as changing relationships between academic scientists and the marketplace, putting into evidence the contamination between science and business as to the norms and practice of the academic work (Owen-Smith & Powell, 2001). The mentioned transformation can be positively commented as an evolution suitable to follow the intrinsic changes in the modes of knowledge production (Gibbons et al., 1994; Nowotny et al., 2005); by contrast, they can be judged as a risk for the role traditionally played by the institutions and the scientists, for their autonomy and identity.

Blurring Boundaries in Academic Professions

One important issue is defining and institutionalize boundaries of profession against outsider and also struggling of professionals among themselves. Scientists as other professionals want to distinguish themselves from outsiders thus building the boundary of what can be considered as 'science' (Gieryn, 1983). The concept of "boundary-work" describes the "discursive practices by which scientists attempt to attribute selected qualities to scientists, scientific methods, and scientific claims" in order to delimitate their own domain from those of other non-scientists professionals (Lamont & Molnar, 2002).

The quoted authors pointed that boundary-work can be articulated into different type of processes, namely expulsion, expansion and protection of autonomy. The

former occurs where there are rival authorities each claiming to be scientific, thus boundary-work is a mean of social control "sanctioning the transgression of symbolic boundaries of legitimacy." Expansion describes the case when one rival epistemic authority tries to monopolize the control over a disputed ontological domain. Protection of autonomy against outside powers is another aim of boundary-work toward legislators or corporate managers: different conceptualizations of "sociological ambivalence" (Merton, 1976) and "boundary work" (Gieryn, 1983) have been developed to analyse how scientists act in order to defend their autonomy and to secure resources despite the on-going transformations (using the power of interpretative strategies to build a space for science in pursuit of authority within the epistemic community, thus contributing to the institutionalization of disciplines, and theoretical orientations within science, Gieryn, 1999).

Several empirical investigations of boundaries in academic profession have been developed. For instance, Whitchurch (2008a) build a categorization of professional staff identities as having bounded, cross-bounded, and unbounded characteristics. The former is composed by those that locate themselves "within the boundaries of a function or organizational location", and that are governed by 'rules and resources'; the second are those that "recognize and use boundaries to build strategic and institutional capacity"; the latter are those that disregard boundaries, taking an "exploratory approach to the broadly based projects" where they are involved. Starting from this categorization the same author (2008b) describes a further category of blended professionals "who here mixed backgrounds and portfolios, comprising elements of both professional and academic activity"; in this way blended professionals occupy a third space between academic and professional domains.

Lam (2010) explored the different work orientation of academic scientists in the relationships with the business sector, and the different ways of shaping boundaries within the academic work. Four orientations emerge from her investigation, namely the traditional scientists, characterized by boundary separation and expulsion, traditional hybrids, which share some characteristics of the traditionalists (maintaining boundaries between academia and industry) but are prepared to explore the emerging opportunities of relationships, and are wiling to accommodate their research agenda when they perceive possible benefits. A third group includes the entrepreneurial hybrids, which combine an orientation toward entrepreneurial behaviour with the core values and norms of academia. The possibility of crossing science and business boundaries is open because industrial links are perceive as very useful for their research activity. The entrepreneurial scientists, characterized by boundary inclusion and fusion, compose the fourth group.

In sum, different facets of the transformation of University institutional and organizational boundaries can be observed: changes in the function, objectives and scope of higher education and research institutions, the move beyond sectoral and disciplinary boundaries and increasingly blurred boundaries of academic professions and of scientific work. Public policies and HE reforms can push or impede the

mentioned transformations, but they can also derive from individual likelihood of moving in blurring spaces or from the transformations of the epistemic communities and the emergence of new fields and sectors.

The chapters that follow contribute to highlight the complexity and heterogeneity, which characterizes scientific knowledge today and underline as boundaries crossing represents a key issue when looking at University transformations across contexts and policies, instruments and practices.

The book begins with two contributions from the keynote speakers at the CHER Conference in Rome (2014) aimed at provides examples of universities transformation and the crossing of institutional and organizational boundaries. *Alice Lam* discusses the rise of the entrepreneurial university and its consequences on the norms and practices of academic scientific work. The chapter deals with the responses of scientists to the shifting institutional environment. Lam argues as most of the discussions about the 'new knowledge regime' introduced by the increasing shifting boundary between academia and private business is mostly based on a macro-level perspective which does not draw attention to the internal diversity in academic scientific work, and to the complex and often contradictory dynamics and institutional logics behind changes. Lam proposes to adopt a micro-level perspective, deepening the analysis of the strategic role of actors, namely scientists themselves, and the way they interpret and shape changes and the shifting boundary between university and industry. The main assumption is that scientists are active agents seeking to shape the boundary between science and business developing different modes of engagement with the emerging knowledge regimes. Between the two extreme positions of those sticking to the 'traditional' norms of basic science and the others exhibiting an 'entrepreneurial' orientation, a third major group of scientists display an 'hybrid' orientation. This group of scientists put in place negotiation strategies to protect their autonomy and role, getting by the fuzzy boundaries between science and business. Lam argues then as the move from the 'traditional' to the 'entrepreneurial' mode is not necessarily eroding the norms and values of academic science neither it emerges as a linear process of change, rather it is likely to display the existence "of continued diversity" that can be "halted, or even reverted" by scientists. The chapter by *John Aubrey Douglass* introduces the concept of world-class universities with the attempt to advocate the notion of Flagship University as a more relevant ideal for both public and private universities and as more desirable achievement for national ministries and governments. Some key requisites Flagship universities should address are introduced providing a tentative profile of how this should be: an academic institution ranked top beyond its research results, rooted in national and regional ethos, accountable towards society at large and engaged to make itself, through internal mechanisms for supporting quality and excellence, improving and getting always better instead of being positioned as the best. It is a much broader charge the one required to be a Flagship University. Finally the question – not directly addressed- is: how could University embrace such status if the WCU rhetoric is the driving force? The move towards a new university model

entails then that some universities decide to cross their institutional and organizational boundaries to embrace a new institutional identity, to seek a new internal culture and to adopt different organizational assets.

The book is dived into three main thematic sections. The first section deals with the transformation of Universities institutional and organizational boundaries focusing on the change of functions, objectives and scope this would entail. This section includes four chapters. *Maarja Beerkens* is the author of the first chapter. The chapter deals with the risk of increasing agencification of HE because of the increasing importance of quality assurance and of autonomous agencies, which are presented as one corner of the regulatory triangle, together with policy makers (parliament, government) and universities. So far, quality assurance agencies are likely to impact on universities' organizational boundaries: the regulatory state becoming more and more weak, agencies can improve their role of intermediation between the universities and the state and can assume increasing policy decision making power. Two are the main rationales for creating autonomous regulatory agencies in the public sector: separating politics and administration, because of their autonomy, and improving efficiency, because of greater specialization of agencies. Nonetheless, the increasing agencification still represents a problem. This phenomenon is studied in four countries: The Netherlands, United Kingdom, Norway and Denmark.

Evidences show that quality assurance has become a mature regulatory field in HE and agencies have strengthened their role reinforcing their credibility and legitimacy. However agencies also risk becoming major policy actors in the HE landscape, contributing to increase fragmentation and lack of coordination in the HE landscape.

Tatyana Koryakina Antunes, Cláudia S. Sarrico and Pedro Teixeira discuss the universities' third mission activities and how they represent a challenge to extending boundaries. They focus on universities' organizational transformation with relation to third stream activities. They argue these are gaining increasing importance but little is known about their effects on the institutional setting of HEIs. The chapter presents an explorative study of the impact of income diversification on Portuguese universities' governance and management, and considers third mission activities as diversified income sources. What do university managers perceive as external barriers towards third mission activities? What do university managers identify as internal barriers? What are different and converging elements between different universities? These questions are addressed through a case-study methodology aimed at analyzing the perceptions of two Portuguese universities' top and middle managers on relations with the external environment. The authors argue that a certain degree of differentiation emerges in the way third mission activities are institutionalized within each university studied. This shows as path dependency influences the ways universities, although sharing similar narratives, engage differently in third mission activities. Also third stream activities are described as "scattered across the academic and research units, showing different degrees of involvement", thus highlighting

differences across and within the universities analysed. The role of institutional leadership and the way institutional communication is managed are considered as key elements shaping third stream engagement.

Deepening the discussion about changes driven to HEIs by new entrepreneurial logics, *Andrew Kretz and Creso Sá* discuss this with respect to learning practices. They provide an analysis of how entrepreneurship education is shifting institutional boundaries in higher education. The impact of entrepreneurship education on the functions, objectives and scope of HEIs are concerned. Main assumption is that entrepreneurship in higher education has to be considered "*as a broad socio-cultural phenomenon, rather than just a response to market opportunities, commercial logics, and pushes for third stream activity*" which redraws university boundaries in multiple ways. Discussion is based on two research projects on entrepreneurial education at universities and colleges in the United States and Canada and the study is guided by a grounded theory based approach. They use the concept of "Boundary spanners" that is organizations, organizational units and programs, originating inside and outside the university which facilitate the development of university entrepreneurship programs, initiatives, and communities of practice. Authors argue that entrepreneurship education is shifting institutional boundaries in universities, going beyond simple teaching concerning start up activities and creating shared spaces from which academic and entrepreneurial actors may educate students from across academic departments.

To conclude this section dedicated to changes in institutional and organizational boundaries of HEIs the chapter by *Dimitri Gagliardi, Deborah Cox, and Yanchao Li* discusses the increasing complexity in science, focusing the attention on changes to HEIs institutional arrangements driven by the introduction of open science. Changes they consider are: a new way of doing science, the increasing relevance of attention towards science and research output and the multiple actors being involved more and more in scientific deliverables. Drivers and barriers to the adoption of open science are investigated in this exploratory study, focusing on the roles of the research performing stakeholders in the scientific process and their conflicting interests as well as on institutional arrangements, new methods and cultural changes driven by the adoption of open science. Policy implications deriving from the emergence of open science and its adoption within the existing organisational settings are also discussed. Their findings confirm the positive effect of the introduction of open science: however they argue as this is mostly related to researchers personal curiosity and interest of researchers and that there is not a strategy supporting the opening of science and that institutional barriers still play a role in the uptake of open science.

The following section includes two chapters which discuss the shift of university sectoral and disciplinary boundaries: the first considers the developments and organizational changes concerned doctoral training in the social sciences in the UK, while the second chapter considers boundaries changes in university governance focusing on the role of external stakeholder. *Rosemary Deem, Sally Barnes, and Gill Clarke* discuss consequences, both intended and unintended, of policies concerning

doctoral training in the Social Sciences in the UK. culminating in the DTCs policy (Doctoral Training Centres) and the early years of its implementation. They consider changes introduced from 1992 to 2014 which concerned mainly the gradual move first to specification of discipline-specific training requirements and department-specific accreditation, then to delegation of the selection of candidates for Economic and Social Research Council (ESRC) doctoral studentships to universities rather than a national competition and finally to institution-wide or inter-institutional arrangements for doctoral education . How universities have responded to these changes, which invested doctoral training in the Social Science? This is the main question addressed in the chapter.

They consider changes and the impact they had on institutions, on university autonomy, leadership and student diversity and inclusion. To discuss changes they use collaborative narratives technique and field notes of the three authors ("tales") providing many interesting hints on changes in doctoral training. Changes in policies and practices concerning doctoral training as well as its reorganization in the years represent the bulk of the narration of the authors. Some important lessons concerning the move towards collaborative training emerge from the narrations.

Differently *Sofia Bruckmann* focuses on the shifts in boundaries between HEIs and the society discussing changes driven by the introduction of NPM logics in university governance, taking institutional reforms, which invested HE system in Portugal, as example. What is the role of university external stakeholders in the changed role of university towards the society and the changes in the state-universities relationships? To answer the question, the roles of stakeholder in the top positions of university governing bodies are analysed for a sample of Portuguese universities.

The final section of the book includes two chapters which move the attention to boundaries changes in the academic professions focusing on two key concepts: that of academic leadership and the one of academic excellence.

Joakim Caspersen and Nicoline Frølich address the theme of leadership in higher education. The general observation introduced by the authors is that leadership in higher education has shifted from *"old modes of leadership based in academic and collegial values to new modes of governance increasingly based in social responsibleness and managerialism."* To explore changes in academic leadership they use the case of qualification frameworks and learning outcomes (HELO-Higher Education Learning Outcomes). The assumption behind the discussion is that HELO should be considered as a governance and management tool beyond a simple device for teaching and learning assessment the extent to which it pushes universities towards more results orientation. They question then how academic conceive these instruments and what the interplay between HELO introduction and different leadership models is likely to be. Their findings show "*old modes of new governance,* played out in relation to new policy initiatives such as HELOs": thus authors argue as HELO does not drive changes into leadership models

rather is more likely to push academics to put in place different blended and mixed version of leadership models.

Finally, *Marek Kwiek* deals with academic research productivity and the role of top research performers across Europe. The author observes as inequality characterizes the academic knowledge production: the productivity distribution patterns across European systems emerge to be strikingly similar, despite starkly different national academic traditions. Thus about ten percent of academics – which the author label as "research top performers" – are at the echelons of highly productive academics and provide, on average, almost half of all academic knowledge production. The "quality quantity dilemma" of academic productivity is then the central issue of this chapter. Instead of discussing these observations using widely used metrics and bibliometric tools he investigates the "what" of academic knowledge production and the "why" of it (individual and institutional predictors of high research performance). Moreover, how does this relate to different universities profiles? The main assumption concerns the balance between academic productivity and professional recognition, the latter being assumed to be proportional to the former, which give rise to different "academic professions" communities and productivity patterns in European Universities. Policy implications (what if systems are primarily institutionally-based research funding?) and policy dilemma (should highly ranked scientists be supported or highly ranked institutions giving rise to further segmentation with academic landscape?) for academic professions in a changing academic environment more and more focused on academic measurable scientific performance are discussed.

The book brings then together different contributions, which allow capturing the complexity of the debate around the transformation of universities and changes of institutional and organizational boundaries. If several changes have invested HE in the last twenty years, the way these have impacted on universities internal organizational dynamics, institutional settings, governance models, sectoral and scientific fields relationships as well as on the works of academics and the way science is produced are far from being completely drawn. Observing the move of institutional and organizational boundaries of universities represents then a way for tracking changes and for figuring out paths of academic institutions transformation.

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Emanuela Reale
IRCrES CNR
Research Institute on Sustainable Economic Growth of
National Research Council

Emilia Primeri
IRCrES CNR
Research Institute on Sustainable Economic Growth of
National Research Council

ALICE LAM

SHIFTING INSTITUTIONAL BOUNDARIES

'Boundary Work' of Academic Scientists in the Entrepreneurial University

INTRODUCTION

The rise of the entrepreneurial university has aroused intense debates about the changing relationship between academic scientists and the marketplace, and the consequences of the increasingly blurred boundaries between science and business for the norms and practices of academic scientific work (Owen-Smith & Powell, 2001; Vallas & Lee Kleinman, 2008). Some scholars view the institutional transformation in a positive light and stress the growing convergence between academia and industry. They describe the emerging structures as a 'new mode of knowledge production' (Gibbons et al., 1994) or 'triple helix' (Etzkowitz & Leydesdorff, 2000) that links the university, private industry and government together in a productive relationship. Authors in this camp herald the arrival of a new class of 'entrepreneurial scientists' who integrate academic research with its commercial exploitation. By contrast, other researchers are deeply critical of close university-industry ties and warn of the normative and institutional risks associated with academic entrepreneurialism (Beck & Young, 2005; Hackett, 2001). Slaughter and her colleagues use the term 'academic capitalism' to describe the encroachment of a profit motive into academia (Slaughter & Leslie, 1997; Slaughter & Rhoades, 2004). These critics emphasise growing conflict of values and crisis of role identities experienced by academic scientists, and the erosion of academic freedom and autonomy.

