

## Article

# Third Mission as an Opportunity for Professionalization in Science Management

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Received: 13 May 2019; Accepted: 6 November 2019; Published: 8 November 2019



**Abstract:** With the rise of the Third Mission of universities, the role of science management, which itself has been growing steadily over the years, is gaining relevance for organizational success. Science managers possess exclusive knowledge of organizational processes and keep their own external networks; neither scientists nor university management can give up on successfully carrying out Third Mission activities, such as lifelong learning or student exchange programs. This study takes up the question of whether this exclusive knowledge of science managers fosters their institutional establishment as influential—and therefore, professional—actors. This leads to the research question: Which power resources are available and used by science managers in the relationships with scientists and university management? The theoretical approach builds upon power resources and micro-politics as the core explaining variables for influencing others. In this pursuit, case studies of four German universities with altogether 27 qualitative interviews were conducted with science managers, university management and scientists. The results show that science managers only partially experiment with tactics that entail more risk, such as barter trade or dominance and the most common strategy in relation to others is moderation by idealization or objectivity. In contrast to expectations, they hereby lean more often on internal than on external networks as power resources. In general, two patterns emerge from the analysis: One group of science managers that act managerial and wishes for more room for individual maneuver, and a second group that sees itself as a service provider with little self-interest and wishes for more rules to strengthen their position towards scientists.

**Keywords:** Third Mission; science management; Third Space; professionalization; higher education; qualitative empirical study

## 1. Problem and Research Approach<sup>1</sup>

Universities can no longer escape the strategic development of the Third Mission—the interactions of universities with business and society—as they are expected by their stakeholders in politics and society in general to make an increasing contribution to positive social development. For this, however, universities are also dependent on their professional or science managers, also known as ‘third space’ professionals [1], who provide the necessary information and coordinate many of the activities. Science management surged in Germany in the early 2000s and has been steadily growing ever since [2]. However, the job profiles are very heterogeneous and, as a new player in the university, they are institutionally not yet well established, which is also visible by a high degree of fixed-term and part-time employment.

<sup>1</sup> This paper is based on my doctoral thesis “Third Mission als Organisationsherausforderung. Neuausrichtung der Machtstrukturen in der Hochschule durch Professionalisierungstendenzen im Wissenschaftsmanagement, BWV—Berliner Wissenschaftsverlag, Berlin, 2019, ISBN 978-3-8305-3968-1.

For science management in the Third Mission, a certain degree of autonomy is required to achieve results. This need for autonomy also stems from the fact that in the Third Mission, contacts outside the university are usually cultivated intensively, and the acting persons often have exclusive access to them [3,4]. Hence, it seems plausible that the exclusive knowledge about organizational processes in the Third Mission, e.g., internal and external networks, as well as organizational specifics, is a resource that can contribute to better establishment and professionalization in science management. Without this exclusive knowledge, the organization of such activities is at risk of failing. Using this knowledge strategically could, thus, allow science managers to act more self-confidently towards the university management and scientists and, consequently, to represent their own interests and ideas on the organization of the Third Mission more strongly.

This study takes up the topic of university development in the context of the Third Mission from an organizational sociological perspective. It is less focused on the associated activities, but rather their organizational contexts. In particular, it looks at science managers as a relatively new group in the science-supporting field of higher education, which is also involved in Third Mission activities. In most cases, science managers either are specialized administrative staff that work for the university management (rectors, deans) or they have management roles in special units, e.g., career, entrepreneurship or transfer centers. The core research questions, thus, are: (1) What opportunities do science managers with responsibilities for the Third Mission have to influence the organization of such activities in their relations with university management and scientists? (2) How does this, in turn, help them to strengthen their professional role in the university? (3) Which of these opportunities do they actually make use of?

Although the study is limited to German universities, it can be assumed that the conflicts between scientists and science management over the Third Mission are not fundamentally different in other countries. So far, the role of science management for the production of Third Mission activities has not been investigated thoroughly. This study aims to contribute to filling this gap, i.e., to investigate whether science managers seize their opportunities for professionalization given their special role in the organization of Third Mission activities. Professionalization here means claiming a field of expertise and having decision-making authority over it.

This structure of this paper is as follows: First of all, I review relevant literature on the Third Mission and science management in order to map out the research field and research gaps (Section 2). Then I present my model for power relationships based on the literature on which the model is based (Section 3). Entering the empirical part of the paper, I present the case studies and methods of data collection and analysis (Section 4). The following section presents the results of the qualitative data analysis (Section 5). These results are analyzed and put into context in Section 6. I finish with some generalized conclusions drawn from the evidence (Section 6).

## 2. Literature Review

The growing importance of the Third Mission and the expansion of science management is related to developments in the higher education and science system that have persisted for some time. On a systemic level, three major developments are closely linked to these topics. Firstly, changes in the production of scientific knowledge, in which non-scientific actors are now also increasingly involved in application-oriented research directions, thus, making the Third Mission of higher education institutions more relevant. Secondly, the changes in higher education governance brought about by New Public Management and the associated reorientation of inputs towards the outputs of scientific achievements, which went hand-in-hand with an increased need for individual responsibility and management abilities for higher education institutions. Thirdly, the increased emphasis on the quality of higher education teaching and the vocational qualifications of graduates in the course of the study structure reforms of the Bologna Process, which helped both science management and the Third Mission to gain further significance for university success.

### 2.1. Discussions Related to the Third Mission

The Third Mission of universities is characterized by debates about observed or attributed changes in the production of scientific knowledge. Two groups of concepts can be distinguished, which were discussed in the context of higher education institutions.

First, those that primarily focus on the traditional university functions of teaching and research, but place these in a broader horizon and integrate Third Mission elements. A very influential concept was *Mode 2* by Gibbons et al. [5,6]. It describes a change in knowledge production, which takes place with substantial participation of the universities, but in a different way than the traditional Mode 1. In Mode 2, knowledge is produced transdisciplinary and transfer-oriented. Central to knowledge production is the context of application [7]. Moreover, knowledge flows do not move in one direction only, which blurs the traditional boundaries between fundamental and applied research. A further much-discussed concept is the *Entrepreneurial University* [8–12] where universities transformed themselves into institutions with an economic mission, in which they not only produce knowledge, but also contribute to job creation and stimulate overall economic productivity. It also discusses bringing university management closer to the working methods of private companies and adding more diverse relations between companies and universities by mixing staff, co-opting and consulting. Another closely related concept is the *Triple Helix* [13,14] which describes the relationships between universities, companies and government in order to design a global knowledge production model. The three main institutional spheres of economy, state and science interact with each other and generate innovations, especially at the regional level, in order to stimulate knowledge-based economic development. The changing understanding of regions is also discussed in the research on *Regional Innovation Systems* [15–17]. The so-called ‘new regionalism’ assumes that the decisive subjects of economic competition are no longer nation-states, but rather regions. Consequently, innovation policy must have a regional component where universities play an important role.

