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Steering the Direction of Research through Organizational Identity Formation

Thomas Franssen[1] · **Siri Brorstad Borlaug**[2] · **Anders Hylmö**[2,3]

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Abstract

Public research organizations respond to external pressures from national research evaluation systems, performance-based funding systems and university rankings by translating them into internal goals, rules and regulations and by developing organizational identities, profiles and missions. Organizational responses have primarily been studied at the central organizational level, and research on the steering of research has primarily focused on the impacts of performance-based funding systems. However, research evaluation exercises may also have a formative impact, especially below the central organizational level. This paper uses a case study of a research unit of a biomedical research school in the Netherlands to explore the organizational response to a relatively critical external assessment report. It shows that the participation in the Dutch research evaluation cycle legitimated the formation of a new organizational identity for the research unit, which functions as a frame that suggests to staff members a new interpretation of the type of research that is at the core of what the research unit does. We identify three additional steering mechanisms that support the enactment of the organizational identity: steering by resource allocation, by suggesting and by re-organizing. We, furthermore, explore the epistemic effects – the direction and conduct of research – of the organizational response, through interview data in combination with a bibliometric analysis.

Keywords Organizational identity · Epistemic effects · Research governance · Steering mechanisms · Public research organizations

Introduction

Public research organizations (PROs) respond to being evaluated, ranked and steered by governing bodies, through developing a strategic capacity to adapt to external pressures (e.g., Whitley 2012; Thoenig and Paradeise 2016; Aagaard et al. 2020;

Extended author information available on the last page of the article

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Maassen and Stensaker 2019). PROs have developed missions, organizational profiles and strategic priorities in line with public policy and have developed internal evaluation and accountability procedures in response to performance-based funding systems, national research evaluation exercises and university rankings (Thomas et al. 2020). They compete with one another for prestige, staff and students, in the increasingly interwoven global field of research and higher education (Krücken and Meier 2006; Krücken et al. 2007).

How PROs respond to external pressures has primarily been studied at the macro-level of entire organizations, although with notable exceptions (e.g. Leišytė 2007). This literature reveals two main organizational pathways through which external pressures are translated into internal organizational goals, rules and regulations. The first involves internal performance management systems (e.g. Whitley 2003; Gläser et al. 2010), while the second uses the formation of organizational identities, strategic priorities and organizational missions (e.g. Seeber et al. 2019; Mizrahi-Shtelman and Drori 2021).

Epistemic effects of external pressures, i.e., the effects on research practices and the direction of research, have primarily been examined in relation to the first organizational pathway. Studies indicate that performance management systems affect research, specifically through who and what are prioritized by leadership at the central level as well as within departments (Marques et al. 2017). Other studies suggest that despite these systems shaping the context in which researchers work, they do not necessarily affect researchers' choice of research topics and problems (Leišytė et al. 2010). Regarding the second organizational pathway, research shows that scholars can easily buffer or modify organizational identities and missions stemming from central management, such as when they are pushed to engage in entrepreneurial activities (Lam 2010). However, Laudel and Weyer (2014) show that strategic priority setting can have powerful effects when entire research areas are no longer deemed valuable to the organization.

There is, however, limited research on the epistemic effects of attempts to steer research through organizational identity formation below the level of the organization as a whole. This paper argues for more attention to organizational units at the meso-level: faculties, institutes, research schools, departments and so on (Hare 2003; Degn 2018), especially in terms of organizational attempts to steer the direction of research.

This paper builds on a case study of a research unit at a biomedical research school in the Netherlands. We show that (the formation of) an organizational identity is used by the management of the unit and the school to steer research by "suggesting" what Jochen Gläser (2019: 432) calls a "re-interpretation of the situation". The organizational identity functions as a frame that suggests, but in our case does not compel, staff members to adopt a new interpretation of what type of research constitutes the core interest of the research unit. We also find three supporting steering mechanisms employed in the school's attempt to steer research through formation of this organizational identity. However, a bibliometric analysis reveals limited epistemic effects of these efforts.

In the following, we first discuss earlier research on the two organizational pathways used to translate external pressures into internal goals, rules and regulations.

We then zoom in on the notion of organizational identity and connect it to the theoretical framework developed recently by Gläser (2019). We showcase the importance of organizational identity formation, empirically, through a case study of a research unit at a Dutch biomedical research school. We draw on document analysis, interview data and bibliometric data to analyse the epistemic effects of the formation of a new organizational identity that was sparked by a relatively critical external assessment report. We conclude by discussing the limitations of the study and suggesting avenues for further research.

Theoretical Background

The PRO as an Actor in a Changing Science System

Several changes in the global science system have created the need for PROs to develop themselves more strongly as organizations to respond to external pressures (Krücken and Meier 2006; Whitley 2012). One crucial shift has been the emergence of national research evaluation systems and performance-based funding systems for PROs (Whitley and Gläser 2007; Thomas et al. 2020). Both can be understood as enactments of a different accountability relationship between PROs and national governments, which are part of the more general trend of the rise of New Public Management in the public sector (de Boer, Enders and Schimank 2007; Weingart and Maasen 2007; Bleiklie et al. 2011; Musselin 2021). While the nature and use of national research evaluation systems and performance-based funding systems varies widely between OECD countries (Whitley and Gläser 2007; Thomas et al. 2020), governments have generally moved away from providing unconditional core funding to PROs, and instead developed allocation models tied to performance and policy goals (Hicks 2012). At the same time, research funding has increasingly been distributed through competition for grants arranged by national and international funding bodies, decreasing the relative share of block funding (Whitley et al., 2018). As both the financial size and duration of competitive grant awards have grown (Bloch and Sørensen 2015), their impact on PRO research profiles has also increased (Edler et al. 2014).