Despite the on-going debate, our understanding of the 'new knowledge regime' and its consequences for academic scientific work has been limited by oversimplified theoretical assumptions about the underlying process of change. There is a tendency among many authors to view the shifting boundary between academia and private business as an institutional change that occurs as a linear historical process in which the old institutional logic of academic science is under attack (Beck & Young, 2005; Hackett, 2001) and will be eventually replaced by the new logic of entrepreneurial science (Etzkowitz et al., 2000). Both the 'new knowledge production' and the 'academic capitalism' perspectives are built on the presumed inevitability of the entrepreneurial university. Their analysis takes place at a high-level of aggregation and generalisation. This approach all too easily obscures the internal diversity in academic scientific work, and the complex dynamics of organisational change

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that permit the co-existence of contradictory institutional logics (Murray, 2010; Smith-Doerr, 2005; Vallas & Lee Kleinman, 2008). More importantly, it fails to take account of the strategic role of actors, namely scientists themselves, in interpreting and shaping change.

The analysis presented in this chapter seeks to go beyond these limitations by adopting a micro-level perspective to examine how the shifting boundary between university and industry is experienced and can be shaped by academic scientists themselves. The analytical framework draws on the theoretical insights of the new institutional school of organisational change which highlights actor choice and strategic action in shaping change (Barley & Tolbert, 1997). The sociology of science literature provides the main concepts and micro-theories for interpreting the strategic responses of scientists to the changing work environment. The analysis stresses how scientists exploit the 'sociological ambivalence' (Merton & Barber, 1963) of their 'boundary work' (Gieryn, 1983, 1999) to defend and negotiate their positions, while at the same time seeking to acquire critical resources in pursuit of their career goals. The evidence presented shows that scientists are active agents seeking to shape the boundary between science and business, and have developed different modes of engagement with the emerging knowledge regimes. While some adhere to the 'traditional' norms of basic science and resist the encroachment of commercial practices, others exhibit an 'entrepreneurial' orientation and partake in the realms of both science and business. Between the two polar positions of the 'old' and the 'new', the majority of the scientists display 'hybrid' orientations and are particularly adept at mapping out their own social spaces for strategic manipulation at the fuzzy boundaries between science and business. The analysis challenges the protagonists' views on the emergence of a dominant market norm in academic science and provides evidence of continued diversity.

Scientists as Strategic Actors in Shifting University-Industry Boundaries: 'Sociological Ambivalence' and 'Boundary Work'

Neo-institutional theorists treat the change and reproduction of institutions as a dynamic, ongoing process in which actions and institutions are recursively related (Barley & Tolbert, 1997; Oliver, 1991). Oliver (1991) argues that individuals and organizations do not simply conform to institutional pressures but respond positively to them and in some cases modify them. She proposes five types of strategic responses to institutional process, from passivity to increasingly active resistance: acquiescence, compromise, avoidance, defiance, and manipulation. Institutions may also vary in their normative power and their effect on behaviour, depending on how widely and deeply institutions are accepted by members of a collective (Tolbert & Zucker, 1996). Moreover, actors can take different orientations with regard to the social structures in which they are situated and develop different modes of engagement (Mouzelis, 1989).

It is also possible for an institution seem to change at the formal policy level without concomitant changes in cultural norms at the organisational or individual levels. Aldrich and Fiol (1994) distinguish between socio-political legitimacy where practices or rules are approved or mandated by the state, and cultural-cognitive legitimacy, in which ideas are more subject to actor interpretation. Moreover, these two component parts need not be in congruence as we often assume. A study by Colyva and Powell (2006) on the institutionalisation of academic entrepreneurship in the US shows that new practices can be more or less legitimated, and they may fail to become deeply cognitively embedded despite apparent formal compliance. Moreover, the new practices that are becoming legitimated can also be transformed in the process as actors interpret them and imbue them with new meanings according to the institutional logics of their specific domains or strategic goals. As DiMaggio (1997: 265) notes, institutions or culture are 'complex rule-like structures that constitute resources that can be put to strategic use.' Murray (2010), for instance, examines how geneticists in the US resisted and accommodated 'patenting' and, in the course of doing so, they re-interpreted the meaning of patenting by treating it as an alternative currency for building academic reputation, and also used it as a means to exclude unwanted commercial intrusion. Thus, actors have the leeway and flexibility to use their existing relations and understandings to incorporate, transform, or resist new practices. Hence, our understanding of the dynamics of institutional change will need to recognise the ambivalence inherent in the structural conditions of change as well as the responses of actors.

Early research in the sociology of science highlights the sociological ambivalence of scientists and their active agency role in defending their positions in response to external challenges. Merton's (1957) early formulation of the norms of basic science as characterised by universalism, communism and disinterestedness regulated by a scientific-community has been criticised by some as overly idealised, and ignoring both the practical realities of scientific work and the day-to-day negotiation among scientists to secure resources for their work (Latour & Woolgar, 1979; Mitroff, 1974). His later work (Merton & Barber, 1963; Merton, 1976) on the notion of 'sociological ambivalence', together with Mitroff's (1974) concept of 'counter-norms', suggest that the role of scientists reflects a dynamic interaction between countervailing orientations to dominant norms and subsidiary counter-norms. For example, scientists may portray their research as either basic or applied, and the boundary between production and exploitation of knowledge may be clearly demarcated or blurred depending on the demands of the situation and external challenges encountered. Such 'sociological ambivalence' may generate inner conflicts and tensions among scientists (Hackett, 2005). However, it serves also as a useful social device for scientists to cope with the contingencies that they face in trying to fulfil their functions. Mulkay (1980) argues that sociological ambivalence provides scientists with alternative cultural resources which they may use for legitimating work boundaries and defending their positions in different contexts.

Gieryn (1983, 1999) coined the term 'boundary work' to denote the active agency role of scientists in drawing and redrawing the boundaries of their work to defend their autonomy and secure resources in pursuit of professional goals. He stresses the power of scientists' interpretative strategies in constructing a space for science for 'strategic practical action'. His historical analysis of scientists' efforts to preserve autonomy and enlarge resources for research showed that the boundary between basic and applied research was clearly established when the scientific community wanted to protect their professional autonomy and ensure that basic research was free from government interference. However, it often became obscure, if not dissolved, when scientists sought to secure increased resources and public support for research. Gieryn (1983: 789) refers to 'boundary work' as an ideological style found in scientists' attempt to present their social and collective image to the external world in their struggle for autonomy and public support. This concept has also been widely used to examine the occupational demarcation problems of professionals, and the strategies that they use to defend the content of their work and institutional arrangements that undergird their practice (Lamont & Molnar, 2002: 177–8).

Work boundaries and role identities are intertwined, and challenges to external work boundaries may threaten stable role identities (Ashforth et al., 2000; Kreiner et al., 2006). Beck and Young (2005) argue that the contemporary transformation in the relationship between academia and the marketplace presents a major challenge not only to the external conditions of academic work, but more fundamentally, to the core elements of academic professional identities. The professional role identity of academic scientists has historically been deeply rooted in a distinctive scientific community marked by strong external boundaries and a special relationship to knowledge production (Henkel, 2005; Kogan, 2000). This self-regulative bounded world is associated with the Mertonian norms of disinterestedness and communism, traditionally upheld by the scientific community as the default ideals that promote the free pursuit of knowledge. Although scientists do not always adhere to these ideals in practice, they have great normative significance for the community and serve to underpin its professional autonomy and role identity. The increased penetration of the marketplace into academia and commercialisation of knowledge pose a challenge to this professional ideal. Some authors point out that a scientist's decision to go down the commercialisation path potentially involves a role transition and inner sense-making process akin to managing multiple role identities (George et al., 2005; Pratt & Foreman, 2000). What strategies, then, do scientists employ to negotiate their work boundaries and role identities as they embark on commercial roles? How do they reconcile the tension between the contradictory logics of science and business?

The analysis presented below explores these questions by drawing on prior empirical work by the author.[1] The evidence is based on 36 in-depth individual interviews and a survey sample of 734 academics scientists from five major UK research universities, covering the following disciplines: biological sciences, medicine, physical sciences and, computer science and engineering. Much of the recent debate about research commercialisation has concerned these disciplines.

A Typology of Scientists: 'Old School' Traditionalists vs. 'New School' Entrepreneurial Scientists

In contrast to the protagonists' views on the growing dominance of an entrepreneurial orientation, my study finds a great deal of variation in the scientists' responses to university-industry ties. The analysis develops a typology of scientists to explore their diverse work orientations. It draws on the insights of earlier research on the differentiation of scientists according to their attachment to scientific values and goals (Box & Cotgrove, 1966) and a more recent study by Owen-Smith and Powell (2001) on the attitudes of university scientists to research commercialisation. It places the scientists on a continuum defined by two polar types representing the 'old school' traditionalists vs. the 'new school' entrepreneurial scientists at the opposite ends, with two mixed types, the 'traditional hybrids' and 'entrepreneurial hybrids', situating in between. The five key dimensions differentiating the four categories are summarised in Table 1.

These dimensions were initially derived inductively from the interviews and later cross checked against the survey data. In the interviews, scientists were asked detailed questions about the extent and intensity of their engagement in industrial links, their motivations and incentives for such engagements, their work roles and professional identities, their attitudes towards academic-industry relations and assessment of the influence of industrial engagements on their research and careers. Those who had been actively engaged in industrial activities were asked to elaborate on the ways in which they managed the boundary relationships and, resolved potential tensions and conflicts. At the end of the interviews, the scientists were shown a card with the statements describing the four categories (see, Appendix A) and asked to select one category that best described their orientations. Although not all the scientists saw themselves as falling into 'pure' categories, their dominant orientations could be identified from their responses to the descriptive statements and other questions asked in the interviews. In the data analysis, the scientists' 'self-definitions' were cross checked against their responses to other relevant questions and generally found to be consistent. The classification was subsequently refined and used in the survey where the respondents were asked to select their 'first best' and 'second best' choice of statements that described their professional orientations (see, Appendix A). The distribution of the responses shows that in the great majority of the cases, the second choice was contiguous to the first which illustrates the consistency of the choices. The first choice category was adopted for the quantitative analysis in mapping the scientists' orientations onto other relevant dimensions pertaining to the typology.

The distribution of the interview and survey samples by the four types, and the variation in their engagement in industrial links are shown in Table 2. It should be noted that 22 of the 36 interviewees also responded to the survey which enables cross-checking of the consistency in the classification. Table 3 shows the factors that have motivated them to engage in industrial links

Table 1. A typology of scientists' orientations towards university-industry links

	Beliefs about academia and industry boundary	*Extent and modes of engagement with industry*	*Main motivating factors*	*Perceived legitimacy of commercialisation*	*Boundary work strategies and role identities*
Type I 'Traditional'	• Believes academia and industry should be distinct and pursue success strictly in academic arena	• some collaborative links but of an intermittent nature	• Mainly to obtain funding and resources for research	Resistance • seen as an assault on academic ethos and autonomy	• Boundary separation and expulsion • Retain extant academic role identity
Type II 'Traditional hybrid'	• Believes academia and industry should be distinct, but also recognises the need to collaborate	• mainly collaborative links with intermittent involvement in some commercial activities	• Funding and resources for research most important amongst other factors	Accommodation • not necessarily desirable but an inevitable development	• Boundary testing and maintenance • Retain and protect dominant academic identity
Type III 'Entrepreneurial hybrid'	• Believes in the fundamental importance of science-business collaboration but recognises the need to maintain boundary	• continuous engagement in a range of collaborative and commercial activities	• Funding and resources for research most important • Application/exploitation of research, knowledge exchange and professional networking also important	Incorporation and co-optation • pursue commercialisation but not all its associated meanings	• Boundary negotiation and expansion • Hybrid roles but retain strong focal academic identity
Type IV 'Entrepreneurial'	• Believes in the fundamental importance of science-business collaboration	• continuous engagement in a range of collaborative and commercial activities • strong commercial ties with firms	• Application/exploitation of research most important • Funding and resources for research, knowledge exchange and professional networking also important • Personal pecuniary gains also relevant	Acceptance and veneration • commercial practices embedded in work routines	• Boundary inclusion and fusion • Fuse dual role identities

Table 2. Distribution of the interview and survey samples by type and engagement in industrial links

Typology	*Interview sample**	*Survey sample*	*Engagement in industrial links (Survey respondents)*		
			None	*Collaborative***	*Commercial****
Type I Traditional	3 (8%)	108 (17%)	57%	30%	13%
Type II Traditional hybrid	8 (22%)	215 (33%)	21%	48%	31%
Type III Entrepreneurial hybrid	16 (44%)	251 (39%)	14%	44%	42%
Type IV Entrepreneurial	9 (25%)	69 (11%)	15%	26%	59%
Total No. of survey respondents/ interviewees (N)	36 (100%)	643 (100%)	24%	41%	35%

* *All the interviewees were engaged in industrial links: 10 had collaborative links only and 26 were involved in both collaborative and commercial links.*

** *Collaborative links: including collaborative research, contract research, consultancy, student sponsorship and joint publication.*

*** *Commercial links: including patenting, licensing, affiliation with start-ups and company formation.*

Table 3. Factors motivating industrial links

Q. Which of the following factors have motivated you personally to engage in industrial links activities? (Multiple answers)
% selected the 'important' and 'very important' replies

*Motivating factors**	*Type I*	*Type II*	*Type III*	*Type IV*	*All types combined*
To increase funding and other research resources	55%	85%	90%	71%	82%
Application & exploitation of research results	32	56	82	84	68
To create opportunities for Knowledge exchange/transfer	40	50	78	73	65
To build personal and professional networks	35	48	68	64	57
To enhance the visibility of your research	26	38	61	50	46
To increase your personal income	14	20	27	51	26

* *Variation between types significant $p < 0.001$*
N = 510 (Total no. of those with industrial links responding to the question)

In this classification, *Type I 'traditionalists'* are characterised by a strong belief that academia and industry should be distinct and they pursue success primarily in the academic arena. They comprise 17% of the survey sample which may be an underestimate of their importance in the population.[2] Although they may develop some links with industry (e.g., collaborative research, student sponsorships), the main reason for doing so was to acquire financial and other resources to support academic research. Type I scientists typically do not pursue commercial mode of engagement and tend to be suspicious of those who do so.

In contrast, *Type IV 'entrepreneurial scientists'* see the boundary between academia and industry as highly permeable, and they believe in the fundamental importance of science-business collaboration for knowledge application and commercial exploitation. They comprise a much smaller proportion (11%) of the survey sample relative to the other categories. However, the dominant majority of these scientists had involvement in industrial links and 59% were engaged in commercial activities of one kind or another, with 29% being company founders. The importance of knowledge application and exploitation to these scientists is clearly indicated in the survey; 84% agreed that this was an 'important/very important' factor motivating them to engage in industrial links. What also sets this category apart from the other three Types is the relative importance of personal financial gains (Table 3).

Between the two polar types, nearly three-quarters of the scientists surveyed exhibit a 'hybrid' orientation combining elements of both the 'old' and 'new' schools. Hybrids appear to adopt contradictory positions and express paradoxical views about the nature of relationships between science and business. There are two categories of hybrid scientists: *Type II 'traditional hybrids'*[3] share the old school commitment that the boundary between academia and industry should be distinct, while at the same time recognising the need to engage in science-business collaboration for scientific advancement. Over three-quarters of them reported having involvement in industrial links over the last ten years, and just under one-third were engaged in commercial activities. These scientists adopt a pragmatic orientation towards science-business interaction, while maintaining a strong academic identity. Like their Type I colleagues, they pursue industrial links primarily to obtain funding resources to support their research, although knowledge transfer and exploitation was also seen as important by some.

The other hybrid position, described as *Type III 'entrepreneurial hybrids'*, comprises the largest category (39%) of those surveyed. Scientists in this category share the new school belief in the importance and benefits of science-business collaboration, while maintaining the old school commitment to the core scientific values. The majority of the Type III scientists had engagement in industrial links and 42% were involved in commercial mode of activities, with 16% affiliated with start-up companies and another 12% being company founders. While Type II scientists were not entirely at ease with commercial endeavours, scientists holding a Type III position perceived such endeavours as largely legitimate and desirable for their scientific pursuits. Besides obtaining funding for research, Type III scientists were

motivated by a range of other knowledge, reputational and network building factors in their pursuit of industrial links.