On the other hand, there are concepts that describe new university tasks that still connect to traditional university functions, but also exceed them in the direction of socially relevant engagement, and thus, operate in the core area of the Third Mission. Third Mission has also been interpreted as the social mission of higher education [18]. The *Engaged University*, for instance, focuses on the development of social innovations, with which university teachers and students work on the solution of social challenges. Teaching and research are aiming at working together with social actors here [19]. *Transformative Science* is a scientific approach to activate science for a great societal transformation, which is considered necessary in order to meet the Grand Challenges of Humanity [20]. Moreover, it claims not aiming to narrow science to problem-solving, but of ensuring reflexivity in relation to social challenges [21]. This debate is also closely related to the concept of *Responsible Research and Innovation*, which is characterized by a transparent, interactive process by which societal actors and innovators become mutually responsive to each other [22,23]. Furthermore, the Third Mission is also reflected by *Social Innovation* that refers to an intentional, purposeful reconfiguration of social practices in certain fields of action or social contexts. Those innovations originate from actors or constellations of actors, with the aim of solving or satisfying problems in a better way than with the established practices [24–26]. Another distinction between the aforementioned concepts is possible according to whether they primarily focus on economic aspects (*Entrepreneurial University*, *Triple Helix*, *Mode 2*, *Regional Innovation Systems*) or devote themselves primarily to non-economic aspects of the universities’ impact (*Engaged University*, *Social Innovation*, *Responsible Research and Innovation*, *Transformative Science*).

In addition, there are also ample definition approaches for the Third Mission with different demarcation areas. Consequently, they differ in which activities of the universities are to be included and which are not. In the wider concepts, attempts are made to combine several different elements under the term Third Mission. Also more broadly defined are demarcation attempts, which concretely name certain areas of activity, but in doing so, forgo a general definition or criteria of belonging [27–30]. In principle, the Third Mission describes those activities of a university that exceed its traditional radius

of action, which are not or not solely teaching or research, but are related to its core tasks of teaching and research. Third Mission activities can be roughly divided into continuing education, research and knowledge transfer and social engagement [3,31,32]. This systematization is used to identify Third Mission activities of the case studies (see below Section 4).

## 2.2. Discussions Related to Science Management

It should be noted that theoretical and empirical literature coined an array of terms describing what is called science management here, each with a slightly different meaning:

- *New Professionals*: An up-and-coming group in higher education, fulfilling its role in newer forms of support for study and teaching [33].
- *Third Space*: A developing territory between academic and administrative areas of the university, which is mainly characterized by specific job profiles [1].
- *Scientific Coordination*: Extended tasks of the administrative staff, such as preparation and support tasks in financial accounting, the implementation of reporting and the auditing of the organization [34].
- *Higher Education Professions*: Describes professional positions that are “neither routine administration nor directly attributable to teaching and research” [35] (p. 170).
- *Higher Education Professionals*: Employees with “different disciplinary, but academic backgrounds, who perform multiple service functions, mostly in the form of consulting and management activities” [36] (p. 34).
- *Administrative university management*: A newly developed occupational field, due to the “assumption of numerous new planning and service functions (...) at many universities” and the “establishment of new expert groups”, which, however, is less characterized by “professional autonomy”, but by “sector-specific knowledge and organizational experience” [37] (p. 234, p. 238).

Tasks and activity profiles for science management and science managers can be roughly summarized into three task areas [35] (p. 170), [1] (p. 380): (1) Conceptual input for the management levels, such as research, concept development, conception of institutional initiatives and strategies; (2) carrying out predominantly formalized tasks, such as the implementation of management decisions and ongoing professional services, such as marketing and communication, as well as those of a quasi-academic nature, such as course evaluations or lectures at outreach events; (3) carrying out less formalized tasks: Initiating and coordinating university development projects, such as raising third-party funds or establishing longer-term regional partnerships. It is particularly the latter that is characteristic for the organization of Third Mission activities, as contacts and partnerships outside the university cannot be formalized in the same fashion as internal processes.

In official German statistics, there is no clarity on how to distinguish traditional administrative staff from science managers as this is not a category in statistical reports and those managers are partially employed through funding grants, which formally make them scientific staff. However, in Germany, an estimated 10 per cent of the total non-scientific staff at higher education institutions consider themselves science managers [2]. In this study, only those science managers are investigated who are responsible for the Third Mission (see below Sections 3.1 and 4). Thus, the results primarily apply for this sub-group in science management.

## 2.3. Professionalization in the Context of Science Management

In classical administrative tasks, the employees carry out the tasks largely in accordance with existing regulations, best practices or instructions from higher authorities. This description, thus, corresponds more closely to that of an occupation in the sense of a “reference to a certain social function by a leading, transcendent authority”, which can be characterized as a “socially institutionalized bundling of socially necessary activities and those demanded on a labor market into a standardized unit” [38] (p. 17). In contrast, professionals typically act in situations that are

extremely demanding, recognizable by uncertainty and openness of interpretation, conflicts of social norms, heterogeneity of the clientele and time pressure, which often force decisions under uncertainty cf. [39]. In addition to politicians, lawyers, physicians and other professions, these characteristics can also be found in scientists, whose actions only become professional through their freedom of action. A profession, therefore, presupposes that the “constitutive knowledge stocks” acquired in the course of professionalization for the corresponding functional system are administered in a dominant or even monopolistic manner by the occupational group [40] (p. 40). Science managers change the structures and processes in the university as they add new capacities to the university profile. In doing so, they gain constitutive knowledge about the processes in which they are involved. The professionalization of science management ultimately takes place as a stabilization of the system of action through the establishment of cultural traditions and behaviors. Unlike traditional profession sociologists like Parsons [41], more recent research does not assume that professionalization necessarily leads to a profession, but rather to professionalism, where autonomy is achieved by (1) claiming expertise in a specific field and (2) staging it as credible to others [42–44]. This study leans on the latter, less strict, interpretation of professionalization. In this sense, professionalization in science management can be characterized as gaining acceptance of their field of expertise within the university and also more effective participation in related decision-making processes.