The space in which PROs act has also changed due to the internationalization of the research and higher education field (Ortiga et al. 2020; Wedlin 2020). PROs are increasingly competing for the best researchers in a transnational academic job market (Ortiga et al. 2020). The development of university rankings plays an important role in this competition (Hazelkorn 2015; Wedlin 2006; Wedlin 2020). Organizational leaders are increasingly preoccupied with recognition through league tables and rankings that signal prestige and bestow status in the transnational research and higher education field. A higher ranking increases an institution's attractiveness for researchers and, crucially, for the students who are an important source of income for PROs.

The literature reviewed above has taken the PRO as a whole as the most important unit of analysis. Indeed, at first glance, PROs are most visible as objects of governance in the science system, as is evident in university rankings or the United King-

dom's Research Excellence Framework (UK REF). Yet, as Leišytė (2007) points out, research governance takes place at multiple levels and the organizational sub-level closest to the proverbial shop floor is important for understanding the effect of research governance (see Leišytė 2007). There are two reasons why this level of faculties, departments and other organizational units below the central organization is important. First, it is often the department or research school that is the unit of analysis on which university rankings are based. Similarly, in national research evaluation systems, including performance-based funding arrangements, the department or research school is the organizational unit that is most commonly evaluated. For example, the UK REF is made up of disciplinary committees through which a hierarchy of departments emerges; in the Netherlands, all organizational units in a research field are usually evaluated at the same time by the same committee. The central management of a PRO will consequently, if to various degrees, put pressure on lower-level management to do well in these ranking and evaluation exercises (Yokoyama 2006). It is also in the interest of lower-level management and faculty to do well, as a rise in university rankings might increase the visibility of their research or increase student numbers, and a good score in a national evaluation exercise might mean even more. Hence, it is at the meso-level that the connections between institutional strategies, external demands and the shop floor are made, which means that level is a crucial site for organizational success (de Boer and Goedegebuure 2009).

Second, to successfully shape research practices or steer the direction of research, the management of an organizational unit needs to employ mechanisms that will actually reach the shop floor. For initiatives taken by central management, this will likely mean either making changes in resource allocation (e.g. Laudel and Weyer 2014; Henkel 2000) or involving lower-level management teams in steering attempts. In contrast to the central administration, managements at lower levels have more direct opportunities to attempt to influence the shop floor. The head of a department or research school is often involved in hiring procedures and decisions, internal staff assessments, and the division of labour related to teaching and management among staff members. They are further responsible for development of strategic plans, which involves agenda setting and prioritization. These activities can be linked to the organizational unit's identity – whether actual or aspirational – a mechanism that reaches the shop floor as well, as this study will show. As these organizational sub-units are epistemically more homogeneous than the PRO as a whole, strategic plans can be more specific and focused. Epistemic effects, changing the direction of research towards the aspired organizational identity, might thus be reached through hiring, assessment and task division practices.

In practice, the opportunities for the management at the meso-level organizational unit to (attempt to) steer the direction of research independently from the central management, varies between national research systems and sometimes even between institutions in the same country (Bleiklie et al. 2015). The decision-making power of deans, department heads and others in managerial functions depends on factors such as the centralisation of decision-making structures, organizational units' autonomy, their resources, room for manoeuvre and their strategic capacity (Mignot-Gérard et al. 2022; Bleiklie et al. 2015; Thoenig and Paradeise 2016). For instance, high-per-

forming and resource rich departments may enjoy a greater degree of autonomy from central management and have more decision-making power, compared to departments with limited resources (Pfeffer and Salancik 1974; Leišytė et al. 2010). That being said, in all cases of attempted steering researchers themselves are "obligatory passage points", as Gläser (2019: 423) rightly points out, and success in the acquisition of external project funding generally strengthens researchers' authority and independence in relation to the organization (Cruz-Castro and Sanz-Menendez 2018; Edler et al. 2014).

Organizational Performance Management Systems

As PROs become strategic actors facing a new environment, they respond by translating external pressures into internal goals, rules and regulations. We find two main organizational translation pathways in the literature. The first is the development of organizational performance management systems. Studies of the impacts of the forerunners, UK REF and Australia's RAE, suggest that organizational managerialism has risen, as PROs create strategies for doing well in assessment exercises (Martin and Whitley 2010; Martin-Sardesai et al. 2017). PROs have increasingly implemented monitoring and management control systems, like journal ranking guidelines (Agyemang and Broadbent 2015). This move has been perceived as discouraging innovation and novelty in research (Horta and Santos 2020), and deemed responsible for a shift in the academic ethos from a collegial to a competitive atmosphere (Kallio et al. 2016; Kalfa et al. 2018; Yokoyama 2006). According to some, this leads to a sense of alienation as academic managers are increasingly pressured to conform to performance maximization and thus foreground researchers with the "highest research power" prior to an evaluation (Marques et al. 2017).

However, recent studies focusing on less market-centered research systems have nuanced this image (Melo & Figueiredo 2020). Studies show that the impact on collegiality is both more complex and mediated by academic units' reputation in French universities (Mignot-Gérard 2022), and that the enactment of organizational control regimes is mediated by the national environments of European universities (Bleiklie et al. 2015). Recently, new digital performance management instruments have also added new dimensions to this complexity across organizational levels, as they may disperse control to actors in the ICT-sector and shift performance criteria (Leišytė 2022). Research has also shown that academics manage to preserve the opportunity and ability to choose their own research agendas and problems as they apply strategies of symbolic compliance and professional pragmatism (Leišytė et al. 2008; Teelken 2012). These studies thus question the direct influence of performance management systems on the direction of research.

All in all, the evidence on the impact of performance-based funding systems and its organizational response pathway of performance management by PROs themselves, is mixed. Although such systems may not yield direct epistemic changes, they do impact perceptions of what counts and what is valued inside PROs and in how academics perceive themselves by internalizing the norms set out in evaluation exercises.