Universities are complex organisations comprising different academic disciplines and departments, and science itself is a disunified endeavour pursued by groupings of experts who are separated from each other by heterogeneous research approaches (Knorr-Cetina, 1999). The diversity in scientists' orientations toward science-business links reflects, in part, the different disciplinary norms, history of industrial engagement, and the divergent pressures and opportunities for research commercialisation in the different fields. For example, the survey shows that the traditional types (I and II) have a more conspicuous presence in physical sciences (55%) than in the applied subjects such as engineering and computer science (38%); whereas the entrepreneurial types (III and IV) are more prominent in the latter (62%) than in the former (45%). In subject areas where recent scientific advancement has blurred the boundaries between basic and applied research, and opened up new opportunities for commercial exploitation (e.g., biosciences and biomedicine), it is roughly an equal split between the traditional and entrepreneurial types.

However, beyond disciplinary variation, two observations are notable. The first is that all the different types are present within each disciplinary category. This suggests that an academic discipline may influence but does not determine scientists' orientations to industrial engagement. Previous research shows that scientists' early socialisation and work experience can influence their propensity to develop industrial links (Bercovitz & Feldman, 2003; Stuart & Ding, 2006). The second is that 'hybrids' (Types II and III) are the dominant category (70%+) across all the subjects. Their strong presence suggests that the conventional approach of conceptualizing the outcomes of the institutional transformation in terms of a simple dichotomy of the 'new' entrepreneurial scientists vs. the 'old' traditionalists fails to capture the complex variation in scientists' responses to the shifting academic landscape.

Boundary Work, Professional Autonomy and Role Identity

This section examines how scientists characterised by the different orientations use varied strategies of boundary work to defend, maintain or negotiate their positions. The analysis draws heavily on the individual interviews, supplemented by the relevant survey data on the respondents' evaluation of science-business relations (Table 4) and also analysis of the written-in comments provided by 152 respondents, spread widely across the four types.

Type I 'Traditional Scientists': Boundary Separation and Expulsion

For the Type I 'traditionalists', the boundaries between academia and industry are markers of differences between two distinct institutional domains. The distinction between basic and applied research, grounded in different types of organisations,

Table 4. Evaluation of industrial links and perceived influence on research and careers

% agree/agree strongly
[% disagree/disagree strongly]

	Type I	*Type II*	*Type III*	*Type IV*
Engagement in commercial activities has the potential to confuse university's central commitment to knowledge production (N = 637)	74 [12]	66 [14]	48 [33]	38 [39]
I am willing to alter my research programme to accommodate industrial demands (N = 475)*	16 [60]	29 [39]	38 [27]	60 [18]
Industrial links have stimulated me to develop new areas of research (N = 475)*	16 [53]	43 [15]	73 [9]	65 [19]
Have positively influenced my academic career and scientific reputation (N = 475)*	22 [54]	30 [27]	60 [12]	54 [26]

Variation between types significant $p < 0.001$
% of 'neutral' replies not shown
** Only those with industrial links were asked to respond to these questions.*

continues to represent a boundary that has meaning and significance for these scientists. The university, according to the Type I scientists, should be the setting for the pursuit of disinterested basic research, while applied work should be done in the commercial setting. A Type I computer science professor interviewed, for example emphasised the importance of differentiating academic research from industrial problem-solving and talked about the need to 'protect' himself and his colleagues from 'the pressure to make a lot of connections with industry'. He believed that 'real academics' should focus mainly on basic research and, those engaged in industrial problem-solving 'are more like scientists in the research and development of big industrial firms', and they 'should not be in the university in the first place.' Another Type I professor, in physics, described one of his colleagues who engaged in applied work as someone who was 'not really an academic' because 'he doesn't write many papers… his aim is to produce instruments…'. These accounts in the interviews were evidently boundary-making in themselves in that the scientists' role identity was intimately associated with the pursuit of basic science in the context of the university. Their definition of who is and who isn't a 'real academic' amounts to a strategy of symbolic expulsion to protect and defend their own academic role identity.

Type I scientists believe that commercialisation of research is harmful to academic science and they see the growing pressures for applicability in research

as a threat to scientific autonomy. In the survey, the majority said that they were not prepared 'to alter their research programmes to accommodate industrial demands', indicating their resistance against industrial encroachment. Three-quarters agreed with the statement that 'engagement in commercial activities has the potential to confuse university's central commitment to knowledge production' (Table 4). This sentiment was also vividly expressed by many of those who wrote their remarks on the questionnaires:

> I strongly believe that the commercialisation of research by academia has harmed and has the potential to further harm the role of academia in society… (Professor, bio-engineering)

> Universities are selling their souls to the gods of patents and profits. (Lecturer, physics)

Type I scientists responded to the rising tide of commercialisation by avoidance or contestation. Some dismissed the environmental changes and others actively contested the legitimacy of these activities. They often evoked the traditional ideals of pure, 'disinterested' research to guard the boundary of basic science. Especially among those who did not see the relevance of industrial engagement, their suspicion of industrial links may well reflect their personal desire to maintain an 'ivory towerish' world of academic science. At first sight, it would appear that these Type I traditionalists were using the norms of basic research as a protective resource for self-justification. However, there is also ample evidence to suggest that their resistance against commercial endeavours also reflects a genuine concern that private interests may undermine the objectivity of research and pose moral threats to the enterprise of science:

> … most commercial companies have little interest in research for its own sake, or even sometimes in the truth, they always had to put the bottom line first. This is probably inevitable, but it means that industry support is not in my view a satisfactory way to support academic activity. Findings unhelpful to a commercial company are suppressed, and favourable findings exaggerated. (Professor, medicine)

> Industrial links are not all the same although they are all more or less problematic. For example, links between basic science and the defence industry are entirely morally wrong, links with commercial drug companies are highly problematic, while other links have their own specific associated questions… (Researcher, mathematics).

The 'boundary work' of Type I scientists seeks to reinforce the institutional logics and integrity of academic science, and maintain their extant role identity. The norms of 'disinterestedness' and 'communalism' were often invoked, in their conversations and written comments, not simply for self-interested protection but also to defend the

collective enterprise of academic science against the encroachment of commercial interests.

Type II 'Traditional Hybrids': Boundary Testing and Maintenance

Scientists belonging to this category share the traditionalists' view that engagement in commercial activities can be harmful to academic science and they also believe in the importance of maintaining a boundary between academia and industry. However, they adopt a more accommodating attitude and are prepared to test the boundary relationships to explore the emerging opportunities in anticipation of possible benefits. About one-third of those surveyed said they were 'willing to alter their research programmes to accommodate industrial demands' (31% neutral), indicating a more flexible approach (Table 4). Many also recognise a need to meet the growing expectations for industrial collaboration. Several of those who had been involved in start-up companies talked about their 'social obligations' as scientists and the 'culture' of their departments:

> … we felt obliged as one is obliged actually, apart from some arty research, to do your best to commercialise the outfits…From my perspective, I feel starting up starter companies is kind of what you are supposed to do. It's kind of what you should try to do, obviously the government gives you money because it's supposed to help the economy and to do research ultimately it should help the economy. (Professor, biosciences)

> … it was a directive from above, you know, our Head of Department was very keen that we open up… it was the culture of the department at the time… You know if you were going to be a top academic that's one of the things you had to cover… (Professor, biosciences)

Underlying this apparent institutional compliance was a pragmatic personal adaptive strategy that many of the traditional hybrids pursued in the changing research environment. Many believed that demonstrating an entrepreneurial stance in their work would enhance their chance of obtaining the much needed research funding. One young professor in biophysics, who had been successful in obtaining major funding for his lab in the past few years, described in a somewhat cynical manner how he went about this:

> The Government was making it harder and harder to do pure research and so if you could show application in the context of, you know, collaborative work with industry, it was much easier to get funding…. So, for example, I have to write a report for my Wellcome Trust Senior Fellowship, my annual report saying how great I am. And one of the questions there is, you know, what have you done that is impressive outside just running a lab? So you know, I think, oh it would be great if I had some… you know if I showed I'd started a company

> or … Yeah, so I'm going to bullshit about my contacts with company X and you know, and it's all a case of building that up and that is more impressive than saying, "oh well I gave four lectures and three tutorials"…

The 'traditional hybrids' were individualistic and pragmatic in crafting their own versions of 'boundary work.' While retaining many of the characteristic traits of the Type I traditionalists, they sought to test the science-business boundary relationships by experimenting with new practices and trying out new roles. Many recognised that commercial engagement had gained increased institutional legitimacy and it was something that might bring academic credentials and benefit their careers. However, such activities also challenged their focal scientific values and they were only too acutely aware that commercial activities had not gained wide acceptance at a deeper cultural-cognitive level among their colleagues. A Type II bioscientist engaged in a start-up company, for example, expressed his concerns about being seen by his colleagues as having 'crossed over to the dark side.' Another mocked his own activities in seeking company funding by repeatedly saying that he was 'selling his soul…' and thought those who were too deeply involved in commercial activities were 'walking a very narrow line.' These narratives reveal the scientists' deep-seated worries about the potential career and identity risks that commercial activities entail.

The position of the traditional hybrids was somewhat indeterminate and ambiguous. Kosmala and Herrbash (2006: 1399) argue that ambivalence is a strategy of self-protection – it enables individuals to distance themselves from external control, and to create a 'free space' for autonomy. The Type II scientists sought to experiment with new work practices without undermining the established scientific norms and their dominant academic role identity. This ambivalence allows them to create 'provisional selves' (Ibarra, 1999: 765) as temporary solutions to experiment with new roles.

One might even say that these scientists were 'hedging their bets' and they would change directions based on evaluations of the success or failures of the trial efforts. The accounts of the interviews and written comments on the questionnaires show the scientists' meticulous assessment of their experiences. Many of these served as warnings about the risks of over-stepping the science-business boundaries:

> Research donations (unencumbered, charitable) from industry are now our preferred option since any explicit "research contract" outlining collaborative or contractual research with funding from industry nowadays brings massive and ill-conceived IP terms and conditions… (Senior lecturer, computer science)

> In retrospect, the time I spent on commercial links with industry distracted my concentration on research objectives, and my career might have had more fundamental impact if I had pursued those research objectives single-mindedly. (Professor, biosciences)

Several of the traditional hybrids told negative stories of their own or their colleagues' 'failures' in company ventures. They talked about how their own attitudes and the

'culture' of their Departments had shifted from away from the 'entrepreneurial' pull towards more a basic research orientation as a result of the unsuccessful ventures.

The boundary work of the traditional hybrids is both individually self-serving and organisationally significant in creating opportunities for testing new behaviour. It creates a free space for navigating a transition and experiencing alternative perspectives without posing a major threat to the established norms. Type II scientists seek to 'test' as well as 'maintain' the science and business boundary.

Type III 'Entrepreneurial Hybrids': Boundary Negotiation and Expansion

Type III scientists are also hybrids in that they combine a new school entrepreneurial orientation with an old school commitment to the core values and norms of academic science. For these scientists, the boundary between university and industry is permeable and provides an open space within which knowledge production and application can be effectively combined. They emphasised an interactive relationship between basic and applied research, and appeared to be comfortable and confident in crossing the science-business boundary. Relative to their traditionally-oriented colleagues, a much smaller proportion of the Type III scientists surveyed agreed that 'engagement in commercial activities has the potential to confuse university's central commitment to knowledge production'. Conversely, a higher proportion said that they were 'willing to alter their research programmes to accommodate industrial demands' (Table 4). The majority believed in the positive benefits of industrial engagement:

> Industrial links have been very important with respect to gifts of reagents without which many of my basic scientific research questions could not be addressed. (Reader, medicine)

> The consultancy work is invaluable in turning up ideas for research. (Professor, chemical engineering)

These scientists are experienced and strategic in the way they interface with industry. They will attempt to influence or manipulate the expectations of their industrial partners in order to shape the relationships. As one scientist put it: 'we have very clear ideas of what we want to do and we'll play the company's [game]… you know, we're not going to be pushed around.' For these scientists, the boundary between academia and industry provides an overlapping space where bargaining and negotiation takes place. While recognising the benefits of industrial ties, the entrepreneurial hybrids are also aware of their pitfalls and potential risks. They would seek to protect the hard core of scientific values when they felt that industry had overreached: 'science must come first, no compromise' (interview with a professor). The problems of 'publication restriction', 'control over intellectual property rights' and 'conflicts of interests' were often mentioned in the interviews as threats that could impinge

on their academic freedom and autonomy. Many would actively devise strategies to deal with the problems and exert control over the collaborative relationships to ensure that they were conducted on the 'right terms', in the words of one professor. For many of the Type III scientists, as in the case of their more traditionally-oriented colleagues, the norm of communism that supports open dissemination and publication of research results must be protected. They would rigorously safeguard this when entering into collaborative agreements with industry:

> What you need is clear contracts with industry so that if there are people, you know who are doing PhDs or who are doing basic research, you have to have clear clauses to say that, you know… the company for example should be given the results freely but there should be no embargo on publication… the ownership comes into it as well, you know who actually owns the IP and so that needs to be very carefully sorted out before you start, you know who owns what. (Professor, biosciences)

Some scientists would use their specialist expertise and personal scientific eminence to exert control over their industrial partners. One bioscience professor, for example, used non-exclusive licensing deals with companies to ensure that no one single company could have complete control over his work:

> … when I published a paper on X, which is an enzyme involved in high blood pressure and I suggested this might be used to design anti-hypertensives and a lot of companies wrote to me and so I made a deal with thirty companies…
>
> I sold them the same thing. Polygamy works very well. If you are monogamous in your relationship with a large company then you become completely ruled by your partner. If you have a lot of partners you become very powerful and more effective… I licensed to a lot… *(Laughing)*

Unlike the Type II traditional hybrids, the Type III scientists did not appear to experience cognitive dissonance or role identity tension when they embarked on commercial ventures. They perceived such endeavours as largely legitimate and would use 'old' academic frames to interpret the meaning of commercial engagement to resolve any normative tension. For many of the entrepreneurial hybrids, knowledge application and commercialisation amounts to an extension of their scientific role following long years of fundamental research: '… I like to think our jobs are a mixture of that degree of freedom to operate and to push the boundaries, that may well lead… that boundary may well lead to some commercial thing or a licensing or a spin out…' (Professor, biosciences). For some, forming a spin-off company was a way of asserting control over the knowledge exploitation process so as to exclude unwanted commercial interests from big companies: '... but I suspect at the end of the day, you know to get sort of independence and to be able to do things beyond a certain level, I suspect you really need to have a company …' (Professor, biosciences; company founder).

Like Type II traditional hybrids, Type III scientists also frequently mentioned how they used industrial links to generate the much needed financial resources for their laboratories (see also, Table 3). The 'resource frame' for some of the entrepreneurial hybrids includes also personal income. This money incentive, however, is not supposed to be a legitimate one for 'truthful' scientists engaging in 'disinterested' research. The scientists reframed what this meant for them to justify their involvement in 'profit making' activities which appear to be at odds with their socialised academic identity. For example, some talked about their 'freedom' and 'right' to engage in such activities to compensate for their low pay:

> … I think I'm being underpaid and so I've always campaigned for better salaries in the university world but I've also always championed the rights that if we're going to be paid very little we should be able to write books or do consultancies or form companies. (Professor, biosciences)

Beyond this nuanced 'self-interested' economic narrative, the majority of the entrepreneurial hybrids interviewed stressed the wider societal benefits of their commercial ventures. The following comment is illustrative:

> … even if I get no drugs in the end and we still have a good chance, I've put a lot of money into the local economy, I've given jobs and what I'm absolutely convinced is that the method we've developed is going to be useful in making drugs in the comings years… I think that we as academics have a responsibility, especially in University X, to the nation really, we're in a very privileged position… And our money comes from the State or from charities. (Professor, biosciences)

The entrepreneurial hybrids have been able to expand the boundaries of their work to incorporate commercial practices without sacrificing their focal academic identity. The majority interviewed saw themselves as 'a scientist first and foremost'. They believed that their commitment to academic values, clear research agenda and scientific reputation had enabled them to reap the benefits of commercial endeavours without the attendant negative implications. A professor who had been actively engaged in commercial activities described his scientific reputation as 'a central core' that gave him the freedom to do many other things outside academia: '… my first priority is to be a world leader in my research myself… the only defence of somebody like myself is to do better than anyone else in my academic job…'. These scientists are similar to what Zucker et al. (2002) describe as 'star scientists' who pursue dual knowledge production while remaining firmly rooted in the academic community. They pursue commercialisation of research but not all its related commercial implications. They actively seek to determine the shape and content of their enterprise activities so as to maintain their scientific autonomy.