Professionalization in science management has already been the subject of empirical studies, for instance, the work on “higher education professionals” by Barbara Kehm, Nadine Merkator, Christian Schneijderberg and Ulrich Teichler [36,45,46]. Their studies found that “they see themselves primarily as service providers to scientists and that their role is less active than reactive”, but that this can be attributed to a “lack of professional identity (...)” or “deliberate modesty in order to be able to assert their own ideas more conflict-free” [36] (p. 35). According to a further study, there have been few signs to date of the development of an independent occupational profile or profession [37] (p. 234). These studies do not, however, consider the special features of the Third Mission. Moreover, it is still a young occupational profile that has continued to develop dynamically since the survey phase of these studies (2009 and 2010). Consequently, it can be assumed that the conclusions of these studies may no longer reflect the current status of developments. The first indications of this were provided by Banscherus et al. [2] who interviewed science managers who understood their field of activity to be distinguished from both science and administration. One aim of this study is to explain better the distinctiveness of science managers for the sub-group with Third Mission responsibilities. In particular, whether they emancipated from a pure administrative view of their tasks.

### 3. Theoretical Framework

The theoretical model aims at reconstructing patterns of behavior in science management in relationships with the university management and scientists. Here, the focus is on the organization of Third Mission activities or its communication to the public. In this pursuit, it should be clarified what the specific tasks and responsibilities of the three actors are, especially in science management. In addition, the model defines how power relations can unfold in different ways and which strategies make which outcomes more likely.

#### 3.1. Responsibilities of Science Management in the Third Mission

At the operative level, the Third Mission is a coproduction of scientists and science management. The university management has representative tasks and a decision-making role in the Third Mission but, in most cases, is not actively involved in carrying out the activities. They instead act as employers to science managers, exert influence on teaching and research strategies and foster relevant networks and partnerships. By doing so, they have a say in the Third Mission activities, but on a more general level. Looking at the operative aspects, one can leave the university management on the sidelines for the moment.



Scientists use their networks to establish cooperation, participate in public lecture programs at the university or place students in teaching projects, start-up centers or in companies to write their theses. In addition, basic teaching and research activities form the foundation on which a university can interact with society in the first place. Moreover, the Third Mission is not only produced by the scientific level, but also the science management level, particularly as it plays an active role in organizational aspects of the activities. However, science managers and scientists are not equally responsible for delivering the Third Mission activity cf. [3] (Table 1).

**Table 1.** Operative actors of various Third Mission activities.

Main Production by ...		Co-Production
Scientists	Science Managers	
<ul style="list-style-type: none"> <li>• Social engagement</li> <li>• Collaborative projects</li> <li>• Lectures and consultations</li> <li>• Decentralized service learning</li> </ul>	<ul style="list-style-type: none"> <li>• Networks and strategic partnerships</li> <li>• Start-up center</li> <li>• Continuing education institution</li> <li>• Transfer center</li> </ul>	<ul style="list-style-type: none"> <li>• Postgraduate courses subject to a fee</li> <li>• Offers for lifelong learning (children, seniors, etc.)</li> <li>• Operation of public facilities (museums, libraries, zoos)</li> <li>• Centralized service learning</li> </ul>

Note: Elements taken from Reference [3] and own elaboration by assigning tasks to actors.

The fact that science management is more involved in the production of Third Mission activities than is usual in comparison to the organization of teaching and research activities can essentially be attributed to three causes:

- The participation of external actors or groups requires scientists to communicate outside their own epistemic community [47]. Here, the management areas and executives active in communication represent an effective link between internal and external actors.
- In certain activities, coordination of several scientists involved is necessary, for example, in the case of public lecture series. Science management arguably has more experience and the necessary administrative and marketing know-how compared to the self-organization of the scientists.
- The exploitation and marketing of activity beyond the academic scope can also be regarded as unrelated to the role of the scientist [48], even if such expectations are nowadays more clearly communicated to them. Here, too, the management's expertise is generally needed, at least as a flanking measure, or is used to relieve the administrative burden of the scientists.

Given the special role of science managers in the production of the activities, it is subject to further investigation on whether they use this role as a resource to improve their standing within the university and, thus, contribute to their professionalization. However, the co-production character of the Third Mission also means that a successful organization of activities requires a working relationship between both actors. Not least in order to prove their abilities to the university management. The investigation of power relations can deliver a better understanding of how the different roles and responsibilities play out in the current practice.

### 3.2. A Model for Power Relations of Science Management

The concept of power games and micro-politics are central to this paper. *Power games* describe the collective actions of individuals within an organization. Power is defined by Mintzberg as the ability to influence or affect organizational outcomes [49] (p. 4). A distinction is made between legitimate power through formal authority through the position in the organization and illegitimate power through informal, process-related politics [49] (p. 5). Crozier and Friedberg [50,51] provide an approach to structural theory that analyses the collective actions of the actors and can be applied to the context given here. Crozier's and Friedberg's approach is micro-political, i.e., it tries to find causes for the "deviations, unpredictability and unplannability" of organizations beyond the "regularity, predictability and plannability" [52] (p. 91). The reason for entering into a power relationship at all is that one needs the cooperation of the other to realize a project, a common goal or the solution

of a problem [53] (p. 113). In order to establish a power relationship and for the achievement of goals, an overweight of power resources in relation to the relationship partner is, therefore, required. Crozier and Friedberg [50] (p. 50) name four sources from which actors in their organization can draw power resources:

- Through their specific expertise and functional specialization (special skills);
- Through general organizational rules (rules);
- Through control over information and internal communication (information);
- Through their relationships with the environment or environmental segments (external relations).

Relative freedom, i.e., the room for attainable maneuvers between one's own goals and collective constraints, opens up the field for strategies of exercising power that can take place within a contingent frame of reference, the game. With the game, the "use of opportunities", "willingness to take risks", "joy in variants" and "surprises" become significant in organizations [54] (p. 163). In short, games bring dynamism to otherwise rigid power configurations. They investigate what is achievable within the scope of the possibilities for action if the corresponding motivation to express one's voice and change something is present.