Organizational Identities, Missions and Strategies

The second pathway identified in the literature to steer research by organizations is the development of strategies, missions and organizational identities (Fumasoli et al. 2015; Stensaker 2015; Degn 2018; Seeber et al. 2019; Mizrahi-Shtelman and Drori 2021). Traditionally, studies have perceived organizational identity as an inherent characteristic of a given university and have been oriented towards that institution's past (Clark 1998). A more recent direction, however, sees organizational identity as a strategic and integrative tool playing a key role in the management of PROs (Fumasoli et al. 2015). As PROs have increasingly become strategic actors, organizational identity formation has become more salient. This relates to the rising importance of evaluations and accountability procedures and the expectations of universities to "become more than the sum of their loosely coupled parts" (Enders et al. 2008: 122), which has brought new decision making and management structures, as discussed above. University rankings have also prompted comparisons between universities, thereby triggering discussions about organizational identity (Elsebach and Kramer 1996; Wedlin 2006; Elken et al. 2016).

The concept of organizational identity assumes that an organization's identity involves features, which its members perceive as central to their own self-image and distinguishes the organization from similar organizations. A key point here is that organizational identity is an ongoing construction shaped by internal and external processes (Gioia et al. 2013; Ashforth et al. 2011; Degn 2019). Organizational identity may serve as an integrative tool within the organization and between central leadership and staff (Stensaker 2015), and it may be a strategic steering instrument for universities to manoeuvre between internal and external expectations and demands for change (Fumasoli et al. 2015). Several studies have investigated rather generic organizational identities developed at the central level of PROs. However, these may not resonate within the organization where organizational units and their staff may have their own academic identities (Borlaug et al. 2022). Importantly, identity involves a sense of belonging that is both cognitive and emotional. If members do not believe in the organizational identity, it may be de-coupled from their self-image (Humphreys and Brown 2002). This perspective thus implies a continuous relationship between self-image and identity (Gioia and Thomas 1996).

Previous studies of organizational identity formation have primarily looked at effects in terms of leaders' and staff's perceptions of the organization and themselves, while studies of academic identities, emphasising the different epistemic traditions (Henkel 2000), have focused on disciplinary communities (Välimaa 1998). In contrast, we seek to understand how organizational identity may serve as a mechanism to steer research at the meso-level. To conceptualize the interplay between organizational identity formation and the steering of research, we will draw on insights from Gläser (2019) on how research may be steered. To understand the interplay, we build upon previous studies of identity formation which suggest to look at the way leaders develop and apply formal identity claims through strategies and narratives, to adjust staff perceptions (Degn 2019) and how this may be observed in changes in staff's practices (Ashforth et al. 2008).

Organizational Identity as a Steering Mechanism on the Meso-level

Gläser (2019) defines the steering of research as the "exercise of authority over research goals and approaches" (Gläser 2019: 421) and argues that there are four ideal-typical mechanisms of steering. Three mechanisms change the situation in which actors find themselves, while the fourth changes their interpretation of a situation.

First, one can force an actor to carry out or avoid a given action by coercion. In labour relations the threat is usually that the employment relationship can be ended if an actor does not cooperate. It is rare for researchers to be forced to carry out specific research, although Gläser suggests that relations between supervisor and PhD-students can, in certain fields, be understood in terms of this mechanism (2019: 427). The negative form of suppressing research can take place through ethical regulations or non-disclosure contracts in industrial research.

Second, equipping researchers with resources is an important and often-used steering mechanism (Gläser 2019: 428). It entails attempts to "enable, facilitate, hinder or make impossible" (Gläser 2019: 423) particular research, by providing or withholding the necessary means for pursuing it. For instance, choosing to employ researchers with particular competencies and research lines allows them to continue their research and shapes the profile of a research group. Similarly, thematic calls by funding agencies or local strategic funds enable research into specific topical areas while other researchers are denied funding and consequently do not carry out their research.

Third, one can make certain topics and practices more or less attractive by providing positive or negative rewards through inducement (Gläser 2019: 431). By providing or promising rewards, one can hope to change the research goals of individual researchers or research groups. An important institutionalized form of this steering mechanism is performance-based funding systems. Awards and prizes can play a similar role. Within organizations, factors like promotion, pay increases and ritual celebrations based on past performance can all be ways to induce particular behaviours.

Coercion, (not) equipping and inducement change the material situation in which researchers make choices. Regulations curtail what research is allowed to take place, resource allocation shapes who can carry out their planned research and some researchers are rewarded for having achieved particular research goals thereby strengthening their position.

In its ideal-typical form, the fourth mechanism differs from the other three in that it does not change the material situation in which actors find themselves; rather, it affects their interpretations of the situation. Gläser calls this suggesting a re-interpretation of the situation (2019: 432) and argues that it occurs through the transmission of information or with reference to certain values. For example, patient organizations of those with rare diseases may try to persuade biomedical researchers to study their disease. Another example is the shifting contract between science and society; over time, the expectations of researchers, and thus their understanding of what is valued and expected of them by societal actors, have evolved (e.g. Hessels et al. 2009). Gläser suggests that re-interpretation often exists in combination with equipping (2019: 432), citing the example of peers equipping one another with new information

or new tools, which suggests a re-interpretation of the state of the art of a research area, thereby shifting epistemic priorities.

While inspiring, Gläser's discussion of suggesting a re-interpretation of the situation remains rather abstract. We propose to conceptualize the development of an organizational identity as a specific form of "suggesting a re-interpretation of the situation" and argue that this is a crucial steering mechanism at the meso-level in PROs.