At the socio-cognitive level, Type III scientists use 'mediating beliefs' (Pratt & Foreman, 2000) to reconcile the internal inconsistencies associated with their

simultaneous partake in science and business. Patenting and company formation, for example, are not seen as vehicles for profit making but as mechanisms that enable them to have control over knowledge exploitation and thus to protect the integrity of science. At the more practical level, they are meticulous in maintaining clarity and social order across the academic-business boundary in their daily work. They would ensure that the two domains were kept separate in their laboratories to avoid conflict of interest:

> … I kept the topics distinct and I kept the equipment distinct, I duplicated things if necessary. I had a yellow line down the middle of the lab, you couldn't see it but nothing crossed it. (Professor, biochemistry)

The boundary work of Type III entrepreneurial hybrids is complex and clever. These scientists actively negotiate the boundaries between science and business, and seek to map out new social spaces for their work while protecting their autonomy and role identity. The way they negotiate the blurred boundaries between the two arenas often involves an apparent paradoxical combinations of contradictory institutional logics and perspectives. Yet, these scientists are adept at resolving normative tension and avoiding conflict of interest. Henkel (2005: 173) argues that scientists in the contemporary environment 'must negotiate between social and institutional pressures and preservation of identity.' The boundary work of the entrepreneurial hybrids does precisely this.

Type IV 'Entrepreneurial Scientists': Boundary Inclusion and Fusion

Type IV 'entrepreneurial scientists' see the boundary between academia and industry as entirely permeable and flexible, and use it as a basis for bridging and inclusion. Like their Type III counterparts, Type IV scientists are also experienced participants in university-industry links. However, they have gone further down the 'entrepreneurial path', with a conviction to linking knowledge production more tightly to its practical use and commercial exploitation. The dominant majority surveyed said they were 'willing to alter their research programmes to accommodate industrial demands' (Table 4).

To the entrepreneurial scientists, science is inherently commercial and the pursuit of commercial science is entirely logical and compatible with their academic role. The traditional ideal of 'disinterested science' seems to bear little significance to the way these scientists approach their research. A Type IV professor in physics, for example, talked about the 'need to be aware of [commercial] opportunities and the need to spot them', and the importance of 'having a perspective on how commercialisation of fundamental research works' so that 'you're not working in areas of science that has absolutely no chance of being kind of exploitable'. Those in the more applied disciplines believed that the worlds of science and commerce were completely merged and it would be difficult to draw a clear boundary between

the two: 'The world is more industrial… to talk about science as separate from marketing aims of big corporations is naïve' (interview with a biomedical professor). To these entrepreneurial scientists, the Mertonian ideal of academic science was no more than an imaginary mythical world that only existed for those who believe in '… some Victorian nirvana of ivory towers doing wonderful intellectual research', in the words of a Type IV professor interviewed.

Scientists holding a Type IV orientation are ardent advocates of Burton Clark's (1998) notion of the 'entrepreneurial university' in that they believe in the critical importance for universities and academics to participate in the market and maximise opportunities for commercialisation in order to achieve financial self-reliance. The following remarks by a Type IV professor in bio-medicine sum up this view well:

> … well the key thing that my message to you is that Universities will not be successful until we understand the value of intellectual property in University and how to exploit that. The Universities in the UK need one thousand Company X (a spin-off) if we're going to have real funding of the University independent of the Government, I believe in that very much...

In contrast to their traditionally-oriented colleagues who often use the ideal of 'disinterested research' to protect and defend the boundary of academic science, Type IV scientists do precisely the opposite. They develop their own distinctive version of boundary work to challenge the institutional rules and values of academic science. They do so by mocking and belittling the role and contribution of basic research as opposed to applied research. One Type IV professor in computer science, for example, pointed out that the 'theoreticians' in his department were 'at least twenty years behind' and that they would need to justify their existence in relation to those who were engaged in applied work. For the most entrepreneurial new school scientists, research without practical relevance or that bears no technological fruits is less valuable.

The boundary work of the entrepreneurial scientists also challenges the norm of communism that gives priority to publication over patenting. To these scientists, patents not only constitute an alternative source of scientific credit but they are also an important economic resource that must be exploited:

> … if you discover something then I believe you should patent it immediately if you want to patent it which is very cheap and then publish… and also those who say we need open, free dissemination of science, what we need as well is for that science to have an effect on society and the effect on society… I do not believe that patenting and free dissemination are in conflict. (Professor, biomedicine)

At a practical level, the entrepreneurial scientists sought to incorporate their mode of operation into the established academic structure. One professor in computing science talked about how he would 'cheat in every way possible in the system to bring applied people in and make their lives possible' in the department. Another

in biosciences actively championed and developed what he described as an 'ideal organizational structure' to 'allow the companies to do their research within the university labs'. Unlike the Type III entrepreneurial hybrids who often draw a clear line between their academic and commercial activities to avoid conflict of interest, the Type IV scientists seek to integrate the two into a single structure.

For these scientists, deep engagement with industry constitutes part of their established work routines and role identities. For example, one Type IV scientist interviewed described 'entrepreneurial engagement' as part of 'the repertoire, base skills' that he should retain as a professional scientist. Others saw their parallel activities in the academic and commercial arenas as an integral part of their work roles: '… it's part of my life, you know, it's not dislocated particularly'. Another Type IV professor pointed out in the interview that technology transfer in his case was his 'academic self' talking to his 'industrial self': 'It all happens together… that's the heart of how it works, no barriers right. You can do the same thing at once…'. This 'talking to himself perspective' reflects the fusion of two different role identities into a hybrid, two-faced one.

While Type III scientists use various legitimating themes and mediating beliefs to accommodate commercial science within their academic frames, Type IV scientists assert the rationality and righteousness of their entrepreneurial convictions. Some openly acknowledged the importance of personal financial gains. The following remarks made by two company founders are illustrative:

> … you've got to make money, the company is to make money, right, it's not like another item on your frigging CV, it's to make money! That's why you do it! It's not a CV driven thing, it's not like a publication… (Professor, computer science)

> Money. Money, money, money. It is just money. I mean if you think about academic jobs whether perfectly reasonably paid… You are never going to earn the same thing as a banker or you know a lawyer or something. So I think if you can incentivize people – even with a few thousand pounds actually, you know, it is quite helpful. (Professor, biosciences)

It would appear that commercial practices have achieved a deep cultural cognitive legitimacy among the Type IV scientists. However, probing deeper into their work experiences and role identities reveals a much more ambiguous and tension-prone picture. Several of the Type IV scientists interviewed complained about how the 'old norms' and the 'real culture' continued to erect barriers to their boundary bridging activities, and that they would have to 'push back on that' and 'work very hard to manage the considerable suspicion' from their colleagues. Another pointed out that there was 'an institutionalised negativity' towards entrepreneurial activities because they were not seen as 'high grade' and the view that 'industrial stuff is not nice' still 'permeate the entire system'. Besides the subtle cultural sanction, the Type IV scientists were particularly adamant that the system continued to

reward predominately scientific achievements in the form of publications and peer recognition, and downplayed their contributions to knowledge exploitation. For the scientists who simultaneously commit themselves to academic and commercial science, a successful career would imply performing well in their dual roles across the science and business realms, and meeting the goals and performance criteria of the two very different systems.

The majority of the Type IV scientists interviewed felt that their decision to go down the entrepreneurial path was a 'risky' endeavour because it could jeopardise their academic careers. Those who were professors described themselves as being 'lucky' and 'managed to get away with it'. For those who had not yet made it to the top of the career hierarchy, the career risk was genuine and there was a constant fear of being de-coupled from the core academic system. One young bio-scientist, who had founded a company, described his position as being like 'a waiter with all those plates' and feared that the 'whole thing could collapse' around him any time. Another who was a Reader in physics, also a company founder, had experienced such difficulties in balancing his dual role that he was making a genuine assessment about whether to remain full time in academia: 'I think I have had to make a careful and studied decision that I want to go down this road in the knowledge that it is almost certainly preventing my promotion within the university…'

Even among the apparently successful entrepreneurial professors, the narratives in the interviews reveal a sense of anxiety in keeping up their academic performance. One professor thought his publication track record was 'a bit thin' for a professor in a top research university of his, and mentioned several times in the interview that he was 'no 400 paper journal man' compared with one of his more eminent colleagues. Another talked about his role conflict in satisfying the different responsibilities and not having time for his own research: 'I have nightmares about the volume of work I have to deal with… I genuinely wake up sweating in the middle of the night… these [industrial] activities take time and they take time away from other things and if you value them more highly you spend more time on them, and the time that's spent on them is time away from teaching, time away from you know, fundamental research and theoretical speculation, time away from scholarship…' Conflict of commitment and role overload appear to be a widespread problem experienced by the Type IV entrepreneurial scientists.

The boundary work undertaken by Type IV scientists is contentious and tension-prone. They attack and dismiss the traditional model of academic science which remains as the default ideal for many. This inevitably breeds tension and risks jeopardizing their acceptance by academic colleagues. The tension inherent in the boundary work of Type IV scientists is also manifest at the individual level in the role identity conflict experienced. For the individual scientists, the decision to pursue commercial activities is akin to managing multiple role identities which can lead to role identity overload and conflict (George et al., 2005). Individuals may adopt different strategies to resolve the conflict. Type III scientists resolve the tension by maintaining one dominant academic identity and creating mediating

beliefs to reconcile the internal inconsistencies. Type IV scientists, by contrast, seek to fuse the academic role with the entrepreneurial one to make a two-faced hybrid identity. However, the hybrid identity maintains distinct elements from the pre-existing identities, and thus role tension may occur when any elements from the original identities come into conflict (Pratt & Foreman, 2000: 31–2). The transition from the role of a scientist to that of an entrepreneur, even in the case of the most entrepreneurial Type IV scientists, appears to be partial and fraught with inner tension. This is not only because the gap to be bridged between the identities is considerable, but also forgoing the focal academic identity would mean threatening the very professional self and scientific esteem upon which the entrepreneurial one is built.

Discussion

The increased penetration of the marketplace into the institutional fabric of universities has generated much debate and uncertainty about the shifting nature of academic scientific work. Proponents of academic entrepreneurialism stress the growing prominence of the new school entrepreneurial scientists. Critics, by contrast, paint a dark world of academic capitalism where the norms and values of academic science are gradually being eroded, and the position of traditional scientists is under threat. The analysis presented in this chapter does not lend support to either view. The emerging picture is far more complex and fluid than is presented in these generalized observations.

The typology of scientists based on a continuum defined by two polar sets of values, the 'traditional' vs. 'entrepreneurial', has provided a useful framework for examining the emerging patterns of conflict and agreement in scientists' responses to the changing environment. It avoids the limitations of a dichotomous view which projects a clear divide between the 'old' Mertonian values of basic science and 'new' values of entrepreneurialism, assuming a linear process of change with the new displacing the old. It is important to note that both traditional and entrepreneurial types of academics have always existed in universities, but changes in social conditions may determine which type becomes more dominant and which set of values gains greater legitimacy at any given time. As Hacket (2001: 203) notes, 'historical events that disturb society do not create new values and ethics out of whole cloth, nor do they necessarily pose novel value conflicts, but instead they alter the balance between pre-existing polar opposites'. The two polar positions, I and IV, represent two gravitational fields or latent pairs of principles in academic science which are always in tension. Recent changes in science-business relationships appear to have altered the balance, giving the entrepreneurial type a greater degree of socio-political legitimacy than before. The hybrids, Types II and III, denote the sociological ambivalence of scientists and their attempts to bridge across contradictory positions. Treating hybrids as distinctive types enables us to explore the potential for strategic action and change at the intersection of different institutional spheres.

All the scientists studied have a clear sense of shifting boundaries but they diverge in their adaptive strategies. Type I traditional scientists see the demands of industrial application as constraints to their work and an assault on their professional autonomy. The boundary work of these scientists seeks to maintain the traditional ideals of basic science and protect their academic role identity. Although these scientists may be increasingly constrained by their continued reliance on diminishing public funding, they remain a powerful force especially in the disciplines characterised by a strong basic research orientation. Their determined opposition to the rising tide of commercialisation restrains the move towards entrepreneurialism and keeps the controversy and debate alive. In contrast, Type IV entrepreneurial scientists perceive increased commercialisation as an opportunity to establish an alternative mode of knowledge production. This category may well be gaining greater prominence in the fields with growing market opportunities for research commercialisation. Their attempt to fuse the science-business boundaries and assimilate a strong commercial perspective, however, breeds tension and risks jeopardizing their acceptance by academic colleagues. Type IV scientists comprise a relative small share of the survey sample (11%) and their actual presence in the academic population may well be less significant. Their 'boundary work' may not constitute what Gieryn (1983: 789) refers to as an 'effective ideological style' that could establish entrepreneurial science as a hegemonic model in academia.

The hybrids, Types II and III, comprise the great majority and have been particularly adept at mapping out their own social spaces for navigating a transition. Although the two categories differ in the strength of their gravitation towards entrepreneurialism, they both seek to exploit and manipulate the changing circumstances to their advantage. Oliver (1991) argues that manipulation is the most active response to institutional pressures because actors actively seek to influence, change or co-opt institutional expectations and evaluations. Type II traditional hybrids use the social space at the intersection of science and business for experimentation. Their fluid position enables them incrementally to move towards entrepreneurialism or retreat into the bounded academic arena, depending on changing circumstances or the outcome of their trail- and -error efforts. This indeterminate position may cause cognitive dissonance and psychological discomfort, but it also creates opportunities for evaluation, learning and making sense of the new possibilities (Piderit, 2000). Moreover, it allows them to 'float' at the intersection of different institutional domains, change direction or define a new hybrid domain by mixing elements of the intersecting institutions.

Type III entrepreneurial hybrids are those who have developed a distinctive negotiation zone at the interface between academia and industry. They vigorously seek to mobilise material and knowledge resources across the two arenas to support and expand their research. These scientists have acquired substantial entrepreneurial knowledge through work experience and are particularly skilled at controlling the research agendas in both worlds. This is the category of scientists most likely to report positive influence of industrial links on their research and careers

(see, Table 4). While looking towards the industrial world and selectively crossing the boundaries, their values and role identity are firmly embedded in the academic community. The ambivalence of these scientists lies in their apparently paradoxical combination of the logics of science and business in their work, and their use of seemingly conflicting frames to legitimate their boundary crossing activities. However, Type III scientists do not appear to experience psychological discomfort despite their structurally ambivalent position. They actively negotiate their roles and seek to incorporate business practices into their repertoire of behaviour, doing so on their own terms. These tactics neutralize opposition and enhance the legitimacy of their commercial ventures in the academic arena. At the individual cognitive level, they resolve role identity conflict by altering the meaning of commercial practices to better fit with the logic of academic science.