*Micro-politics* describe the tactical behavior of individuals in power relations. Although Crozier and Friedberg convincingly argue the fluidity of the power relations and haggling relationships in the games of the actors, they do not name the concrete micro-political instruments used in these games. Even at universities, one can observe how individuals "instrumentalise(*sic*) others through targeted action in order to successfully assert their own ideas and interests in organizational uncertainty zones" [55] (p. 191). Existing studies on the exercise of power were summarized to seven tactics by Neuberger [56]: (1) Dominant appearance, (2) barter trade, (3) appeal to higher authorities, (4) objectivity, (5) coalition building, (6) playing off personal attraction or charisma and (7) idealization or ideologization.

The theoretical fundament of this study concentrates on power relations between science management, university management and professorships as the three central actors of the Third Mission, based on the model of Crozier and Friedberg [51]. For science managers, those power resources can be substantiated as:

- Administrative knowledge that scientists do not possess (special skills)
- Regulations for teaching and research that also apply for Third Mission (rules)
- Management and administrative relations that scientists do not possess (information)
- Public relations that others do not possess (external relations)

From the viewpoint of power, the focus is on the possibilities of science managers to influence the decisions of other actors in terms of their own objectives by using their own power resources, such as control over specific expert knowledge or environmental contacts. The use of power resources is modelled using Neuberger's micro-political tactics, which structure actions in the relations between the actors. For instance, idealization can be used to emotionalize the importance of the Third Mission or barter trade is an option to exchange personal contacts for support in the organization of activity. These tactics differ in the level of risk that is taken and the professional rewards: Being objective towards others does not involve much risk, but does not do much to gain more autonomy. In contrast, using charisma or dominance comes with high risk as unsuccessful action can be damaging. However, risky tactics have a higher return on personal autonomy as successful action will increase one's influence on the decisions also in the future. From the set of micro-political tactics, three strategies, or player types, seem plausible for science managers: (1) Moderators that use the low-risk tactics idealization and objectivity; (2) occasional players that use mid-level risk tactics, such as barter trade or coalitions; and (3) go-getters that use risky tactics, such as charisma or even dominance.

The theoretical model combines both, power resources and micro-political tactics and derives expectations for a type of science manager that is proactively pursuing influence on the decision-making, and hence, his or her own professionalization. Table 2 displays the core elements of the model.

**Table 2.** Summary of the model for power relations of science management.

<b>Power Resources</b>	
<b>General</b> (Crozier/Friedberg 1980)	<b>Resources of Science Managers</b>
Special Skills	Administrative knowledge
Rules	Rules for Teaching and Research
Information	Administrative Relations
External Relations	Public Relations
<b>Micro-Politics</b>	
<b>Player Types of Science Managers</b>	<b>Power Tactics</b> (Neuberger 1995)
Moderator	Idealization
	Objectivity
	Appeals
Occasional Player	Barter Trade
	Coalition Building
Go-getter	Charisma
	Dominance

Using this model, the central hypotheses of this study to be tested empirically are:

1. Public and administrative relations are the central power resource for influencing scientists and university management.
2. Barter trades and forming coalitions are considered the most effective tactics.
3. More risk is assumed to yield more professional autonomy; hence, the successful go-getter will obtain the largest professional autonomy and influence on decisions.
4. In practice, however, a well-balanced level of risk is expected to be the mainstream approach of science managers as the Third Mission is not a core mission of the university. This means that the occasional player is the most common strategy for a proactive science manager.

Empirical testing requires both identifying the above-mentioned power resources of science managers with Third Mission responsibilities, as well as the tactics they use to employ those resources successfully. The following section describes the research design used to empirically address the research question within the presented theoretical framework.

#### 4. Materials and Methods

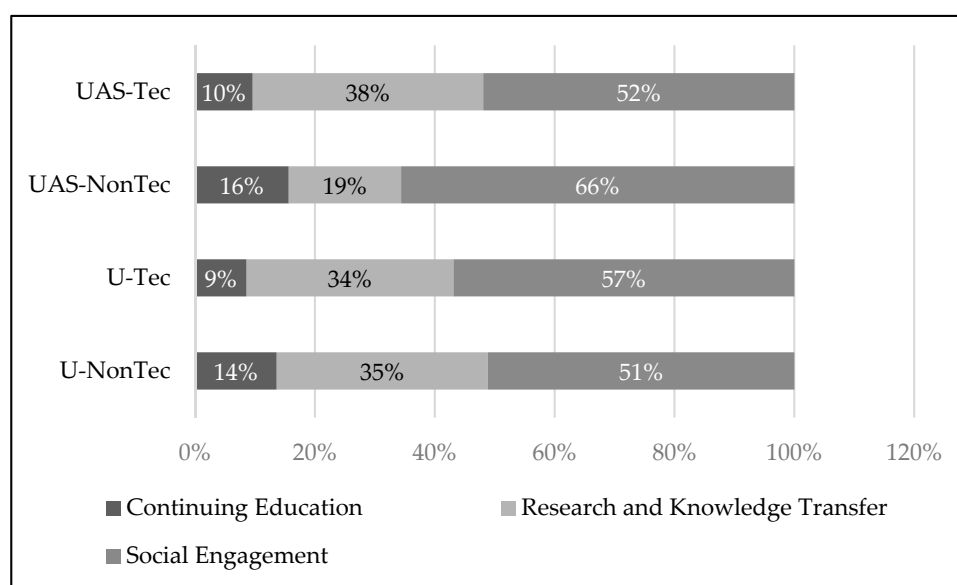
On the empirical level, the research question and assumptions were explored by case studies of German higher education institutions. The advantage of case studies lies in the detailed information on the examined research objects, which is not limited by a need for high comparability [57] (p. 178). Instead, one can concentrate on the structuring of the concrete case and include different perspectives. Decisive for the generalization of the findings are criteria, such as representativeness and variation of the found case situations, as well as the expertise of the interviewees on the subject of the study [58] (p. 38).

The selected mix of universities and interviewees followed these guidelines. For the case studies, four higher education institutions were selected in a most-different-systems approach cf. [59]: Two universities and two universities of applied sciences, each with one technical and one non-technical orientation. This approach aimed at capturing a wide range of contexts for the organization of Third Mission activities. For instance, technical universities are usually very active in fostering applied



research relationships with private companies, or non-technical universities often have ample lifelong learning and continuing education programs.