Our case study of the development of an organizational identity within a research unit at a biomedical research school in the Netherlands allows us to showcase the importance of organizational identity formation as a steering mechanism. We show that, in this case, three additional steering mechanisms are employed to enact the organizational identity. At the same time, we aim to show, in line with Gläser and others, the limitations of attempts to steer the direction of research. Steering research is difficult, and our case study indicates that steering research towards particular goals and practices is more effective than trying to prevent researchers from studying particular topics. Lastly, our study suggests that the importance of organizational identity formation is a consequence of, and legitimized by, the Dutch national research evaluation system. In the discussion section, we explore the possible relation between national research evaluation systems and steering mechanisms used in PROs that operate within those systems.

Case Study

Our case study took place in a biomedical research school of a university medical centre (UMC) in the Netherlands. Most biomedical research in the Netherlands takes place at eight UMCs, which are collaborations between universities and hospitals and operate as centres for research, education and highly specialized care, that surpass the level of care offered by what are known as regional hospitals (on the history, organizational structure and governance of UMCs, see Davies et al. 2010).

The Netherlands is particularly well-suited to study the use of organizational identity formation to steer the direction of research. First, the national evaluation exercise in the Dutch science system is explicitly formative and aimed at learning. As such it is a typical and well established "weak" research evaluation system (Whitley 2007: 9). The evaluation protocol used in the national evaluation exercise has recently been rebranded as the "strategy evaluation protocol" (see section 4.1) which highlights its formative character. Second, the national research evaluation exercise is conducted at the organizational sub-level of organizational units, rather than the PRO as a whole. Third, as is typical of weak research evaluation systems, publication output does not play a role in governmental block funding in the Netherlands, which means steering towards particular outlets is not a priority. Fourth, a case study within a UMC is particularly interesting because bibliometric output is gathered for each UMC and validated by the research school itself, which is not often the case for bibliometric data.

The research school we consider in this paper consists of researchers that have either a clinical position in the hospital or a position in a department of the univer-

sity's faculty of medical sciences[1]. The division between the research school and the hospital and university is relatively strict. The research school is only concerned with the staff's research time, while the hospital is concerned with patient care and the university departments with the pedagogical duties of staff members.

The research school is led by an *executive board* that consists of six persons: 1) the scientific director, a function similar to the department head in a typical university department and taken up by a professor from the school; 2) the heads of the three research units into which the research school is divided (all three are professors); 3) a representative of the strategic board (also a professor in the school) and, lastly; 4) a managing director who is responsible for finances and human resource management. A strategic board was put into place in response to a comment made in an external assessment report, as we show below, and supports the executive board with advice on long-term policy. The three research units, into which the school is divided, each consist of several research groups headed by principal investigators (PIs) who are responsible for and have autonomy over the financial management of their own PI groups. The research unit we investigated in depth consisted of nine PI groups at the time of our study.

We collected documentation from and about the research school, which detailed policies that might influence the research school and its staff. We looked for pronounced changes in the steering of the school, especially formal identity claims. We interviewed a total of nine staff members: the scientific director of the research school; the head of one of the research units; the managing director; three professors, two of whom were PIs; and one associate professor, who was part of one research unit; along with a former PI from the same research unit, who no longer works at the school. Lastly, we interviewed the program manager for clinical and translational infrastructure, who works in a clinical centre in the hospital closely aligned with the research school (many of the research school's clinical staff are part of this clinical centre).

The semi-structured interviews took place between spring 2019 and spring 2021, with interview guides adapted to each respondent's role in the organization. When speaking with interviewees who were active in research, we asked about the forms of steering they encountered and specifically discussed the participation in the Dutch research evaluation cycle and the organizational changes that emerged from that process. Interviews with the members of the executive board also covered the use of particular steering mechanisms. Interviews lasted between 60 and 75 minutes and were taped, transcribed and coded inductively by the first author. We also drew on a bibliometric dataset that contained all publications for members of the research school (Franssen et al. 2021). These data were used to corroborate evidence of epistemic effects found through the analysis of interview data.

[1] In 2017, staff members of the research school we studied came from 15 different departments in the faculty.

A National Research Evaluation Exercise, Organizational Responses and Epistemic Effects

When narrating the development of the research school over the past fifteen years, interviewees pointed to different external pressures on the research school and its staff. Importantly, we found that one research unit had been caught up in an organizational change process for several years, in which the formation of a new organizational identity was a central aspect. This process was both sparked and legitimized by the (recurrent) participation of the research school in the Dutch research evaluation exercise.

In this section, we first describe the key characteristics of that evaluation exercise. We then follow what happened in one research unit that did not do especially well in the 2007–2012 evaluation period. The critical external assessment report concerning that period triggered a lengthy process of forming a new organizational identity for the research unit. We discuss this process and the different steering mechanisms that were employed to enact the organizational identity. We then consider its epistemic effects with a combination of interview data and bibliometric analysis.

The Dutch Research Evaluation Exercise

In the Dutch science system, organizational sub-units, be it university departments or research schools, are evaluated every six years. This evaluation is formative and aimed at learning; it is not organized centrally like the UK REF, but rather takes place at different times for different research areas. Organizational sub-units in the same research area often jointly organize the evaluation and thus have a single external assessment committee, but this is not required. The format used for the evaluation is developed nationally and was, until recently, called the Standard Evaluation Protocol[2]; it has been renamed the Strategy Evaluation Protocol. The name change highlights the formative and reflexive character of the exercise. The evaluation cycle consists of a self-evaluation, an assessment by an external review committee and a mid-term evaluation halfway into the cycle. In the period we study, the research school went through two evaluation cycles. The first occurred in 2013–2014 and was part of the 2007–2012 evaluation period. The second cycle ran from 2013 to 2018, and its external assessment report was being written when data collection for the present study began.