It is clear that scientists do not respond uniformly to the changing institutional environment. There is evidence of open or subtle resistance against the encroachment of a commercial ethos, but also obvious attempts to bridge the contradictory demands of science and business, whether reluctant or positive. Such sociological ambivalence, arguably, is a character of science and scientists have always had to defend their position in response to external challenges. The increasingly blurred boundary between university and industry, and growing pressure on scientists to exploit the commercial opportunities in an expanding array of scientific fields have brought the ambivalence of scientists to the forefront. Gieryn (1999) argues that boundary work is most apparent in situations in which boundaries are contested. The scientists looked at in this study are engaging in collective professional boundary work as well as personal boundary work (Waterton, 2005) as they seek to defend and establish the value of their work in the shifting terrain of academic science. Collectively, scientists are engaging in what Friedson (1994) referred to as the 'maintenance project', searching for a coherent professional identity as they increasingly operate within open and contested terrains. At the individual level, they are crafting their own versions of boundary work to map out social spaces for pursuing their professional and career goals.

Amidst the apparent ambivalence and diversity, the majority of the scientists engaged in industrial links, notably types III and IV, perceived a positive impact of industrial links on their research and careers (see, Table 4). This indicates that they have been able to assert a sufficient degree of control over the science-business relationship to pursue their own objectives. The analysis also reveals strong continuity and stability in the role identity of the majority of the scientists. While it is possible for individuals to hold multiple identities salient to various roles and contexts (Kreiner et al., 2006), some aspects of individuals' identity are 'central' and often remain salient and can be held strongly even in the face of external challenges (Markus & Kunda, 1986). For the majority of academic scientists, their role identity is deeply rooted in a strong scientific ethos that cherishes autonomy and dedication to knowledge. This focal identity is also the result of long years of graduate training and socialisation, and is intimately tied to an institutionalised career reward system

based on scientific credibility and peer status and it differs substantially from an entrepreneurial one associated with commercial science. The boundary between science and business is becoming fuzzy, but not dissolved. It continues to have great symbolic significance for the majority of scientists and serves to underpin their role identity.

This continuity has enabled scientists to adapt to the external challenges without undermining the core logic of academic science. It has to be remembered that one of the unique features of universities is the strong influence of academics on defining their missions and goals, and the management of daily routines of work. Radical transformation in academic science is unlikely to take place without widespread acceptance of commercial practices among the majority of scientists at the deeper socio-cognitive level. This does not appear to have occurred. These observations are consistent with the results of several other studies (Enders, 1999; George et al., 2005; Henkel, 2005) which also show a strong continuity in the professional role identity of academic scientists, despite challenges from the environment. Even in the US where the institutional framework for promoting academic entrepreneurialism is much more developed than in the UK, empirical evidence on the effects of these changes on the norms and practices of academic scientific work suggests a picture that is largely mixed and riddled with inconsistencies and anomalies (Owen-Smith & Powell, 2001; Vallas & Lee Kleinman, 2008; Welsh et al., 2008).

Conclusion

The remaking of boundaries between science and business is a contentious and contested process. Science itself is a diverse activity full of anomaly and paradox, and managing ambivalence is part of the daily routine of scientific work which also shapes the social structure that produces it. Neo-institutional theory highlights the agency role of actors in shaping the change and reproduction of institutions. It postulates that actions can either maintain or transform existing institutional structures. This chapter has demonstrated the capacity of scientists to defend and negotiate their positions, and to exercise agency through boundary work.

Those who see the growing power of the marketplace and the ethos of commercial science capturing and corrupting the cognitive norms of scientists will need to take account of how actors can resist change and alter the meanings of new practices to fit with their 'old' norms (McLoughlin et al., 2005; Murray, 2010). Authors who predict a shift in the work orientations of scientists towards the 'new' entrepreneurial mode should bear in mind that this can occur within a strong continuity of the 'old' academic frame as actors mix disparate logics at the blurred boundaries between institutional sectors. DiMaggio (1997: 268) argues that individuals are capable of maintaining inconsistent action frames which can be invoked in particular situational contexts. Hybrids in boundary-spanning positions can bridge contradictory logics and act as powerful agents of change. However, it should be noted that the move from the 'traditional' to the 'entrepreneurial' mode is not necessarily a linear process

as it can be halted, or even reverted, as a result of actor learning or contestation. As Coyvas and Powell note (2006: 346), social life is full of situations of partial institutionalisation in which new practices or values can prompt resistance from incumbents.

This chapter highlights the contribution of a micro-level perspective to understand the responses of scientists to the shifting institutional environment. It has looked at the experience of 'elite scientists' in major research universities who have relatively strong bargaining power and varied resource options to exert control over the environment. The situation may be more constraining for scientists in smaller or newer universities with less reputational and institutional resources to defend their positions. Future research could be extended to include different types of institutions to explore the potentially divergent experience of a wider population of academics.

NOTES

[1] The study was funded by the U.K. Economic and Social Research Council (ESRC Grant No. 160250018), Science in Society Programme. Full details of the findings are reported in Lam (2010, 2011) and Lam and de Campos (2015).

[2] Scientists who had no engagement and no interest in industrial links would have been less inclined to respond to the survey and especially to the question about their orientations to science – business interface. There were 56 cases of no reply to the question and 77% of them did not have any involvement in industrial links, suggesting that the majority could be Type I scientists. Some wrote at the end of the questionnaire that they did not feel that the question was relevant to them as they did not have any involvement with industry.

[3] This category was labelled 'Type II pragmatic traditional' in Lam (2011).

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Alice Lam
School of Management
Royal Holloway University of London

APPENDIX A

Survey Question Used to Categorise Orientations of Scientists

Please indicate which of the following statements best describe your professional orientation (indicate your first best and second best choice if appropriate)

	First best	*Second best*
1. I believe that academia and industry should be distinct and I pursue success strictly in the academic arena	( )	( )
2. I believe that academia and industry should be distinct but I pursue industrial links activities mainly to acquire resources to support academic research	( )	( )
3. I believe in the fundamental importance of academic-industry collaboration and I pursue industrial links activities for scientific advancement	( )	( )
4. I believe in the fundamental importance of academic-industry collaboration and I pursue industrial links activities for application and commercial exploitation	( )	( )

JOHN AUBREY DOUGLASS

WHAT IT MEANS TO BECOME A FLAGSHIP UNIVERSITY[1]

Seeking a New Paradigm

INTRODUCTION

It's a familiar if not fully explained paradigm. A "World Class University" is supposed to have highly ranked research output, a culture of excellence, great facilities, a brand name that transcends national borders. But perhaps most importantly, the particular institution needs to sit in the upper echelons of one or more world rankings generated each year by non-profit and for-profit entities. That is the ultimate proof for many government ministers and for much of the global higher education community. Or is it?

The relatively recent phenomena of international university rankings are fixated on a narrow ban of data and prestige scores. Citation indexes are biased toward the sciences and engineering, biased in which peer reviewed journals are included – (largely US and European, and the English language), and tilted to a select group of brand name universities who always rank high in surveys of prestige, the number of Nobel Laureates and other markers of academic status.

It is not that these indicators are not useful and informative. But government ministries are placing too much faith in a paradigm that is not achievable or useful for the economic and socio-economic mobility needs of their countries. They aim for some subset of their universities to inch up the scale of this or that ranking by building accountability systems that influence the behavior of university leaders, and ultimately faculty. Some of this is good, creating incentives to reshape the internal culture of some national university systems that have weak internal quality and accountability policies and practices. But it also induces gaming by university leaders and arguably is pushing institutional behaviors toward a vague model of global competitiveness that is not in the best interests of the nations they serve.

THE FLAGSHIP UNIVERSITY

In a forthcoming book with Palgrave Macmillan, I attempt to advocate the notion of the *Flagship University* as a more relevant ideal – a model for public institutions and perhaps some private institutions, one that could replace, or perhaps supplement and

E. Reale & E. Primeri (Eds.), The Transformation of University Institutional and Organizational Boundaries, 29–39.

alter the perceptions, behaviors, and goals of ministries and universities in their drive for status and influence on society. It is a model that does not ignore international standards of excellence focused largely on research productivity, but is grounded in national and regional service, and with a specific set of characteristics and responsibilities that, admittedly, do not lend themselves to ranking regimes. Indeed, one goal here is to articulate a path, and the language of a *Flagship University*, that de-emphasizes rankings and that helps broaden the focus beyond research. *Flagship Universities* are research-intensive institutions, or in the process of becoming so, but have wider recognized goals.

After a long period of governments and their ministries attempting to shape the mission and activities of universities, including various accountability schemes and demands focused on the normative World Class University (WCU) model, we need to enter a period in which institutions themselves gain greater autonomy and financial ability to create or sustain an internal culture of self-improvement and evidence-based management. The great challenge for the network of universities that are truly leaders in their own national systems of higher education is to shape their missions and ultimately to meaningfully increase their role in the societies that gave them life and purpose. The *Flagship University* profile I offer includes an outline of the mission, culture and operational features and is intended as a possible construct for this cause.

The objective is not to create a single template or a checklist, but a list of characteristics and practices that connect a selective group of universities to the socioeconomic environment in which they must participate and shape – a model that others might expand on and indigenize. Further, the *Flagship University* ideal is not, and could never be, a wholesale repudiation of rankings and global metrics, or the desire for a global presence. The model here is compatible with the WCU focus almost exclusively statistical analysis of research productivity, but aims much higher to, in some form, the soul and culture of the institution.

There are a few key assumptions to allow the *Flagship University* to exist and mature:

- *Mission differentiation* – National systems of higher education require some form of mission differentiation among its network of postsecondary institutions, and including a limited number of research-intensive universities, some of which might be *Flagship Universities*.
- *The Flagship ethos* – Either by government identification or self-appointment, *Flagship Universities* aspire to support regional and national socioeconomic mobility and economic development, educating the societal and business leaders of the future, and understanding and seeking a role in supporting other segments of a nation's education system. As noted, they also have or seek a culture of self-improvement. The best universities are always looking to get better at what they do to positively influence society at large.

But to pursue this ethos, they need the political, financial and policy support of their national governments in a manner that aligns with the overall management of a national higher education system and that meets the needs of various stakeholders – from students and their families, to business interests, and local and national governments. While the *Flagship Model* is largely focused on internal cultures and behaviors, government plays a critical role in a variety of ways, including:

- Using funding to steer the higher education sector to respond to labor market requirements and human welfare needs;
- Incentivizing research and innovation in selected universities.
- Pursuing a close link between national and regional economic policy development and higher education planning.

- *A comprehensive array of academic programs – Flagship Universities* have or aspire to offer degree programs across the disciplines, including professional fields such as engineering, law, medicine, education (including teacher education) and social welfare.
- *A sufficient "academic core"* – Universities that exude the values of the *Flagship Model* can do so only if they have sufficient funding and a baseline of Core characteristics, including manageable student-to-faculty ratios, a significant population of permanent faculty with doctoral degrees, sufficient numbers of masters and in particular doctoral students, and evidence of sufficient graduation rates and research productivity.

Research and analysis on a group of sub-Saharan African universities by the Center for Higher Education Transformation (CHET) based in Cape Town outlined the Academic Core concept first in 2011. CHET's baseline criteria focused on the developmental needs of African Universities; but they provide a useful framework for all universities that are early in the stages of maturation, and often in developing economies. The Academic Core includes input and output variables that link an institution's capacity to positively influence regional economic and social development with its capacity for knowledge production.

The important point is that there is a healthy balance in the various ratios of first degree and graduate students, permanent faculty, and a general assessment of productivity in graduates and research output. A key additional concept is the crucial importance of proper incentives and expectations for academic staff, along with the conditions in which they must work.

- *Institutionally driven Quality Assurance* – While ministries of education can positively or negatively influence the quality of university academic programs and activities, ultimately top tier institutions require sufficient independence to develop internal cultures of quality and excellence *and* incentives. This must include merit-based academic personnel policies. If there is any one major theme

that helps determine what are the most effective universities, it is the quality of the faculty, their ability to carry out their duties, high expectations regarding their talents, duties, and performance, and driven by a process of peer and post-tenure review. The quality of students, and to a large degree their academic and other forms of engagement, follow.

An ancillary assumption: government policy regimes and induced efforts to improve the quality and performance of all or a select group of national universities reflect doubt about the ability of their universities to become top, globally competitive institutions, and often with good reason; but ministries should view such government requirements and often one-size-fits all policies (such as national policies on academic advancement) as simply an initial stage in the goal of achieving high-performing *Flagship* universities, with the next and more important stage focused on sufficient autonomy to support *a culture of campus based institutional self-improvement.*

Flagship Universities are mindful of their global interaction and impact (including journal citations) *and* their regional responsibilities and influence in areas such as economic development and socio-economic mobility. They are mindful of ranking systems that essentially encourage them to be what one might call "universities of the cosmos" (for example, with research and quality goals that are not tied to location or more directly to societal needs), but they must remain grounded in a set of values and activities that make them essential to the societies they must operate in and serve.

SEEKING A FLAGSHIP PROFILE

In the forthcoming book with Palgrave Macmillan, I offer a "profile" of the *Flagship University*, organized in four categories, summarized in Figure 1 with each related to the institutions external responsibilities and internal operations. The idea is that, within the context of a larger national higher education system, *Flagship* institutions have a set of goals, shared good practices, logics and the resources to pursue them. Generally, the sequence is from the larger external context, to the mission of the institutions and goals, to the management structure to make it happen. Put another way, my effort here simply attempts to help create coherency, and to provide some guides and examples, for what many universities are already doing or are thinking of doing, but with emphasis on internal culture and processes for evaluation and self-improvement.

The expanded version of the profile provides a path to comprehend the vast array of values and activities that characterize the modern, research-intensive university. Universities are complex organizations that purposefully pursue mutually supportive activities that do not lend themselves easily to separate categories – in a vibrant university, teaching, research, and public service are symbiotic activities, built on a model of institutional revenue sharing and mutual

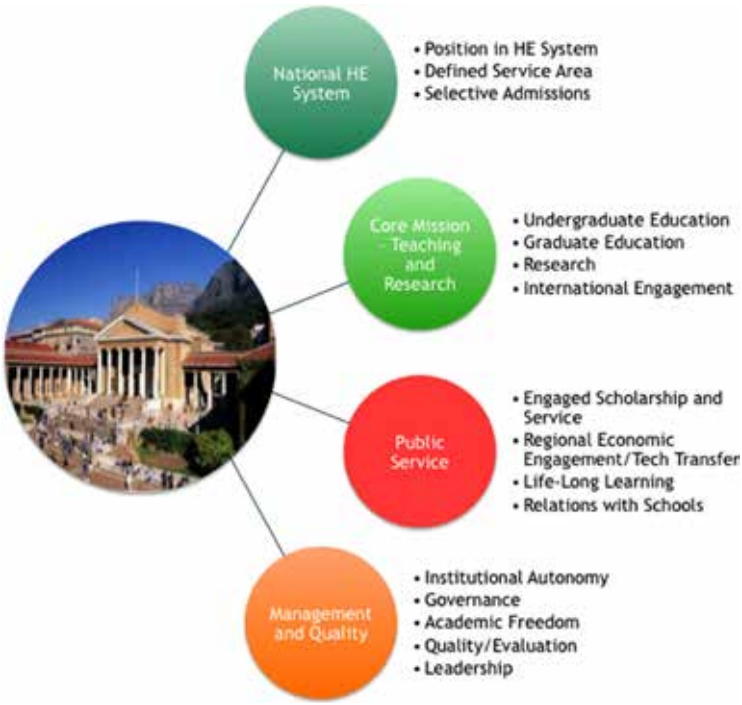

Figure 1. A flagship university profile: Four spheres of policies and practices

support. Hence, there is some redundancy in how I have organized the Profile of *Flagship Universities*.

The following provides an example of one of the policy areas under the Public Service sphere.

PUBLIC SERVICE – Engaged Scholarship and Public Service – *Flagship Universities* promote public service in various forms by faculty, students and staff via formal programs and incentives. This form of "outreach" is extremely important, providing a significant impact on local and regional communities, opportunities for learning and experimentation, and direct evidence of priorities. "Publicly Engaged" universities, as one observer has stated, "can make serious headway against social problems. As civic engagement elevates the quality of university teaching and learning, it produces millions of university graduates with both hands-on competence in their fields and a personal commitment to being agents of social change. And increasing public goodwill for universities can make government and private funders more generous in their financial support".

Figure 2 provides an outline of the traditional view of academic scholarship and the scholarship of Public engagement.