To assess the Third Mission profiles of those universities and obtain a better understanding of the comparability of the cases, documents available on the Internet were collected and analyzed: University or faculty homepages, annual and research reports, research databases, university magazines and brochures. This resulted in a list of activities assigned to specific Third Mission items (in accordance with the systematization in Reference [3]) for each case. These items were assigned to either continuing education, research and knowledge transfer or social engagement. Overall, there were no stark differences in the Third Mission profiles of the universities compared by the number of activities in each field. Only the non-technical university of applied sciences displayed a focus on social engagement and fewer activities in research and knowledge transfer that differed from the rest (Figure 1).



**Figure 1.** Third Mission profiles of the case study universities. Note: UAS = university of applied science, U = university, Tec = technical orientation, NonTec = non-technical orientation. UAS-Tec N = 52, UAS-NonTec N = 31, U-Tec N = 58, U-NonTec N = 88. The data collection reflects the situation as of July 2016.

Altogether, between March and May 2015, 27 expert interviews were conducted with representatives of (a) university management (personal assistant), (b) science management in communication and public relations, (c) science management with general Third Mission tasks (e.g., quality assurance staff), (d) science management with specific Third Mission tasks (e.g., service learning unit) and I professorships. The mix of actors aimed at obtaining different perspectives towards the organization of the Third Mission and the role of science management (Table 3). All interviewees were involved in the organization of Third Mission activities, and thus, qualified as experts on this topic.

Central questions in the interview guidelines with relevance for this study were<sup>2</sup>: How are the activities accepted and supported inside the university? Do Third Mission activities play a role in strategy or profile? What room for maneuver do the organizers have? Which structures or other factors influence Third Mission activities with regard to their implementation, success and duration? The questions did not directly address power resources and tactics, but they implicitly referred to them.

<sup>2</sup> It shall be noted that the interview guidelines contained further questions on reporting processes and infrastructure related to the Third Mission that were of relevance for a funded research project that used the same interview data, but for different research aims and questions (see statement on funding at the end of the paper).

The advantage of indirect questioning is that the interviewees are less inclined to provide the most desirable answers possible on their social relations. As it turned out, talking about the activities yielded substantial information on the relationships with other involved actors that could be processed to tackle the research question.

**Table 3.** Number of interviews per case and actor type.

	U-NonTec	U-Tec	UAS-NonTec	UAS-Tec
a) university management	1	1	1	1
b) science management in press and public relations work	1	1	1	1
c) science management with general Third Mission tasks	3	1	1	0
d) science management with specific Third Mission tasks	0	3	4	2
e) professorships	0	1	2	2

All interviews were transcribed and processed with the software MaxQDA™ for the qualitative analysis. In line with the literature [57,60,61], the coding and analysis of the interview data was conducted as follows: The system of categories was defined in advance, i.e., power resources and micro political tactics among other category types, but it was open in such a way that extracted information could flow into the refinement of the categories and ultimately into the theoretical model. The analysis of the data aimed primarily at confirming or rejecting the theoretical assumptions, but it was also examined whether new or modified assumptions could be derived from the material.

## 5. Results

The results presented here focus on the situation of science management, but shed some light on the perspectives of university management and scientists as well. Empirical results to answer the research questions should begin with the importance of the Third Mission as a prerequisite to obtaining power resources which in turn enable the usage of micro politics that eventually foster professionalization of science managers. The qualitative analysis, hence, emphasizes three issues: (1) The relevance of the Third Mission; (2) power games of science management; and (3) power resources and their application through micro-politics.

### 5.1. Relevance of the Third Mission and Its Communication

In the interviews, the Third Mission was classified mostly as an important university task in the four universities examined. However, some of the views differed from each other:

- At the technical universities, a rather narrow understanding of the term became apparent, i.e., the Third Mission was predominantly seen as social engagement, but less so as continuing education and research and knowledge transfer. Those were largely understood as a firmly anchored service of the university. The strategic importance of the Third Mission, which was more narrowly defined here, has therefore, also been rated lower than at the non-technical universities.
- At the two non-technical universities, the Third Mission had already attained important strategic importance and is defined more broadly as cooperation with the region, i.e., both social commitment and economic cooperation.
- The three groups of actors described their understanding of Third Mission in different ways. While the science managers focused in particular on the range of tasks and usability for communication, representatives of the university management usually talked about concepts or effects and scientists talked more about the range of tasks and their impact.

Against this background, the findings on the implementation and organizational support for Third Mission should also be considered. Apart from public commitments, the university management almost never provides any tangible incentives for Third Mission to scientists. In addition, the units responsible for continuing education and research and knowledge transfer are always assessed with a view to economic efficiency by the management level. Overall, the intrinsic motivation is the most important factor that drives acting persons and the universities, therefore, have problems motivating those scientists who are rather skeptical about the Third Mission.

As one of its key functions, the Third Mission serves as a conceptual platform for the external communication of the university. The following aspects from the interviews can be summarized as essential:

- Most of the interviewees were concerned with improving the media response to public relations work and pointed to successes in this endeavor.
- Somewhat less often, but still frequently, it was emphasized that one would like to arouse the public's interest in one's own activities (in addition to media echoes).
- Other aspects, such as marketing opportunities, the professionalization of the presentation and cooperation with companies, were mentioned rather sporadically.

Some results can also be noted with regard to the organization of public relations work:

- The press offices or communication departments primarily responsible for external communication only bring with them the necessary know-how to translate the scientific content appropriately for the public to a limited extent. It requires the active cooperation of the scientists who have the detailed technical knowledge.
- The technical interfaces, in particular, shared databases, have been described by all actors as improvable. In addition, the processes and responsibilities for documentation were considered less than optimal.
- Furthermore, there is the challenge of motivating the scientists to provide information and of convincing them about the benefits of public relations work of the university, also for their own activities.

## 5.2. Power Games

From the viewpoint of power, the relationship is not only about the objective organizational needs, but also the specific role or personal interests that are pursued by the actors in that context, i.e., their power games [50]. The most important observed games which science managers play in power relations with scientists and university management are presented in this section.

### Games for Support

A central task of science managers is to obtain the support of scientists for the execution of the Third Mission tasks and the communication of the Third Mission. Here, several tasks can be described for the sake of which power relations are pursued:

- *Games for cooperation in the organization of activities:* Science managers expressed that there was a need for better incentive systems for cooperation in Third Mission activities of the university. Even without such systems, constant motivation was described as an important task of science management. In addition, many scientists had still to understand the relevance of the Third Mission as a profile topic of the university, according to several managers. Scientists who are already active, on the other hand, would be much more positive and cooperative. The game of cooperation in the activities, thus, depends on the intrinsic motivation and existence of incentive systems for scientists, such as relieving the teaching duties or internal university funding. This would have a great influence on the possibilities of science management to establish cooperation with scientists. In addition, it was said to be important to sell one's own expertise clearly to the

scientists, to be persistent in getting in touch with them and in being perceived as advisors. In this game, the support of the university management or the exchange with other science managers is sometimes sought and often successful.