Multiple interviewees noted that conducting the self-evaluation and being assessed by an external committee were natural moments for reflecting on the research school's strategy. In this way, the nature of the evaluation exercise shapes the type of organizational capacity that is developed. The research school director explained the emergence of the strategic board as a response to the evaluation exercise and a way to build organizational capacity for reflection on longer term strategy. He went on to explain, in direct relation to the upcoming assessment report for the 2013–2018 period, the introduction of a "strategic annual wheel" through which the development and implementation of the research school's strategy would now be tracked annually:

[2] https://www.universiteitenvannederland.nl/en_GB/sep-eng.html

> The strategic board was established as an instrument of reflection and also an instrument that, when asked but especially without being asked, gives us advice to which we have to respond. The head of the strategic board is also part of our executive board, so he is in our monthly meeting.… We recently had an external review … that states that we are, when it comes to regulating and formalizing, still too academic.… We have too little follow-up. So, we put new people somewhere, new priorities; we invest in it, but then after half a year, a year, two years we don't look. Do the results match up to our expectations? … In the next six years [the next evaluation cycle], we need to do something with that. We already wrote an action plan. We are going to do something like a revolving wheel; each year we review what we chose and whether the outcomes match our expectations. (Interview, research school scientific director)

The managing director similarly summarized the external assessment as a natural moment of reflection on what had been done, what the strategic plans were, what came out of them, and the direction to be taken by the research school:

> What I notice with the external review committee is that you.… It is a moment in which you collect everything from the past five years. What did we do? And it is also a moment to reflect and ask, 'where do we want to go?' So, a few years ago the strategic board was asked to draft a document for this. That is also what we used to draft the self-evaluation report for the external review committee. I think it is really the moment to show how the staff size and composition developed, including in relation to output. What is missing? Which way do we want to go? (Interview, research school managing director)

In the assessment report for the 2007–2012 period, the assessment of one of the research units of the school was not altogether positive. Three out of twelve PI groups were deemed low quality, the research unit was judged to be fragmented, and the external review committee argued that more interaction between PI groups in the unit was needed. This was especially necessary to bridge a thematic divide between two sections of the unit. In the assessment report the committee wrote, "in the opinion of the ERC, the interaction between [research area A] and [research area B] should be enhanced' (Assessment report 2014). The divide described here is substantial. Researchers in both sections study different phenomena, employ different theories and methods and have different ways of intervening with patients. However, patients very often suffer from the same underlying diseases and the phenomena influence one another: phenomenon A can lead to phenomenon B and vice versa. In the following section, we describe the steering mechanisms that we found were used to steer the research unit in a particular direction in response to this assessment report.

Establishing a Research Niche as an Organizational Identity

The head of the research unit took the advice of the assessment report to heart and set out to sharpen the focus of, and collaboration within, the research unit. The assessment report legitimized this effort. A stronger focus on a particular research topic was

sought to unite the research unit's PI groups. The head explained that this process was guided by "what we are very good at now, what are we known for; therefore we looked at our history" (Interview, research unit head).

This process resulted in a research topic on which the unit would seek to focus, around which it could integrate its two sections, and create a strong alignment with the clinical centre in the hospital. That last factor would lead to stronger collaboration across the basic–clinical divide. The research unit head reflected in the interview on his previous management style and how this external assessment changed how he worked:

> That was their assignment. To bring the focus really into it and not, 'well, let every flower bloom'. And that is how I am; you know, 'if you want to do something, go ahead and do it'. But the disadvantage is that you get a lot of leads. When I started – I have been here a very long time – I must be honest; I have let it go on for a long time, and good things came from that on which we can now build. But now we brought a focus into the theme. In essence we will now only do [research topic X], and that is a really great niche. And there are two groups, and they are aligned within the institute and with the clinical centre. (Interview, research unit head)

This research topic is not meant to be "only" a description of the research area in which the research unit operates, but is explicitly framed as an organizational identity. In the subsequent evaluation cycle (2013–2018), the self-evaluation report presents the research unit as follows:

> Within [research unit], it has created a common identity shared by the individual programs, and it has stimulated content-driven interaction around the notion of [research topic X]. (Self-evaluation report 2013–2018)

This new organizational identity reflects an epistemic aspiration. Epistemically, the research agendas of all PI groups would ideally become aligned with this research niche. Organizationally this is enhanced through a reorganization of the research unit to foster collaboration across the epistemic divide that existed between the two research areas and between basic and clinical research. Below, we discuss steering mechanisms through which the aim of increasing focus on this theme and collaboration across research areas and across the basic-clinical divide was implemented in the research unit. It is important to note that the establishment of a research topic as an organizational identity is also a steering mechanism in itself.

Establishing an organizational identity will, by definition, encourage staff to engage in a re-interpretation of the situation in which they work. By foregrounding a particular research topic as the core of the research program, research and researchers that align with this research topic are foregrounded as central to the research unit. The program manager for clinical and translational infrastructure described the effects of establishing an organizational identity as vision-power and saw it as a strong catalyst for change:

> You have a vision, and I believe vision-power is the most important, but you also need to have just that bit of power to be able to implement it. Then, it is for the leadership to say, 'this is our decision, and this is how we are going to do it'. If you do it well, 20% will say 'yes!', 20% will say, 'what a douchebag!'. Then you know, go work at [other university] with [name of other professor] but not here. And the other 60% will say, 'I can do it'…. Scientists have a weak point; they all have it. In the end, they look for the place where they have the best match, and if they find it, they are as inert as anything. Then you can't move them anymore…. They always look for the place where they match best, so people here will say, 'okay, I do not feel comfortable with the idea of [new approach]'. Okay, due respect to you, because you dare to acknowledge it, but that also has the upside that other scientists in the field that we might not have on our radar think 'oh [new approach], that is for me; I have to go to [this university]!'. And in that way, you get a natural flow into the school of new insights and talents. (Interview, program manager for clinical and translational infrastructure)

In this reflection, the affective nature of steering through organizational identity formation emerges with particular force. Establishing a new identity creates a divide between staff who feel at home in a department and in tune with its evolving organizational identity and those who do not. The latter will be inclined to seek employment elsewhere. As such, establishing a new identity is itself the first steering mechanism we identified in this analysis. The three steering mechanisms we discuss next are related to the new organizational identity and can be understood as actively supporting its implementation.