Traditional Scholarship	***Scholarship of Public Engagement***
Breaks new ground in the discipline	*Breaks new ground in the discipline and has a direct application to broader public issues*
Answers significant questions in the discipline	*Answers significant questions in the discipline, which have relevance to public or community issues*
Is reviewed and validated by qualified peers in the discipline	*Is reviewed and validated by qualified peers in the discipline and members of the community*
Is based on a solid theoretical basis	*Is based on solid theoretical and practical bases*
Applies appropriate investigative methods	*Applies appropriate investigative methods*
Is disseminated to appropriate audiences	*Is disseminated to appropriate audiences*
Makes significant advances in knowledge and understanding of the discipline	*Makes significant advances in knowledge and understanding of the discipline and public social issues* *Applies the knowledge to address social issues in the local community*

Figure 2. Traditional views on academic scholarship versus the scholarship of public engagement

In some form, all universities, and more specifically their students, faculty, and staff, are involved in various forms of public service and engagement, but the key is how coherent those efforts are and how are they valued within the institution. Most if not all major public US universities have developed over the past two decades or more the idea of "service learning." This often includes efforts to leverage and expand existing university led activities to support local communities and businesses, including the development of credit bearing courses for undergraduates engaged in formal internships with specified academic and public service outcomes. The University of Michigan, for example, has an endowed a center for engagement, focusing on student service-learning and partnerships and producing a refereed journal of scholarly work.

Similarly, UCLA created the Center for Community Partnerships – reflecting the high priority the campus places on engagement with its surrounding community. This was not the beginning of UCLA's involvement in the community; the university has been engaged in the Los Angeles area for many years, though not in a systematic way. One goal of the Center is to promote campus discourse on what it means to be involved in the surrounding community.

Several factors help explain for relatively high levels of engaged scholarship in America's leading public research universities. One is the expectation that

students applying to universities at the undergraduate level have some public service experience, broadly defined. When they enter the university, they already have experience and interest in the student volunteerism and different forms of community engagement. A second factor relates to expectations placed on faculty and an academic culture that has long valued community service and engagement with local business and governments – although with differences among the disciplines. This includes various forms of engaged scholarship incorporated as a formal part of faculty review of their performance and promotion. And a third factor is the growing number of campus organizations targeted toward community engagement – like UCLA's Center for Community Partnerships.

Generally, this is a new concept for most international universities, many who have only recently expanding their missions to include more concerted efforts at integrating community engagement with their teaching and research programs. The Talloires Network, a relatively new international association of institutions, is one example of a global promotion of public service as a central universities mission, providing examples of best practices.

Many Latin American Universities have articulated aspects of the idea of service learning and community engagement, but the coherency of these efforts have been limited, and not clearly articulated in, for example, the faculty advancement process. The following provides avenues and examples on how *Flagship Universities* are or can pursue this central part of their mission – an incomplete but useful way of articulating institutional mission and values with actual programs and activities.

- *Community Volunteering* – faculty, students, and staff at most universities interact informally as individuals in various forms of community service. But Flagship Universities should include formal mechanisms, such as "community service centers" that attempt to identify and link the university community with opportunities for volunteer work. Various forms of civic engagement provide an important path for universities to contributor to local needs – in schools, in hospitals, local social services, charities and similar community based activities. It also raises the visibility, and the value, of the university within the communities they reside in – further proof of their value to local government and populations.
- *Service Learning* – Service-learning is a pedagogical approach; it is academic and integrated into the curriculum. It focuses on student learning through action that benefits the community, but it is mutually rewarding because it can be transformational for students as well, connecting them with their role in a democratic society.

Universities should offer opportunities for undergraduate and graduate students alike to engage in learning opportunities, including course requirements and course credits, which support public service objectives. This is a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote

student learning and development. This should not be viewed as a distraction from the traditional academic experience linked almost solely to coursework; rather, that some, indeed, most students gain experiences that support their general edification and is part of the disciplinary based learning. Figure 3 provides examples of "service learning" programs. Below is an outline of objectives for Service Learning experiences:

- Increase retention, particularly among first-generation college students.
- Increase diversity of local enrollment as a form of outreach.
- Enhance achievement of core learning goals and has an effect on progress to degree.
- Make learning more relevant to students, helping them clarify their talents and interests at an early stage of their academic career; it often impacts choice of major selection and eventual career.
- Develop students' social, civic, and leadership skills.

- **University of Minnesota – Service Learning Courses and Scholars Program**

Each semester, the University of Minnesota offers some 50 courses, most for credit, that have service learning components in a wide range of disciplines that enroll approximately 2,000 students. This class-related community involvement enhances students' understanding of course materials. While deepening the learning process in this way, students build a sense of civic responsibility. Support for most service-learning classes is provided by the Community Service-Learning Center which also sponsors a Community Engagement Scholars Program that requires at least 400 hour of community engagement work such as volunteering and a final project, called the Intergrative Community Engagement Project ICEP that is noted on student transcripts for graduate school and employment applications.

- **University of Glasgow – Service Learning Program**

Service-learning at the University of Glasgow combines academic coursework with voluntary work in the community, to help you experience policy in practice. It is part of the Public Policy Honours curriculum, and an accredited course for visiting students. Program requirements includes one academic course in semester 1: Service in the Community 20 credits, an 8 week placement at 6 hours per week, in a welfare agency in Glasgow, and a 3,000 word reflective journal by the student.

- **Texas A&M – Service Learning Courses and Scholars Program**

Service-Learning Fellows program with up to 6 faculty selected via a competitive review process who receive a $3,000 faculty development award for integrating service-learning into their teaching, research, and public service while becoming recognized campus leaders in service-learning pedagogy and community engagement. The program is a partnership between the Center for Teaching Excellence CTE, Office of the Associate Provost for Undergraduate Studies US, and the Department of Student Activities Leadership and Service Center SA-LSC.

Figure 3. CASE EXAMPLES: Service learning programs

- Strengthen undergraduate research skills and capabilities.
- Encourage students to be productive participants in the community by connecting them to their surroundings.

• *Faculty Engaged Policy Research – Flagship Universities* look for ways to encourage academically relevant work that simultaneously meets campus goals as well as community needs. In essence, it is a scholarly agenda that integrates community issues as a value for faculty. In this definition community is broadly defined to include audiences external to the campus that are part of a collaborative process to contribute to the public good.

The following outlines some of the benefits that can be derived by a systematic approach to promoting and supporting engaged scholarship and civic engagement.

- *Bolster the links between research and teaching.* Research indicates that learning is enhanced by real-world experiences that broaden a student's perspective and connect theory with practice. In addition, research that is informed by community participation can have a uniquely meaningful impact that is locally visible.
- *Improve diversity, student retention, and progress to degree.* A university that more fully integrates community engagement into its research and teaching endeavors develops stronger ties to multiple communities and may be better able to attract and engage a diverse student body. In addition, research shows that engaged students remain in school and progress to degree at a greater rate than students who are not engaged.
- *Re-energize faculty around engaged scholarship.* Creating a civic engagement initiative and providing a supportive infrastructure may re-energize faculty teaching and research by providing a fresh perspective on the value their work brings to society.
- *Connect the university to policymakers.* Universities are being questioned about their relevance, lack of transparency, and high costs. Bringing more visibility to the value that the university provides the public through community-based teaching and research is one way to "live" the public mission and reinforce the important role that the university plays in serving the public good.
- *Build transdisciplinary and interdisciplinary research capacity.* The problems of society are complex, and addressing them requires expertise as well as research that crosses disciplinary lines. These capacities should be supported among faculty and nurtured in students.
- *Building a research community around Societies most challenging policy issues.* Focusing on issues that are of local and national public concern brings the unique strengths of a research university to bear on the most pressing challenges that face the state. This can enhance public knowledge of and appreciation for the university system, thereby making more tangible the return on public investment in higher education.

- *Bringing in new resources and funding.* Both government and private funders are calling for more collaborative approaches to projects as a condition of funding. In addition, local and regional funders who may not normally contribute to other university endeavors may have greater interest in investing in projects with clear public purposes and applications.
- *Build social capital among students, faculty, and communities.* Academic inquiry not only addresses critical research questions but also enhances the ability of students, faculty, and communities to take action and build ongoing relationships that yield multiple benefits. The development of such social capital has been shown by research to strengthen communities, making them more resilient and healthy. New networks of trust and cooperation are likely to emerge and create new academic partnerships for scholarly work.

A MORE HOLISTIC MODEL

The *Flagship* Profile I have partially outlined here purposefully provides an alternative conceptual and aspirational approach to the vague World Class University paradigm that now dominates much of the international discussion, and in academic conferences and journal articles. Yet the goal here is more ambitious: to support the ethos and an institutional culture among a select group of institutions, self-identified or formally so by national or even regional governments, and rooted in an ethos of national and regional relevancy and supported by internally derived accountability activities and behaviors.

The best universities are ones that are striving to get better, and not simply in the realm of research, the primary concern of the rhetoric and policy initiatives associated with achieving the World Class designation via international rankings. It is a much broader charge that includes teaching, and public service, and internal mechanisms for supporting quality and excellence.

In this exploratory effort, I have not sought to generate some elaborate scheme to measure outcomes – what many ministries thirst for. While some sort of framework for assessing the success of a *Flagship* can undoubtedly be created, like all existing outcome models it could only offer a partial understanding of the complex benefits and costs of what a highly productive university brings to the world.

Instead, my focus has been on the void in understanding what defines leading universities and what their aspirations should be. Thus far, the WCU rhetoric is the driving force, influencing government policy (not all bad) and institutional behaviors (not all bad) that have, in my view, an exceedingly limited vision, indeed a constraining force, on what major national universities should be and can achieve.

The *Flagship University*, and the exploratory profile is a supplemental and, certainly, more holistic model applicable to some sub-group of major universities. While governments and other stakeholders have a legitimate claim to influence

and shape the operations and missions of their universities, the *Flagship* model may provide a path for some universities to explain and seek greater institutional identity, a stronger internal culture of self-improvement, and, ultimately, a greater contribution to economic development and socioeconomic mobility that all societies seek. For that to happen, some group of institutions will need to embrace on their own terms some version of the model and articulate it clearly and loudly.

NOTE

[1] This essay is adopted from the pending book The New Flagship University, Palgrave Macmillan.

John Aubrey Douglass
Senior Research Fellow – Public Policy and Higher Education
Center for Studies in Higher Education
University of California – Berkeley

SECTION 1

TRANSFORMING UNIVERSITIES INSTITUTIONAL AND ORGANIZATIONAL BOUNDARIES

Changing Functions, Objectives, and Scope of Higher Education and Research Institutions

MAARJA BEERKENS

1. AGENCIFICATION CHALLENGES IN HIGHER EDUCATION QUALITY ASSURANCE

INTRODUCTION

The 1990s were characterized by the rise of quality assurance in higher education (Dill, 1995). Over the last two decades, quality assurance systems in Europe have changed and evolved significantly. There is now much variety in how countries regulate academic quality (Dill & Beerkens, 2010; Schwartz & Westerheijden, 2007), but despite of the variety we can see increasing convergence in the organizational structure that countries use for quality assurance. A great majority of European countries rely on semi-independent or formally autonomous quality assurance agencies. A survey of the European Association for Quality Assurance (ENQA) reports that the number of independent higher education quality agencies in Europe is consistently increasing; moreover, their tasks are widening and they use a greater number of different evaluation instruments (ENQA, 2008). This organizational form is also strongly promoted by the European Standards and Guidelines for Quality Assurance (ENQA, 2005). As a result, within only a decade countries with very different starting points and approaches to academic quality assurance have adopted a rather similar model of regulatory agencies.

The model of independent quality assurance agencies is often promoted from a sector-specific rationale in higher education. Quality assurance must be independent from the political control in order to assure its legitimacy in the eyes of universities, and it must be independent from universities to avoid 'regulatory capture' (Dill & Beerkens, 2013). However, the trend towards independent regulatory agencies cannot be seen apart from the same trend in other policy sectors. An 'agencification' fever characterized public sector reforms in many European countries from 1990s onwards (Pollitt et al., 2001). Agencies were expected to increase the level of expertise among regulators, make them more effective by separating them from policy-making, and increase legitimacy of regulation in the eyes of regulatees (see Laegreid & Verhoest, 2010).

Quality assurance agencies have thus become an interesting element in thinking about universities' organizational boundaries. They play an important role in the changing dynamics between state and universities. Universities have become more autonomous from state but as a response to the autonomy they must demonstrate performance and accountability. Quality assurance agencies fill an important mediation function in this relationship. Regulatory agencies are a defining factor

E. Reale & E. Primeri (Eds.), The Transformation of University Institutional and Organizational Boundaries, 43–61.

of the 'regulatoy state', a state where government does not provide services but delegates the tasks to private entities and uses regulation for steering the entities (Majone, 1997). Regulation takes place in the triangle of the political demand (parliament, government), regulator (agencies) and regulatees (universities). In this relationship, independent regulatory agencies tend to obtain considerable policy-making power and they become an actor with their own interests.

This chapter focuses on potential challenges of 'agencification' in the higher education. Accumulating literature from other sectors points to some weaknesses of 'agencification', most notably to fragmentation in the system and to a loss of political steering capacity. In this chapter we will first discuss how the changing dynamics between universities and state connects to independent regulatory agencies, i.e., the 'regulatory state' model. Thereafter we examine how the quality assurance agencies have evolved in the four countries, to demonstrate the highly varied trajectory to the rather homogenous model. And finally we explore tensions within the systems from the point of view of 'agencification' literature.

REGULATION AND AUTONOMY: THE RISE OF AGENCIES

A tension between autonomy and accountability, or deregulation and regulation, is a constant issue in many sectors of public administration. The higher education sector may have some specificity, due to the notion of academic freedom and historical distrust of government intervention, but the autonomy-accountability dilemma is nevertheless highly visible. Influenced by the public sector reform agenda, higher education systems in most European countries have experienced substantial changes in the level of organizational autonomy and the nature of government control.

Autonomy and Control

Higher education is an illustrative case about a shift from the 'positive state' to the 'regulatory state' in Europe (Majone, 1997). Over the 1990s and 2000s the traditional relationship between universities and state are critically revised in many countries. As a general rule, universities have become more autonomous: free from line-itemized budgets, input control, detailed prescriptions on curricula, and staff restrictions (Santiago et al., 2008). Reforms in public sector management show, however, that de-regulation goes rarely without some kind of re-regulation. A push towards greater managerial autonomy in the New Public Management (NPM) agenda produces also its 'mirror image' in the form of ex-post control and performance evaluation (Hood et al., 1999). Similarly the greater autonomy given to universities is balanced by new accountability mechanisms (Santiago et al., 2008). Detailed rules and line-item budgets ex ante are replaced with accountability post factum, input control is replaced with ex post quality control, and historically derived budgets are replaced by performance-based funding, etc.

Higher education quality assurance was one area that was strongly affected by the NPM agenda in the public sector. Academic quality assurance entered the scene in Europe and Australasia for the most part in the 1980s and 1990s (Dill, 1995). From a theoretical perspective, higher education quality requires a government intervention on several reasons (e.g., Blackmur, 2008; Dill & Soo, 2004). One set of arguments is linked to market failure issues. First, regulation is needed for consumer protection. Since a higher education degree is a considerable expense for students in terms of money, time and opportunity cost, society needs a warranty that the degree meets some basic standards. Higher education is an experience good: it is impossible to estimate the 'quality of the product' before 'buying' it, which causes a serious information asymmetry between a 'consumer' and a 'producer'. Secondly, higher education is believed to have important social externality. The role of government regulation is linked to safeguarding the quality of education so that it can fill the societal function, not only respond to the private interest of students or of university staff.