- *Games for cooperation in the communication of activities:* A large part of the work on the Third Mission in science management revolves around the organization of reporting and external communication on the subject of the Third Mission. Here, they often face the challenge that certain professors, especially in non-technical subjects, have a good feeling for the necessary translation tasks in science communication, while many others do not. Typical problems are also unreliable input on the part of scientists, which is characterized by delays and forgetting to fill databases or reports. In order to obtain support for communication tasks, which are usually associated with time investments for scientists, this game often offers an exchange for support, i.e., the scientists are offered support services in communication work, such as the provision of publicity or also by contributing their own network capital to support the activity. Within certain limits, formalized regulations can also be used for communication, such as the linking of third-party funding to specific project information. Addressing cooperative professors with a good overview of their colleagues' activities was also described as useful.
- *Games for support for their own activities:* Some science managers carry out self-initiated activities in the field of social engagement. To this end, they seek the support of the university management, which was described as quite difficult, because they would only show themselves to be helpful when it becomes clear that the activity is successful.

The games for support focus on the relationships with the scientists who are to be motivated to cooperate. The support by the university management has been mentioned less often, but also seems to fulfil another function. Instead of concrete cooperation services, this is more about inclusion in information and decision-making processes.

### Games for Prestige

As far as the appreciation of the Third Mission and the participation of science management is concerned, the games can be summarized as follows on the basis of the interview evaluations:

- *Games for recognition of own work:* The recognition of one's own work by the other university actors is an important aspect for the game of prestige. In doing so, science managers have to work against cultural resistances against expectations of usefulness, which are associated with the Third Mission. This is expressed in the interviews as a skepticism ("nagging attitude") on the part of the scientists, which is particularly widespread in technical subjects. It is easier when scientists already show commitment in the Third Mission, according to science managers. The services of the science managers would be much more appreciated here. Another form of appreciation became recognizable in the case of the non-technical university when science managers conducted internal surveys on Third Mission activities and received much praise from scientists, who were pleased to see that the topic was now being given increased attention. Appreciation by the university management also plays a role, namely, as a confirmation of the importance of one's own work, as several interviewees reported.
- *Games for recognition of public relations:* The notion that even more could be done with regard to the public was a view expressed several times by the science managers. The scientists would still not be sufficiently involved, and the sense and purpose of public relations work would not be sufficiently explained to them. It could, however, also lead to defensive reflexes by the scientists if the impression arose that they were being urged to cooperate. In addition, the public could also be reached through the younger scientists, who tend to be more interested in public relations and science communication. In addition, the survey instruments used to track activities should be as simple as possible in order to keep the effort to a minimum, according to science managers and scientists. The production of publicity is a game in which science managers act successfully above

all through skillful communication and motivated actors, as well as acceptable survey instruments. Their personal exposure to the public as university spokespersons was not mentioned in the interviews, but could also be a prestige factor.

Overall, the games of science managers for prestige tend to be overshadowed by the games for support and were mentioned rather casually in the interviews. More often, the importance of recognition of work was discussed by the actors, especially with regard to the scientists, whose motivation for the Third Mission could be strengthened as a result.

### 5.3. Power Resources and Micro-Politics

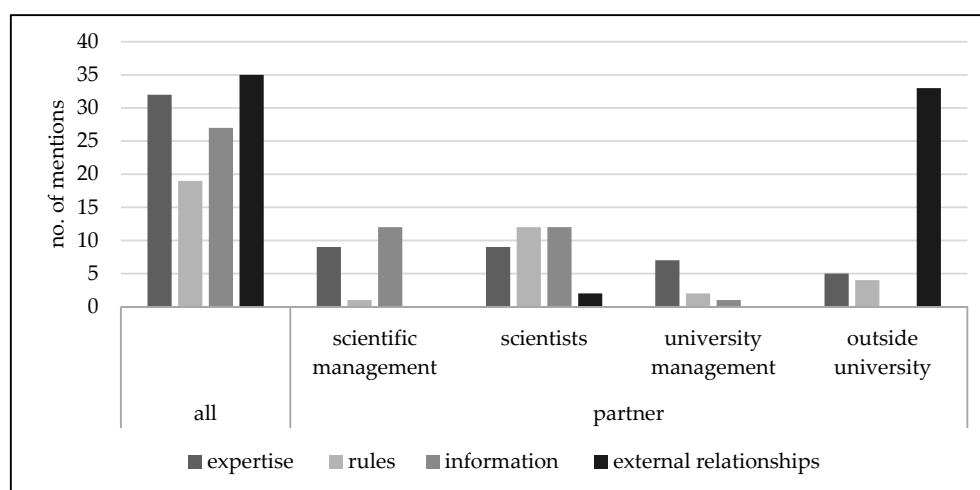
After having looked at what science managers aim for in their power relations, the analysis can now move to the central aspects of the model, i.e., which power resources are available and how they are played out.

#### Available Power Resources

Essentially, the case study analysis confirms the assumptions about the available power resources of the three actors. Science managers have:

- Expert knowledge of administrative processes;
- Regulations for teaching and research that have an effect on Third Mission activities;
- Information from their management and administrative relationships;
- Environmental relations, which they derive from public relations work and, in addition to the assumptions, from cooperation with external partners.

The use of power resources was addressed frequently in the interviews (overall 113 times by science managers only). In the case of science managers, the most frequently mentioned power resources, irrespective of the specific context, were expert knowledge and environmental relations, somewhat less often internal information and the least for rules. In addition, it is revealing to which actors the science managers referred to (Figure 2). For example, expert knowledge is used as a resource for cooperation in all relationships, both inside and outside the university. In the case of rules, a focus can be seen in the relationship with scientists, and to a lesser extent also in the relationship with external partners. Internal information is used almost exclusively in relations with other science managers and scientists, but almost never in relation to university management. Mention of environmental relations was made in most of the cases with regard to external partners and only in few cases with regard to scientists. This is somewhat surprising as external relations were assumed to be the most powerful resource in influencing scientists or university management, e.g., by using it for barter trade.