Steering through Reorganizing

The second steering mechanism we identified is reorganizing. First, the three PI groups that scored poorly in the external assessment were disbanded, lowering the number of PIs (and thus PI groups and research agendas) to nine. Second, a new structure for the research unit was developed, which did two things at once. First, each of the unit's two research areas would now be led by two staff members, one in basic research and one in clinical research. This fit with the research school's historically strong support for translational research and created alignment with the clinical centre of the hospital. Second, across the two research areas, existing and promising research lines were identified on which staff members from both areas collaborated to showcase that alignment within the research unit was certainly possible. This new structure of the research unit took a few years to develop. A PowerPoint presentation by the research unit head, two years after the external assessment report came out, described both the reasons for, and objectives of, the organizational changes. A slide titled "ERC report" summarized in bullet points the main takeaways of the assessment, including:

- From bench to bedside,
- reduce the number of programs and

• improve alignment (cohesion) between programs.
(Internal PowerPoint presentation by the research unit head)

On a later slide called "Objective", the first two bullet points read:

• To establish alignment and cooperation
  ○ Between programs
• To create a common identity relating individual programs to the overarching theme
(Internal PowerPoint presentation by the research unit head)

The new structure of the research unit is thus clearly meant to support alignment around the organizational identity put forward by the research unit head. But how are individual staff members steered towards this organizational identity?

Steering through Suggesting Collaboration

Gläser (2019) argues that steering through coercion is not likely to be effective, as it is effectively impossible to tell a researcher what research problem to tackle and how to approach it, and it is unlikely that someone would succeed in that task if they do not wish to cooperate. Indeed, we found that many interviewees made the same point. Direct prescription is both unlikely to be effective and runs counter to the academic freedom that staff members are said to deserve. Rather than attempting direct steering, the research unit head resorted to a third steering mechanism: "steering through suggesting".

In this case, suggestions primarily concerned new collaborations between staff members. The research unit head suggested to staff members that they might consider working together because of common interests. He primarily aimed to create translational couples (of one basic and one clinical researcher) that led to new collaborations, some of which grew into successful research lines. One professor explained how she ended up working with a clinician colleague:

> Professor: In the first instance, the head of the theme encouraged me and person Y to talk with each other more often. That led to us working together on different projects.
> Interviewer: And why did he encourage you two to talk with each other? Did he have a certain agenda?
> Professor: I am not aware of that.
> Interviewer: But this was about bringing together basic and clinical?
> Professor: I know that within [school name], this has long been seen as a good strategy. I expect that it has been a consideration in … bringing us together. Person Y did her dissertation in the lab so she … we speak the same language. So, I think that he saw that we would be a good match. (Interview, professor 1)

Another staff member confirmed that the development of translational couples was stimulated in the research school:

> Interviewer: Is there steering to get clinical researchers together with basic researchers?
> Professor: That is certainly stimulated, yes.
> Interviewer: And they make couples or is that being done in another way?
> Professor: We try out different things, also putting a couple of one experimental scientist and one clinician in the leadership of the research unit. That is deliberate. (Interview, professor 2)

In the same interview, this staff member went on to explain that "the head of the research unit gives hints now and again. But never.… No. I can't say that he would say with an iron fist, 'you will do this, and you will do that'". Similarly, the scientific director of the research school reflected on the extent to which direct prescription was possible and what possibilities were open to the director of the school:

> People should do the things they can do very well. Because look, these are opinionated researchers and they have their own research groups, their own research questions, in combination with the rest of the school and I don't want to steer that. I don't want to tell someone, 'listen, I think you should follow this trend'. That doesn't work, of course, if that isn't interesting to the researcher in question.… The personal research routes of the personal researchers: we do not want to taint them. We do put them in, between and against all kinds of situations, but they don't notice that. Currently, we have three units, but someone from unit A who is a researcher there is part of the board of unit B. Someone from unit C is on the board of unit A because there is a connection and because we want to promote cross-pollination. (Interview, research school scientific director)

Academic researchers are portrayed as a mixture of opinionated and stubborn and wanting to make their own decisions about what to do. However, one can, according to the scientific director, bring them into new situations to which they will start to respond: they will voice opinions, suggest collaboration due to a new idea and so on. They should not, however, notice they are directed in this way, because then they might feel that their autonomy is being threatened. We expect that steering through suggesting can take different forms in other organizations and can be more or less prescriptive in different contexts. This would, for instance, depend on the hierarchical relation in which a suggestion is made. It is clear that a supervisor suggesting something to a PhD-student has a different weight than a PI suggesting something to another PI. Furthermore, the extent to which a suggestion is followed will depend on the extent to which a staff member identifies with the research unit or the larger organization.