When we turn from a 'theoretical' perspective to the historical reality, we can identify three main triggers behind intensified quality control (Dill, 2010; Van Vught & Westerheijden, 1994). First, massification of higher education and related increase in public expenditure drew attention to quality issues in the system. A rapid increase in student numbers led to starting new programs in existing institutions and creating new (also private) providers. This rapid proliferation raised concerns of whether universities have sufficient resources to maintain high quality education and whether the new programs expect equally high academic standards. Since the expansion of the sector meant also a greater burden on public funds, governments became more alert to the efficient functioning of the sector. Secondly, the New Public Management agenda entered also the higher education sector. As a result, greater accountability mechanisms, particularly in the form of ex-post evaluation and output monitoring were introduced. Higher education thus entered the 'evaluative state', as famously stated by Neave (1988). Furthermore, explicit attention to quality is one characteristic of the NPM agenda (Pollitt & Bouckaert, 2004). Thirdly, internationalization (and globalization) increased the need for internationally comparable and recognized degrees and a transparent evaluation system is a precondition for such a comparability.

Quality assurance agencies were not an immediate response to the growing attention to quality regulation. Quality assurance tasks were originally filled by a variety of organizations, either affiliated with government or university associations. The rise of independent quality assurance agencies originates from a shift in the dominant model of public sector governance.

Regulatory Agencies and 'Agencification'

In the last decade or two we have experienced an explosion of public sector organizations in a variety of sectors (Pollitt & Talbot, 2004). Much of the actual policy implementation, control and regulation has been transferred to autonomous

agencies, separated from the core administration. Such single-purpose organizations have disaggregated the traditional core-administration into smaller parts, both vertically and horizontally (Pollitt et al., 2004). While the trend is rather wide-spread, the agencies are far from homogenous. It is well documented that the agencies come in a great variety of form and size (Pollitt et al., 2001). Talbot (2004) defines agencies quite narrowly, as a body that is formally separated from the ministry, carries out public tasks on a permanent basis, is financed mainly by the state budget, is staffed by public servants and subject to public legal procedures.

There are two main rationales for creating autonomous regulatory agencies in the public sector (Majone, 1996). First, they help to separate politics and administration (Lægreid & Verhoest, 2010). Furthermore, regulatory agencies can be perceived as more credible because of their independence from politicians. Secondly, agencies were seen as a mechanism towards greater specialization, which was believed to lead to greater efficiency (Hood, 1991). Enjoying a greater degree of freedom was believed to lead to more efficient management, due to the benefits of specialization, professionalization, flexibility, transparency, and openness to stakeholders (Pollitt et al., 2001).

Using autonomous agencies in the academic quality assurance is widely spread and strongly promoted by several influential international organizations. 'Standards and Guidelines for Quality Assurance in the European Higher Education Area', a document prepared by the European Association for Quality Assurance (ENQA) and adopted by the education ministers during their meeting in Bergen in 2005, gives much attention to the independence of quality assurance agencies (ENQA, 2005, para 3.6):

> Agencies should be independent to the extent both that they have autonomous responsibility for their operations and that the conclusions and recommendations made in their reports cannot be influenced by third parties such as higher education institutions, ministries or other stakeholders. [...] The definition and operation of its procedures and methods, the nomination and appointment of external experts and the determination of the outcomes of its quality assurance processes are undertaken autonomously and independently from governments, higher education institutions, and organs of political influence. (para 3.6 & 3.8)

The number of external higher education quality assurance agencies in Europe has grown rapidly since the early 1990s (ENQA, 2003). Also their profile and the nature of their work have expanded. In the 2000s such agencies use not only a greater number of quality assurance methods but they are also more likely to advise governments and higher education institutions about quality related issues (ENQA, 2003). While the ENQA guidelines specify the need for autonomy, the formal level of autonomy and the distance from the central government varies among quality agencies (ENQA, 2008). Some quality assurance agencies are formally more distant from the government, often more closely linked to university associations than to the central government and their staff is not necessarily civil servants.

There is not much discussion or empirical evidence available about the benefit of autonomy in the case of higher education quality assurance agencies. From the Standards and Guidelines cited above it appears that the main concern is the objectivity of the process, which requires independence from politicians as well as from universities (see also Dill & Beerkens, 2013). Ewell (2008) is one of the few that discusses the advantages of autonomous agencies in the quality assurance. In the US context he sees two main reasons why independent agencies are more effective than direct state intervention. States are severely challenged by resource shortfall and therefore could not support extensive quality programs or fund performance based schemes sufficiently. Secondly, in a context of short-term policy agenda and severe partisanship it would be difficult to sustain a long-term consistent policy agenda. While strong state initiatives such as performance-based funding proved to be short-lived and did not make much impact under the top administrative level, pressuring accreditation organizations to pursue governments' agenda has been more effective. When the federal government gradually increased pressure on accreditation organizations to focus on student learning outcomes and this was indeed reflected increasingly in their reviews, the majority of institutions had by the end of the 1990s developed the kind of assessment infrastructure originally intended but not accomplished by the state mandates. There thus seems to be a benefit of distancing quality assurance somewhat from the politics, not only for legitimacy but also for credible commitment.

The agency model also seems to correspond well with the reforms that redefine the relationship between universities and government. As universities became 'autonomous' organizations, their regulation was now often seen as a non-political task and therefore not part of the state's 'core business' (Westerheijden, 2008). Outsourcing the task to intermediary bodies (such as quality assurance agencies) was thus a logical step.

'Agencification' in the higher education sector goes well beyond the quality regulation sector. Several tasks are often delegated to various single-purpose agencies, such as student support system, distributing public funding to institutions, institutional and student data collection, etc. A review by the Better Regulation Taskforce in the UK observed in one point that universities have to report to over 100 public agencies and departments, charities and professional bodies for some aspect of their performance (Better Regulation Taskforce, 2000).

Agencification Challenges

As observed in the recent public administration literature, 'agencification' tends to lead to some problems (Bouckaert et al., 2010). On the one hand, delegating responsibilities to highly specialized (semi-) independent agencies leads to coordination problems, particularly in cases where issues cross the borders of one specific agency. On the other hand, separating implementation from the political center makes the latter incapable for steering processes. In the words of Lægreid

and Verhoest (2010: 2), "The narrow task definition of agencies, their focus on organizational performance targets, their drive for autonomy, and the decoupling of implementation from policy design creates centrifugal forces, with central and parent departments perceiving a loss of coordination capacity". Furthermore, this has created a situation where programs and organizations are much better able to resists coordination efforts (Lægreid & Verhoest, 2010).

As the problems of fragmentation are coming up, the post-NPM agenda returns its attention to control and coordination (Christensen et al., 2007). We can see examples of 'rationalization' where several agencies have been merged, the control of the center is strengthened via changes in the legal structure, and innovative coordinating mechanisms hope to address the fragmentation issues.

In the next section we will have a closer look at four countries that according to the ENQA 1998 Report (ENQA, 1998) were planning significant changes in their quality framework in the nearest future: the Netherlands, the United Kingdom, Norway, and Denmark. We will analyse their trajectory to an independent quality assurance agency and thereafter examine whether their recent changes and issues can be linked to the known 'agencification' problems.

FOUR CASES

In all four cases we first examine the change in the government-university relations because it is a key shift in the 'regulatory state' model that explains the spread of independent agencies. Then we examine how the regulatory agency has evolved from the 2000s onwards and whether the changes and issues can enlighten us about potential 'agencification' problems.

The Netherlands

The Netherlands was among the forerunners in giving greater autonomy to higher education institutions. In the 1980s, the Netherlands introduced a new steering philosophy that aimed at 'steering at a distance' while requiring ex-post accountability from universities (Neave & van Vught, 1991). The reform was triggered first of all by the expansion of the system. It became clear that it is difficult to manage such a massive sector. Furthermore, the 1970s and early 1980s in the Netherlands were characterized by a doubt that the government is able to plan and steer public sector through a detailed oversight (Huisman & Toonen, 2004). There was thus a feeling that higher education environment has become more complex and dynamic and higher education institutions need more freedom and flexibility in order to adapt to the new environment.

Already in 1983 a conditional funding policy introduced a peer review of research activities (Jeliazkova & Westerheijden, 2004). The 1985 policy paper *Higher Education: Autonomy and Quality*, extended the idea of quality assurance

also to teaching. As a result of negotiations between universities and government, universities' professional associations *The Association of Universities (VSNU) and The Association of Universities of Applied Sciences (HBO-Raad)* became the focal point of organizing quality assurance. With this step universities were able to avoid the role of the Ministry's Inspectorate of Education which was known for its highly technical approach and performance indicators at lower levels of education (Huisman, 2003).

Since the end of the 1980s, the core of quality assurance is program evaluation, organized after each 6 years (research universities) or 8 years (universities of applied science), and originally managed by the university umbrella organizations. There were no clear sanctions linked to the assessment results. Enforcement of assessment took place through the Inspectorate for Education under the Ministry of Education, Culture and Science (as currently named), who monitored the evaluation reports and the follow-up activities by universities.

In 2003 a new quality assurance system was established in the Netherlands which introduced both an organizational change and a change in the approach to quality assurance. The old program evaluation was replaced with a program accreditation. A discussion about an accreditation scheme started already in the late 1990s. The previous evaluation system offered a list of comments and recommendations but it did not offer a clear conclusion in the end about the quality of a program. There was a political demand for a stronger accountability instrument. Furthermore, with a transition to the new Bachelor-Master degree structure there was a stronger need to demonstrate the 'proven quality' of Dutch higher education both domestically and abroad (Jeliazkova & Westerheijden, 2004). There was also a need for a more explicit reference framework for judging the level of quality, not to rely only on ad hoc comparisons between programs.

The transition to an accreditation scheme brought along a change in the organizational structure. An independent accreditation body was established, NVAO (the Accreditation Organisation of the Netherlands and Flanders), originally NAO without the Flemish component. NVAO was granted the status of an autonomous administrative body with legal rights according to Dutch legislation (*Zelfstandig bestuursorgan*). It does not report to a particular minister or the Committee of Ministers and the latter has no power over NVAO's operations or decision-making. However, the Committee of Ministers appoints the Board that has the supervisory authority over the organization and the Committee approves its budget, the annual report and the annual accounts.

The process of quality assurance, however, did not change as much as might appear from the reform. The previous process of quality evaluation stayed to a large extent in place. NVAO has a responsibility for making accreditation decisions but the decisions are based on evaluation reports done by other bodies. Although VSNU does not organize the evaluation any more as it did before, it created a separate body QANU to continue with the evaluation work. There are also other organizations on

the market that provide the evaluation service to universities. NVAO produces a list of quality agencies that satisfy the requirements of expertise and since 2011 it formally certifies evaluation coordinators.

While the procedure is not so different in its operation, the new system is of course a significant change in its approach to quality. Previously to a large extent the system was evaluating itself, even if there was independent oversight on an ex post basis from the Inspectorate of Education (NVAO Review Report, 2007). In order to strengthen the former system of external review, and to make it internationally more acceptable, the system was revised in several important aspects "by making the system more independent and better aligned with external benchmarks and standards, by having the outcome result in explicit and clear judgements and by strengthening the power of possible sanctions" (NVAO Review Report, 2007).

The year 2011 brought additional changes to the existing quality assurance framework. The change aimed at a more focused and substantive assessment on the one hand, and a lighter accreditation with less paperwork on the other hand (NVAO, 2010). In addition to the program accreditation, institutions may request NVAO to conduct a so-called institutional quality assurance assessment. Should such a thorough audit at the institutional level reveal that an institution's internal quality assurance is in a good order, programmes can get accredited via a 'light' version of the accreditation procedure. The new system constitutes a compromise as universities wished to attain a self-accrediting status and abolish program accreditations as such.

In the summer 2010 the topic of higher education quality assurance reached the front pages of the national media in the Netherlands. One of the largest universities of applied sciences in the country was accused in examination fraud. The reaction from the Minister of Education, Culture and Science was quick and strong. The Ministry's Education Inspectorate was ordered to carry out an investigation. Based on the inspection report, the Vice-Minister responsible for higher education concluded that the quality assurance system in the higher education does not work as expected. He states,

> There is too much liberty in evaluation and quality assurance … This liberty must go away. Education institutions have a lot of autonomy, but this autonomy comes with responsibility and accountability. Therefore we need to take serious steps in order to restore the trust in the system. (De staatssecretaris …, 2001)

Next to some specific suggestions for the specific school, the Vice-Minister presented to the Parliament a number of system-wide measures to strengthen control over the sector. The list of suggestions included national examinations in core subjects, external members in examination committees, minimum thresholds for the staff qualifications, etc. Furthermore, the proposal argued that the current evaluation and accreditation system is not sufficient to react effectively on problems and complaints regarding the sector. Regular accreditation by the autonomous Dutch-Flemish accreditation agency (NVAO) should be supplemented by ad hoc inspections by the Ministry's Education Inspectorate.

The new decade introduced a wide social discussion on the future of the Dutch higher education and in 2009 the Minister set up a committee (known as Veerman committee) to review the sustainability of the Dutch higher education. This report, together with the aftermath of the quality scandal, puts another set of proposals on the table. A recently published strategy document "Quality in diversity" (Ministerie …, 2011) proposes among other a reduction of the student-staff ratio, national standardized tests and external examiners. It proposed a greater role to the Ministry's Inspectorate of Education next to the NVAO in assuring the quality of Dutch degrees. It proposed additional inspections in between the 6 or 8 year accreditation cycle.

Most recently, the Dutch quality agency changed its procedures so that programs are graded on a scale which allows also giving a so-called 'yellow card' without rejecting immediately accreditation. The quality assurance agency earned a high praise from the Parliament for the high number of 'yellow cards' given in the area of Humanities, and a Parliamentarian complemented that 'the agency is doing exactly what it should be doing' (DUB, 2014).

In sum, external quality assurance developed in the Netherlands on the basis of greater autonomy given to universities and in the context of performance and accountability movement. A shift from a 'collegial' evaluation to a 'formal' accreditation brought along also a change in the organizational structure. A professional organization was not any longer fit to fill the task, which led to creating a strictly autonomous public agency with a clear mandate from the Parliament. The relationship between the ministerial inspectorate and the autonomous quality assurance agency is interesting. In case of problems in the system, the Ministry turns to the inspectorate for intervention. While not a typical case of the weakening political core, it refers to some tensions that the distance between the ministry and the agency creates in certain circumstances. We see also a rise in actions that distance the agency from universities and thereby strengthen their legitimacy as guardians of public interest.

While there have been typical responses to fragmentation problems in other areas of higher education, such as mergers of autonomous service units and consolidation of research evaluation schemes, quality assurance system has remained intact. Despite of the concerns of over-evaluation and multiple quality assurance instruments (inc. recently introduced performance contracts), the fragmentation problems have not come up seriously in the agenda.

United Kingdom (England)

Unlike universities in most continental European countries, British universities have had traditionally a high level of autonomy. At the same time, they have a long tradition of professional self-regulation in the form of an external examiner system (Lewis, 2010). In the end of the 1980s, politicians found the self-regulatory approach insufficient in the new environment of an expanding polytechnic and college sector and government Inspectorates started to monitor the quality of polytechnics

and colleges (see Brennan & Williams, 2004). In order to avoid a similar strong government inspection, universities gave to their own umbrella body CVCP (Committee of Vice-Chancellors and Principals) a task to set up a quality assurance instrument. The CVCP established an Academic Audit Unit which started to conduct institutional audits of internal quality assurance procedures, on a voluntary, peer-review basis.

The 1988 Education Reform Act and the 1992 Further and Higher Education Act replaced the binary system of universities and polytechnics with a unified higher education system. The Academic Audit Unit was transformed into a separate organization, HEQC (Higher Education Quality Council), still 'owned' by higher education institutions, which continued carrying out academic audits. In parallel, the government established quality assessment committees within Higher Education Funding Councils. A funding council is a non-departmental body (statutory agency) in each part of Britain (England, Wales, Scotland) that distributes public funds to higher education institutions and which have also a statutory responsibility to assess higher education quality. These committees took over the monitoring function of the inspectorates and they also took over many of their staff and evaluation methods. The committee introduced a system of Subject Assessments, a regular subject level teaching quality assessment. The assessment was based on a peer-review and it graded teaching quality on a five-point scale.