**Figure 2.** Use of power resources by science managers by a relationship partner.

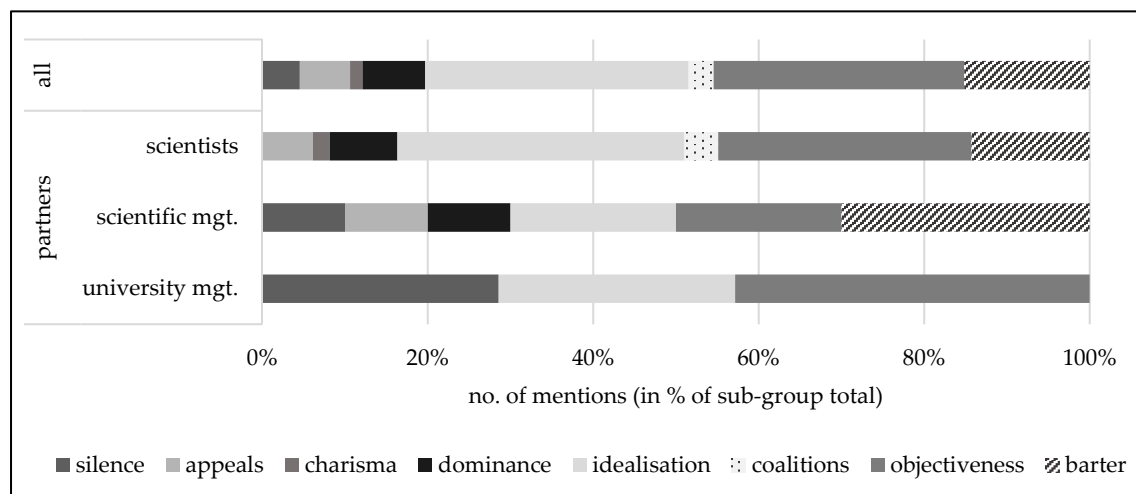


## Used Tactics

If employees in science management actively act in relation to the Third Mission of their universities and are in contact with other actors in the university, three approaches are particularly frequent, corresponding to the evaluation results of the interviews: Idealization, objectivity and, somewhat less frequent, bartering. Regardless of the specific tactic, most of the mentions of a tactic described the relationship to scientists (49 out of 65 mentions).

For the science managers, the behavior also depends on the respective relationship partner (Figure 3):

- Idealization and objectivity are the most important tactics to influence scientists, and barter is also visible.
- Objectivity, idealization and silence (in the sense of not passing on information) are of roughly equal importance to the university management, and other tactics have not been identified here either.
- In relation to other science managers, bartering, objectivity and idealization are to be emphasized; in addition, individual cases of dominance, appeals and silence were found.

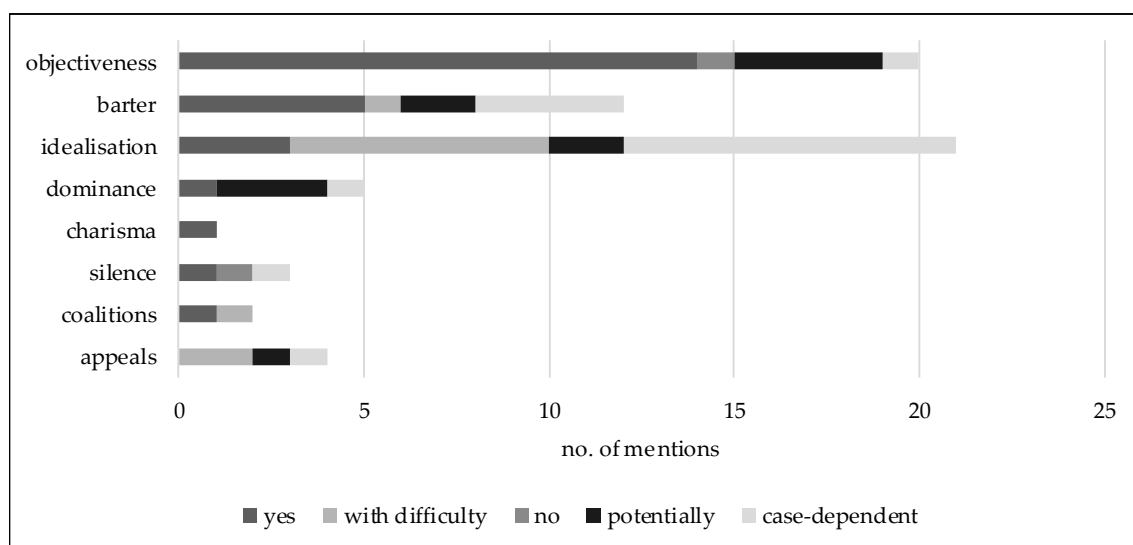


**Figure 3.** Use of power tactics by science managers by relationship partner.

The use of micro-political tactics suggests that the predominant strategy of science managers is the moderator who applies idealization and objectivity and the second strategy, used less often, is the occasional player who uses barter trade to engage with other actors in the university. This stands in contrast to the assumption that the occasional player is the most common strategy.

## Success of Tactics

According to their statements, science managers are mostly successful in their relationships with other actors, at least with some struggles (Figure 4). Thus, roughly half of the identified cases were described as either successful or successful with difficulty. This shall not conceal the fact that the successes were at the time achieved only with great effort, thus, include experiences of frustration, in which at least the result was right. The majority of the situations described as successful were the result of an objective approach, while barter and idealization were used less often. Since four other types of micro-politics have also been successful in individual cases, there are indications that although there may be a basic pattern for success, deviations from it may as well lead to success. Furthermore, in most cases, painstaking successes are based on the idealization of the Third Mission topic vis-à-vis the relationship partner.



**Figure 4.** The success of power tactics by science managers.

In addition, the science managers frequently expressed tactics that they would potentially use if certain preconditions could be created and which they linked with great potential for success. There are no clearly favored tactics here, but it is noticeable that dominance and objectivity are more important here than in the other determinants of success. This indicates a desire for more power based on rules vis-à-vis scientists, at least for some science managers.

Finally, there were cases in which the success of a tactic could not be generalized and was particularly case-dependent. Whether an approach led to the goal was, thus, either dependent on the circumstances, but more often on the specific person with whom one entered into a relationship. In most cases, this meant: The tactics were not successful, but the group of people obstructing success was limited. These experiences of failure were mostly made in the course of an attempt at idealization or in an attempt to make an exchange transaction.