Steering through Resource Allocation

The fourth steering mechanism we identified is steering through resource allocation. The most important form of resource allocation is hiring new staff members. Different interviewees mentioned a list of hiring priorities for the implementation of the

research school's strategic plan. For instance, the program manager for clinical and translational infrastructure told us about a list made in 2012:

> We made a list in 2012 of everything that we were missing. And from that process we found that we needed someone who could do computational modelling, someone who could do this, someone who could do that. So, step by step, we have worked through that list, from this one, to that one, to that one: first the list and then a shortlist of candidates for each position. (Interview, program manager for clinical and translational infrastructure)

Similarly, the managing director explained that in the current budget, which he finalized during the week of our interview, there is strategic funding that can be used to selectively hire new tenure track staff to add expertise in line with the research school's strategy. The executive board has decided on a school-wide list of expertise they want, and the strategic funding is used for this purpose. The managing director explained:

> In the current budget, we have made explicit that we have strategic space. We have structurally made available €100,000 for people, preferably from outside, about whom we can say, 'they will allow us to strengthen ourselves on a number of points'. For instance, we are now bringing in someone with expertise in [topic area]. (Interview, research school managing director)

Steering through hiring new staff members is a powerful mechanism because it alters the composition of the research unit. Without changing the behaviour of the current staff, new expertise and a new research agenda are introduced into the unit. However, this does not immediately lead to more cohesion; it signals the direction in which the executive board wants to go, but does not automatically affect the research agendas of existing staff. Moreover, the use of this steering mechanism is intrinsically tied to the financial resources of a department and can only be used selectively, as such strategic funds are usually limited in size.

A second example of steering through resource allocation is more modest. The executive board launched a call for PIs to co-fund PhD positions. PIs with surplus financial resources that could afford half the cost of a PhD position, could have the other half funded by the research school. Proposals for this initiative were ranked based on, amongst other factors, their contributions to the research school's "strategy and strategic areas".

The epistemic effects of hiring a new staff member are greater than co-funding PhD positions. The school has recently brought in considerable expertise in computational modelling, and a new staff member was hired to bolster its expertise in genome sequencing. These new staff members bring in grant funding, collaborate with existing staff and supervise PhD-students. They also publish in their area of expertise, thus altering the research profile of the organization in terms of publications. Hiring decisions allowed the executive board to quickly take steps to implement its strategic plan and alter the unit's research profile. The call for co-funding is more aligned with

"steering by suggesting", because it targets existing permanent staff members and offers incentives to take particular research directions.

Epistemic Effects: a Bibliometric View

After a critical external assessment report, the research unit head sought to focus the research profile of, and increase collaboration within, the research unit. A particular research topic was chosen that combined the interests of the two sections, and this topic was propagated as the new organizational identity for the entire research unit. Furthermore, to implement the new organizational identity, i), the research unit was restructured, which included dismantling three PI groups and establishing a new governance structure, ii), the research leader actively tried to steer research by suggesting particular collaborations, and iii), a limited number of new hires were made, with funding opportunities created for PIs in line with the research school's strategic priorities. But what effects did this have on the content of research?

The interview data suggests that collaborations increased, as we have shown in the quotes above. Whether there was a stronger focus in terms of research topics is unclear from the interview data. To further explore these two epistemic effects – increased collaboration and increased focus in research on a particular topic – we employed bibliometric methods, drawing on an earlier study by Franssen, Van Leeuwen, Meijer and Rafols (2021).

To answer the question of whether the research of the research unit became more focused, we assessed the spread of publications across microclusters based on the CWTS article-level algorithm (Waltman and van Eck 2012). At the lowest level of granularity, this algorithm assigns each publication in the Web of Science to one of 4,000 microclusters based on citation relations between publications. The spread across microclusters tells us something about the cognitive diversity of the research done in the research unit.

Table 1 shows, for four consecutive three-year periods, the number of publications, the number of microclusters across which these publications are spread, the number of microclusters that include three or more papers from the research unit and measures for diversity of categories (Shannon entropy) and for balance of spread of publications across categories (Shannon evenness; see Rafols et al. 2012)

Table 1 Overview of bibliometric measures for four time periods.

Period	*Number of publications*	*Number of microclusters*	*Number of microclusters > 3 publications*	*Shannon entropy*	*Shannon evenness*
2008–2010	389	138	36	4.25	0.71
2011–2013	596	175	43	3.95	0.62
2014–2016	620	177	49	3.91	0.61
2017–2019	658	173	49	3.92	0.60

The results show, against expectations, that there was no increase in the concentration of publications of the research unit. After an initial rise in the second period, the number of microclusters in which its staff published remained stable. The measures for diversity and balance across microclusters also remained consistent. The bibliometric data, therefore, does not suggest that staff members collectively focused their research on a particular research topic.

To answer the question of whether collaborations increased, we drew on the same bibliometric dataset. We identified 42 authors who were members of staff in the research unit over three periods (2011–2013, 2014–2016, 2017–2019). We subsequently counted the number of colleagues that each staff member of the research unit collaborated with in each period, measured by co-authorship. As it is difficult to determine who was part of the research unit, when an individual became a staff member, and when an individual left, these results should be understood as providing insights, not definitive answers[3].

We find that the average number of collaboration relations among these 42 staff members, rose gradually from 4.6 for 2011–2013, to 5.1 for 2014–2016, and 6.2 for 2017–2019. In each period, the head of the research unit had the largest number of collaborative ties, around 15, while two PIs also reached 10 or more collaborative ties in each of the three periods. The rise in the average number of collaborative relations in the third period was mainly due to four staff members from a generation younger than the PIs. These younger staff members, two basic researchers and two clinical researcher-practitioners, are in their forties. Comparing 2017–2019 and 2014–2016, we see a rise of collaborative ties from 5 to 14, from 4 to 10, from 7 to 11, and from 3 to 7. In general, collaboration among younger staff members thus appeared to be more common than in the older generation. For instance, an assistant professor hired in 2015, after completing a PhD in 2012 in the research school and a short stay abroad, had nine collaboration links in the 2017–2019 period, against just two and one in the two earlier periods. Even among senior staff, there were those who collaborated more internally in the most recent period, although this shift was less pronounced.