In the middle of the 1990s there were thus two major assessment instruments in place, institutional audits and subject assessments, both including a self-evaluation and a peer visit. In addition, universities were subject to the Research Assessment Exercise (again including a peer visit), external examiner control and in some cases to professional accreditation. This system was highly unpopular because it was time and resource consuming. The inspection-like Subject Assessment was particularly unpopular among academics. A joint review by the CVCP and the funding councils examined the issue and as a result a new organization, QAA (Quality Assurance Agency in Higher Education) was established in 1997. QAA is a not-for-profit company and a registered charity. It is jointly 'owned' by university associations and the higher education funding councils, both of which appoint the board of directors. This non-statutory agency took over the two assessment tools – institutional audits and subject assessments. It was claimed that the consolidation of the two activities in one organization would lead to greater efficiency and particularly reduce the burden for universities (Brennan & Williams, 2004).

Concerns regarding over-regulation of the higher education sector continued in the new millennium. The Better Regulation Taskforce in the Blair's cabinet mapped all the regulatory relationships affecting higher education institutions and identified over 100 public agencies and departments, charities and professional bodies to whom the universities are answerable for some aspect of their performance on the basis of statute or contracts (Better Regulation Taskforce, 2000). Government continued to support the idea of subject assessments because of its commitment to competition and consumer choice as an effective regulatory approach in the public sector. Producing

and providing information to the public was therefore a major policy direction. Vice-Chancellors proposed that higher education institutions themselves could take greater responsibility for making information public, if freed from the subject assessments (Brennan & Williams, 2004). Subject Assessment was abolished in 2001 and instead a revised institutional audit was launched in 2003. Through the institutional audit process, institutions are expected to demonstrate their commitment to strong internal quality assurance procedures. Institutions are expected to conduct internal reviews of departments or programs, usually involving some inputs from external peers. Institutional audits by the QAA also audit whether universities indeed publicize their various quality reports, such as the internal reviews, external examiner reports, student feedback questionnaires and other sources. The new system was expected to be more 'light touch'.

The quality assurance system in the UK consists of a number of components, such as institutional review audits, Integrated Quality Enhancement and Review (for further education), public information on teaching quality (including National Student Survey), institutions' own internal quality assurance processes, Academic Infrastructure, external examining arrangements, QAA procedure for investigating concerns about standards and quality, and the HEFCE Policy on unsatisfactory quality (QHEG, 2011). To ensure the coherence of such a system, there is a Quality of Higher Education Group, a standing, not time-limited committee in place since 2011. It is jointly owned by the university associations (UUK & GuildHE), HEFCE and the Department of Employment and Learning (UUK et al., 2011). Furthermore, another committee, Higher Education Better Regulation Group, is in place to observe regulation in the sector more broadly. Most recently, England is experimenting with a risk-based approach to quality assurance in higher education, in order to reduce the regulatory burden on universities and focus the quality assurance activities on this part of the system where the quality risks are the biggest (see HEFCE, 2012).

In sum, the evolution towards a quality assurance regime in England, similarly to the Netherlands, is influenced by negotiations between universities and the government, with universities' intention to limit the external control. The nature of the regulatory agency in the UK is somewhat different. It is still strongly linked to the universities but again formally moved away from the universities' umbrella association. Despite of the fact the agency is still close to universities, political steering does not seem to create many problems. Over-burdening of universities with various formats of assessment, however, has been a problem. Still highly fragmented, the system is now coordinated by a standing committee to ensure the coherence of the system.

Norway

Since the early 1990s, a series of reform initiatives in Norway have given more autonomy to universities and strengthened the role of institutional leadership in higher education institutions (Bleiklie et al., 2000, Langfeldt et al., 2008). Unlike

many other countries, Norway did not develop a systematic quality assurance system until the 2000s. Nevertheless, an interest in quality issues started to rise already in the 1990s when government experimented with a large-scale five-year evaluation project which aimed at improving educational quality and which came close to formal evaluation exercises introduced in other countries at the same time (Stensaker, 1997). In 1998, government established the Norway Network Council with a task to advise the Minister about higher education issues and to develop a national system for evaluating higher education. Formally, it was a central agency responsible to the Minister and closely linked to the Ministry. Norway retained its traditional system of quality assurance that stood on two pillars: the Ministry regulated the establishment of new programs, and an external examiner system within universities guarded quality standards of higher education programs.

Driven by concerns over increasing student numbers and other challenges facing the higher education sector, the Minister of Education and Research appointed a National Commission, known as the Mjøs-Commission, to assess the Norwegian higher education and offer recommendations for its improvement. Among several other propositions, the Commission suggested establishing a new organization that would accredit higher education programs. According to the commission, such an accreditation agency must be independent (both from the Ministry and institutions) and its Board members should be appointed by the Minister but based on their academic competencies. This suggestion did not get implemented immediately. The Ministry proposed that its own advisory Norway Network Council should be redefined as a quality development organization and given the appropriate tasks and organization. The parliament was on the side of the Mjøs-Commission and wanted to see an independent quality assurance agency written into the new Higher Education Act.

In 2003, a new independent accreditation body, Norwegian Agency for Quality Assurance in Education (NOKUT) was established. It did grow out of the Norway Network Council, hiring many of the same staff and using institutional audits and an improvement-oriented quality assurance system (Stensaker, 2007). It is, however, a professionally independent government agency by its legal status as specified in the Higher Education Act. It is significantly more autonomous than the former Council, and the Ministry can influence its activities only by legal acts. The agency itself can decide the methods and the frequency of accreditation. An important element of the quality assurance system is institutional accreditation. The new system requires that universities have an internal quality assurance system in place, covering all programs, which is evaluated by NOKUT every 6 year. NOKUT and the Research Council of Norway, which assesses research quality, were ordered to try to co-ordinate their evaluation activities in order to minimize the administrative burden on the institutions (Stensaker, 2007).

While NOKUT organizes and conducts the accreditation process both for institutions and for programs, the accreditation decisions are sent to the Minister for the final approval. The double authority shows the separation of an expert decision

and political decision. It may well be the case that an expert decision and political decision do not coincide in case of certain nationally relevant context (e.g., regional colleges). Similarly to the Netherlands, the quality assurance agency in Norway also recently strengthened its power and visibility by a tough evaluation round, by rejecting accreditation to a large number of programs (Stensaker, 2011).

In sum, also Norway has created an independent agency but unlike in the UK and in the Netherlands it evolved from a ministerial unit, not from a university association. An interesting element in Norway is the discussion between the Ministry and the Parliament regarding the extent to which an accreditation agency needs to be autonomous from the Ministry. We can see in Norway that adopting a clear accreditation scheme seems to go hand-in-hand with creating a more separate and an autonomous agency. The new agency is not only more autonomous but also more 'single-purpose'. We also see in the Norway that agencies may establish their status in the eyes of the parliament as well as of universities by showing some 'teeth' in their evaluation exercise.

Denmark

With the new Act of Universities of 1993, Denmark replaced its traditional continental university governance model with a new system. The key words of the reform, as stated by the government, were 'deregulation and decentralization, combined with mechanisms to ensure quality' (Thune, 2001). With this act the Ministry of Education transferred a significant authority to higher education institutions and aimed to strengthen the managerial structure of higher education institutions.

The Danish government started to regulate higher education quality quite early compared to its European counterparts. In 1992 it established the Danish Centre for Quality Assurance and Evaluation of Higher Education that was required to evaluate all higher education programs on a regular and systematic basis. The Center grew out of an initiative of the chairmen of the advisory bodies in higher education in the end of the 1980s. The chairmen had initiated a series of pilot evaluations of higher education programs and in the early 1990s they encouraged the Minister of Education to set up an organization to proceed with this work on a more formal basis (Thune, 2001). The new center was formally independent from the Ministry and from universities. It started to evaluate all higher education programs in an interval of seven years, but the evaluations were not part of formal program recognition.

In 1999 the Quality Assurance and Evaluation Center was transformed into the Danish Evaluation Institute (EVA). The new institute maintained its tasks to systematically evaluate education, carry out specific requests from the relevant Ministries, and function as an expertise center in educational evaluation. As a main change its activities were extended to all levels of education. It is an independent organization under the responsibility of the Ministry of Education. It has its board, which is nominated by the Minister, and a high level of autonomy. It is independent in deciding what and how to evaluate but its annual plan is approved by the Minister.

Since its creation, EVA has been experimenting with different evaluation formats. Initially it continued its predecessor's work of regular program evaluations but in 2004 it switched to the format of institutional audits, which emphasizes the role of proper internal quality assurance mechanisms.

In the year 2007 the Parliament passed the Danish Accreditation of Higher Education Act, which introduced a new element in the quality assurance structure. Since then all new and existing university programs need to be regularly evaluated and accredited. The change seems to have a strong international motivation. The accompanying letter to the legal proposal states that "The Danish system for quality assurance of study programs does not fully meet the joint European quality assurance standards" (Explanatory …, na). It also refers to the OECD's country review of 2005 which points out that the quality assurance of Danish university study programs needs to be strengthened. With the new system universities are expected to be better equipped to document and demonstrate the quality of their programs, both domestically and abroad.

With this act the parliament established also a new accreditation agency – ACE Denmark. This is an independent institution within the public administration, responsible for accrediting all higher education programs. The accreditation decision is based on program evaluations, which are conducted by ACE for Master level degrees (long-cycle programs) and by EVA for lower level studies. Universities may also choose another accreditation agency at their own cost. With this change the Minister's authority to approve study programs was transferred to the accreditation unit and as stated explicitly in the letter to the parliament, "a systematic external element will be introduced in the quality assurance of Danish higher education" (Explanatory …, na).

In Denmark we can see an interesting transformation of the quality assurance agency. Already in the beginning of the 1990s the task of quality evaluation was given to an independent agency, which had also a somewhat wider responsibility for developing evaluation approaches and evaluation culture. This center was broadened further. After demonstrating its capacity and success in higher education quality evaluation, its repertoire was extended to other educational sectors. A few years ago, however, a separate single-purpose agency was created which is solely responsible for accreditation decisions and evaluating Master level education programs. While the new system is thoroughly justified in a letter to the Parliament, a need for a new agency to carry on the task (as opposed to EVA) is not touched at all.

DISCUSSION

The four countries studied in this paper vary with respect to their higher education system and approach to quality assurance but in all cases a semi-independent agency stands at a central position in the system. Interestingly, the trajectory to the rather similar organizational form has been very different. The quality assurance systems in all the four countries have had some changes in the organizational structure since the

2000s, or at least since the late 1990s, and in all cases these developments strengthen the idea of an autonomous agency as a most effective regulatory structure. The development pattern is also interesting. In all cases the current agency format has been reached through one or more reiterations. In Denmark, the evaluation tasks were originally given to an autonomous agency, which had somewhat broader mission including policy advice. With implementing a formal accreditation scheme, government created a new, single-purpose accreditation agency. In Norway, on the other hand, the movement towards an autonomous agency has been via a council that was part of the central government. Again, with a new accreditation scheme also a new accreditation agency emerged which was both autonomous and 'single-purpose'. In the UK and in the Netherlands the agencies have taken over the tasks from university umbrella organizations.

While the evolution of the quality assurance system has been different in the four countries, there seems to be quite a convergence in the final outcome, perhaps with an exception of the UK. The agencies are commissioned by the Parliament for quality assurance tasks. They are not in a hierarchical structure of the Ministry but they are linked to the Minister via a Board that is nominated by the Minister in charge of higher education. The Minister is also responsible for overseeing the general performance of the agency, requiring regular external evaluations. There are of course functional differences: some accredit institutions, not programs; some conduct the evaluations themselves while others rely on external partners, etc. Nevertheless, the organizational structure and procedures are surprisingly similar.

There seems to be also a link between introducing a new instrument and revising the existing agency structure. A more hierarchical evaluation system (e.g., accreditation) expectedly requires more autonomy from professional organizations (i.e., regulatees) than a collegial peer-oriented evaluation. While cooperation with professional associations seems to work well in case of 'softer' type assessments, harder instruments such as accreditation or formal subject assessments seem to require a greater distance but also a clearer legal mandate.

Does the agency model create problems for higher education quality regulation? We can indeed see some signs that may require awareness and caution in the future. One generic problem of agencification is fragmentation: it is more difficult to coordinate activities of independent agencies. In many countries there are different evaluation instruments in place. Universities have had to accommodate several site visits, provide data to multiple evaluation schemes and organizations, and report to several organizations. The fragmentation issue in the UK is perhaps most visible and it has been explicitly addressed by policy changes. A new quality assurance agency was established to combine two assessment tools, previously under two different organizations. Current fragmentation issues are addressed by a standing committee whose task is to ensure coherence and offer suggestions for improvement if necessary. On the other hand, it is difficult to make a claim that fragmentation problems and evaluation overload originate from the independence of the agencies. Tensions seem to appear often from the fact that universities face different demands

from different stakeholder groups: external quality assurance is expected to ensure minimum standards but also work as a transparency tool, it should offer incentives for internal quality improvement but also secure political legitimacy, etc. (Beerkens, 2015). An independent agency may also have a positive role because it allows focussing on one core purpose without blurring responsibilities.

Higher education quality assurance has become a mature regulatory field where autonomous agencies form one corner of the regulatory triangle, together with policy makers (parliament, government) and universities. Complaints about regulatory burden have encouraged many agencies to search for a more 'light-touch' quality assurance mechanism. This pressure tends to lead towards institutional audits as a dominant quality assurance approach. On the other hand, there is a political demand for stricter instruments that serve the goals of accountability and political legitimacy. To respond to these demands and secure their own position in the quality assurance system, agencies offer more critical and publicly visible judgments. These reactions are familiar from the point of view of 'regulatory capture' (Baldwin et al., 2011). Regulatory capture means that regulation may serve more the interests of the regulatees than the public interest. A simple argumentation would claim that agencies serve the interests of universities because of their very strong links with universities, via expertise, career mobility, common interactions, shared history, etc. A more strategic approach to regulatory capture assumes that regulators soften their rules in order to avoid strong criticism from the side of the regulatees. The criticism is likely to reach politicians through universities' 'lobby' and thereby threaten the future of the regulatory agencies. On the other hand, when quality issues are high on the political agenda, tough control and regulation is also in the interest of politicians. Balancing the support of the regulatees and maintaining legitimacy in the eyes of the political principals is the every-day reality of regulatory agencies.

The second generic problem of agencification concerns the weakening political core: policy makers cannot steer independent agencies as closely as they can steer their own departments. This may also create accountability problems. Political executives may feel that they lose control since the public holds them responsible for problems but yet they are not supposed to interfere in agencies' activities (Christensen & Laegreid, 2006). In the Netherlands, a quality scandal indeed brought up questions about the role of the autonomous agency vs the role of the ministerial inspectorate. Even though the agency was not held accountable for the problems, the actions and the proposals give an impression that the ministry sees a need for a more 'operational' force in the form of its own inspectorate.

The political steering capacity of quality assurance agencies is affected also by the rise of the European dimension in quality assurance. The European association of quality assurance agencies is a strong network that strengthens the independence of the agencies. The 'mimetic' and 'normative' isomorphism (see DiMaggio & Powell, 1983) through shared experiences and professional expertise, as well as 'coercive' isomorphism through the European Standards and Guidelines weaken the

influence of the national policy on agencies. The agencification at the European level, furthermore, defines quality assurance primarily as a technical, expertise-based exercise as opposed to a political exercise where public goals and objectives are an important starting point.

In conclusion, higher education quality assurance has become a mature regulatory field. Independent quality assurance agencies in higher education are praised for their legitimacy, expertise and credible commitment. At the same time it is helpful to be aware of the weaknesses the agency model may produce. Under certain circumstances agencification may lead to fragmented, uncoordinated policy instruments, it may lead to technical, expertise-based approach to quality assurance that is cut off from political steering, and it may create accountability challenges in the eyes of the public. Most importantly, agencies have become a core actor in higher education quality regulation, an actor with their own identity and strategic interests.

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Maarja Beerkens
Institute of Public Administration
Leiden University