To sum up, the results indicate that the ideal picture of an active and influential science manager cannot be confirmed entirely by the data. This will be discussed in the following section.

## 6. Discussion

The main aim of the study was to investigate whether science managers seized an opportunity for professionalization and improved standing inside the university by using their special role in the organization of Third Mission activities. The professionalization concept used here presupposes the acceptance of their field of expertise and more effective participation in related decision-making processes. It was assumed that their special role provides science managers with power resources that they play out in the relationship with other actors in the university when decisions are made.

Contrary to expectations, environmental relations did not play a major role in the power relations of science managers with their counterparts. They were mentioned frequently, but only rarely with regard to influencing other actors in the university, but rather in relations with external partners. In addition, the information about the university actors, i.e., their relationship capital, is more important than expected. The science managers, however, do not apply their power resources as consequently as the theoretical considerations suggested.

Instead of primarily using barter, coalitions, personal attraction or other more resolute power tactics, they usually act as moderators through objective or idealizing communication. Although the moderating behavior often proves to be effective in concrete problem solving, it reduces the chances of profiling oneself in power relations and of making capital from them for one's own professional development. The most effective behavior proved to be between aggressive and cautious, namely, entering into barter transactions. However, self-perception, as a decisive actor, with its own views,

which are enforced (e.g., through barter transactions) has, only become visible in a part of science management. More often, it seems, a self-perception, as a service provider for scientists and university management, is still present. The moderator is, hence, the most common player type, not the occasional player.

Furthermore, two different cultures in science management can be identified in the interview data that exist side by side. Some of the science managers endeavor to carry out their tasks with managerial skill and have their own claim to the organizational decisions, which influence joint production in the Third Mission processes. Others have arranged themselves well with a more passive service role and would prefer more formalization instead of more room for maneuver, especially through rules and more formal authority in dealing with scientists. These two streams cannot be linked to specific functions of science managers: Both managerial and bureaucratic attitudes were found among representatives of research and knowledge transfer, in the communication departments, in continuing education and in the staff departments. Further professionalization is, therefore, not limited to specific areas of the Third Mission that play a leading role. Rather, it depends on a cultural change in science management that establishes an increasingly self-confident understanding of roles in the joint organization of the Third Mission, eventually leading to a professionalized science management. To see oneself as the “collaboration champions” [62] would be a communicative act of one’s own upgrading in the university structure. In a more generalized perspective on science management as a whole, Merkator und Scheijderberg put it like this: “The similar self-perception and the uniform self-understanding as a service provider and university professional pave the way for the emergence of a common identity” [45] (p. 214).

The situation of science management is also related to another aspect contained in the research question, namely, the significance of the Third Mission for the university. This ultimately determines how valuable the work of science managers is rated by other actors. The case studies showed that there is certainly a strategic interest in the Third Mission, in particular in the social impact of the activities and their institutional anchoring. However, university management also has other issues to deal with and Third Mission is not yet an issue that is on par with the needs of quality development and profiling in teaching and research, even if the German government currently intends to reduce the gap in this respect with the federal-state program “Innovative University”, which started in 2018.<sup>3</sup>

Much more profound, as was made clear in the interviews, is the fact that cultural conflicts between science and management hamper the enhancement of the Third Mission. It was repeatedly stated that even with more financial incentives and recognition, only a minority of professors could be inspired to actively participate in the Third Mission. This reveals the limits of idealization and bartering as tactical instruments for influencing. It also reflects resistances against an appropriation of science for the university Third Mission that cannot be completely resolved. This, in turn, limits the possibilities of science managers to exert influence over scientists and, thus, also to establish themselves professionally vis-à-vis them.

## 7. Conclusions

Overall, it becomes clear that science managers can play a pivotal role: They act as negotiators between scientists and university management and thereby facilitate the reconciliation of interests on both sides. Of course, they do this out of self-interest, since their power potential is also determined by their usefulness for the other two actors. For science managers, the successful intervention also means being able to make greater or at least more secure claims on equipment and stability in the future.

The analysis can also be interpreted in another direction: Science managers do not necessarily have to be involved in fundamental decisions. They can also be treated as functional additions to the organization, i.e., specialized, science-supporting and hardly interlinked service units under the

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<sup>3</sup> <https://www.innovative-hochschule.de> (accessed on 16 April 2019).

supervision of the university management. The extent to which these units develop into an independent actor that skillfully participates in the negotiation processes and makes effective use of power resources ultimately depends on their own will and their ability to forge coalitions among themselves and with other actors. If they do so, they develop a professional identity that Kehm/Merkator/Schneijderberg [36] and Krücken/Blümel/Kloke [37] have not yet been able to confirm in their studies.

The answer to the research question, thus, leads to the following summary: Science managers have various resources at their disposal to influence decisions in the organization and communication of the Third Mission, but they are, on the one hand, not always sufficiently relevant or feasible, due to competition with the core tasks in teaching and research, as well as resistance by the scientists. On the other hand, their self-image as (at least partially) autonomous actors is not yet so comprehensively developed such that they try to assert their influence in a determined manner and with appropriate micro-political means. In other words: The Third Mission represents an increasingly important opportunity to professionalize science management. However, science managers are currently only partially taking advantage of it. The reorientation of power structures inside the university through professionalization efforts of science management in fulfilling the Third Mission has, therefore, already advanced a little, but not yet far.

The results of this paper indicate possible directions for further research. For instance, it would be worth investigating the linkages between external actors that foster professionalization, such as professional associations, networks or journals and how they contribute to qualification pathways, career opportunities and publishing activities. Another research strategy following on from this work would be to focus on the effectiveness of science management in the provision of Third Mission services. In such a research approach, the activities would have to be evaluated with regard to their results and related to the organizational contexts. A third possible approach could be to question which Third Mission framework fits best to different types of universities. Such an investigation could aim at three objectives: (1) To clarify the origin and quality conditions of different variations of Third Mission structures; (2) to derive the functions of science management and the management level for quality-oriented development; and (3) to develop a theoretical concept of the transfer function of higher education institutions as an integrative system of various sub-processes of the Third Mission, including the involvement of science management.

**Funding:** The empirical material was collected in a research project funded by the German Federal Ministry of Education and Research (BMBF), the project “BeMission” at the Institut für Hochschulforschung Halle-Wittenberg (HoF) carried out between 2013 and 2017.

**Acknowledgments:** I acknowledge the reviewers’ valuable comments during the review process.

**Conflicts of Interest:** The author declares no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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