Discussion and Conclusion

It has recently been noted that PROs emphasize the development of organizational identities, strategic profiles and missions in response to changes in the broader science system (Stensaker 2015; Mizrahi-Shtelman and Drori 2021). The effects of the formation of organizational identities on the direction of the research carried out in these organizations have been rightly questioned, as organizational identities developed for the organization as a whole can easily be circumvented at an organization's

[3] While the bibliometric dataset as a whole is validated by the research school, we do not have yearly data on who was part of which research unit or in which role. We have aimed to include only (future) staff members and drew on two staff lists (from 2007 and 2017) to do so, buttressed by affiliation data in publications. We have excluded two staff members who belonged to the research unit, but who moved to a different research unit in the last period. We did include the researchers whose PI status was taken away after the external assessment report published in 2014, as they continue to be affiliated with the research school.

lower levels. By contrast, in this paper we argue that the formation of an organizational identity can function as an important steering mechanism within organizational sub-units such as departments, faculties, institutes or research schools.

We draw on a case study of efforts to steer the direction of research in a research unit within a biomedical research school in the Netherlands. The case study shows that forming an organizational identity can be a crucial steering mechanism in the attempt to steer the direction of research. Moreover, three other supporting steering mechanisms – steering through reorganizing, steering through suggesting and steering through resource allocation – were employed to enact the organizational identity being formed. We observe that the leaders applied both formal identity claims by alluding to external reviews of the unit and more subtle suggestions to the staff about future research directions (Degn 2019). The organizational identity offers a target towards which research and researchers can be steered. We observe, in line with previous research (Fumasoli et al. 2015; Stensaker 2015), that organizational identity can indeed serve as an integrative tool, but in this case at a lower organizational level. One can imagine similar strategies being applied when management seeks to foster interdisciplinary collaboration.

Steering through resource allocation is well documented in the literature (Colwell et al. 2012; Laudel and Weyer 2014), but the other two steering mechanisms that are used to enact the organizational identity are, to our knowledge, novel. Steering through suggesting is a modified form of Gläser's (2019) steering through coercion. As the autonomy of academics as professionals is held in high regard in the Netherlands, there is little point in trying to coerce researchers into conducting their research in a particular way. Rather, the head of the research unit "suggested" particular directions or collaborations that would be worth exploring. Steering through reorganizing is a mechanism that seeks to have epistemic effects by reorganizing the research unit. In this case, each of the two thematic research areas were assigned a pair of leaders, one, a basic, and the other, a clinical researcher with the aim of ensuring that both research strands would be supported.

Our study indicates a direct relation between the use of organizational identity formation as a steering mechanism and the national science system in which the research school operates. This relation is twofold. First, the negative evaluation of the research unit that sparked the process of identity formation was found to be a legitimizing force for steering staff members. The research school's scientific director confirmed this when we asked him to reflect on the development of the research unit and the role of the assessment report in that development:

> That is an incredible catch-up effort initiated, not in the least by the external review report. It isn't only criticism that you get from those people. It is also incredibly useful for us to have a written document that can serve as, well, as a tool for us to govern with.… That provides enormous momentum to bring about change there. This is really a paragon of how an external review should work: what an institute does with it to achieve such an enormous catch-up effort. (Interview, research school scientific director)

Second, the national evaluation system in the Netherlands is intended to stimulate organizational reflection and learning. Units that are evaluated thus have to show that they are reflecting and learning, which is why the strategic capacity of the school has been extended over the past twenty years. Such evaluative exercises also promote the formation of an organizational identity and strategies to enact it. If, we hypothesize, this research school had been located in a national science system with a strong research evaluation system, its organizational identity would be far less pronounced, and there would most probably be steering mechanisms in place to line up with the goals of the performance-based funding system. How steering mechanisms that are used in PROs, relate to the characteristics of the national science system in which they are located, is a largely unexplored avenue that would benefit from future research.

Even when legitimized by an external review committee, the steering of research had clear boundaries. There was substantial respect for the autonomy of staff members regarding their research agendas, and direct prescription (or proscription) of research goals was not seen as possible by the executive board. This confirms earlier research (Whitley 2008; Whitley and Gläser 2014; Gläser 2019), but our results show that this limitation of steering is also self-imposed by the executive board, because of their belief that scientists should be free to pursue their own research ideas. It is possible that such beliefs change over time, and they could differ in other types of PROs or other national contexts. Whether this is the case, is a promising avenue for future research.

Lastly, while our interview data suggests epistemic effects of the schools' steering attempts, we also used bibliometric data to explore two measures of particular aspects of such effects. The bibliometric measures we used are crude, it is for example unclear to what extent each microcluster contains a single research area. Also, co-authorship is just one way in which researchers collaborate. Yet, we do find that such methods offer a complementary lens to interview data when studying epistemic effects. However, more finely grained bibliometric methods that allow one to study changes in research content are urgently needed to explore epistemic shifts at an appropriate level of detail.

An important limitation of this case study is the field that we studied. The biomedical research field in which the school is active is not a discipline; rather, it is an interdisciplinary research area in which a range of disciplines come together to study a particular problem. As an example, the 2017 annual report of the research school states that staff from fifteen university departments or disciplines work in the research school. For this reason, we suspect that disciplinary rankings and disciplinary quality regimes are a less visible structuring force in this research area than they would be in a department in which staff belong to a single discipline, especially when its disciplinary culture is very strong, like economics. In such disciplinary environments, we hypothesize that the organizational identities of departments would be more strongly shaped by disciplinary cultures and quality norms.

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Authors and Affiliations

Thomas Franssen[1] · Siri Brorstad Borlaug[2] · Anders Hylmö[2,3]

✉ Thomas Franssen
t.p.franssen@cwts.leidenuniv.nl

Siri Brorstad Borlaug
siri.borlaug@nifu.no

Anders Hylmö
anders.hylmo@hh.se

[1] Centre for Science and Technology Studies, Leiden University, Leiden, The Netherlands

[2] Nordic Institute for Studies in Innovation, Research and Education (NIFU), Oslo, Norway

[3] School of Business, Innovation and Sustainability, Halmstad University, Halmstad, Sweden