Differentiation of the scientific system and autonomy gain of HEIs: legitimation and development instruments as a result of these processes

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Abstract
This contribution aims to theoretically locate the implementation of two instruments developed by the Zurich University of Applied Sciences (ZHAW) for both accountability and strategic and qualitative governance. It is assumed that changes in the environment of higher education institutions (HEIs), such as growth and differentiation of the higher education system, as well as the autonomy gain of HEI from politics, lead to reactions of the HEIs themselves, such as the professionalization of management and the introduction of standardized performance measurements.

In the paper, the reactions of the HEI are considered by means of the neo-institutionalist approach, extended with help from theory of structuration. This coupling makes it possible to conceive different responses of the HEIs both as conformist behavior towards the institutional expectations addressed to them, and as a strategic and interest-oriented response to changed expectations in their environment.

With the implementation of the catalogue of key figures, which produces, procures, distributes and processes information, the ZHAW pursues the intention to meet regulatory and normative expectations of its environment and to achieve above all pragmatic and moral legitimacy. The strategic observatory, on the other hand, with the help of which trends relevant to the ZHAW are revealed, shows a strategic and thus more interest-led component within the competitive expectations structures.

In addition to the theoretical location of the two instruments, the article also deals in detail with the methodological conception and implementation of the two instruments.

Keywords: [environmental changes, legitimation, strategic action, analysis instrument]
1. Introduction

Organizations are in a reciprocal relationship with their environment. Structural changes in the environment and involved institutional expectations lead to an adaptation of structures, procedures, actions and instruments within the organizations, for reasons both of legitimacy increase towards the environment and of strategic positioning within the environment.

Changes in the higher education system, such as general growth, processes of differentiation or gain of higher education institutions’ (HEIs’) autonomy towards political actors, lead to increased competitive pressure and thus to reactions in HEIs such as the expansion of formal structures or the implementation of standardized performance measurements.

Starting from neo-institutionalism and theory of structuration, this article focuses on the relationship of HEIs with their environment and the changes in the higher education system as well as on the corresponding reactions of HEIs.

The presentation and theoretical framing of two analytical tools, developed by the Zurich University of Applied Sciences ZHAW both for accountability and for strategic and quality governance, shows an exemplary way of adaptation and strategic action undertaken by a HEI as a response to the changes in the higher education system (see case studies).

The paper concludes with a methodological reflection on the two developed instruments, taking into account both the organizational conditions at ZHAW and the theoretical foundations.

2. Reactions of HEIs to transformation processes in their environment: approaches of neo-institutionalism and theory of structuration

2.1. Organizations and their institutional environment

This article considers the relationship of organizations to their environment by means of neo-institutionalism combined with an extension based on theory of structuration. Interest in neo-institutionalism has been increasing in the field of higher education research in the last two decades (Krücken & Röbken, 2009, p. 326; or for an overview Cai & Mehari, 2015). This trend reflects the general renaissance of neo-institutionalism in social sciences since the 1990s. It is also emphasized that many higher education researchers in Europe rely on this theory, which can be explained by the increased reform activities and homogenization processes as a result of the Bologna process (Krücken & Röbken, 2009, pp. 326–328).

Neo-institutionalism focuses on institutional expectations in the environment of organizations (see macro institutionalism). These expectations tell organizations how they should work. Accordingly, the structures in the environment influence the structures, processes, and actions of organizations (Scott, 1987, p. 497; J. W. Meyer, 1994, pp. 33–36; Scott & Meyer, 1994, p. 2; Walgenbach, 2014, pp. 299–300). Organizations do not accept institutional expectations for the purpose of efficiency or efficiency improvement, but for the purpose of producing legitimacy in their institutional environment. Hence organizations act according to the expectations of their environment. How legitimacy is attributed to an organization depends on the perception whether actions, structures and processes as well as the existence of the organization itself correspond to the institutional requirements and the rules in the environment.

If an organization conforms to the expectations, it maintains and gains legitimacy and secures a flow of resources that allows the organization’s survival (Krücken & Röbken, 2009, p. 335). In perfectly legitimate organizations, the organization itself and its aims, means, processes and procedures are rational, appropriate and unquestioned. The organization corresponds to the cultural ideal of an organization, receives support from the environment and thus assures its survival (see figure 1 based on J. W. Meyer & Rowan, 1977).
From a neo-institutionalist perspective, three pillars of institutions are identified (Scott, 2008). Suchman (1995, pp. 577–585) distinguishes forms of legitimacy that correspond to these pillars (Puppis, 2008, pp. 117–118 and table 1).

Institutions contain, firstly, **regulative rules** which manifest themselves in forms of legally formalized rules whose abidance is enforced by sanction. Regulatory rules correspond to **pragmatic legitimacy**, where the interests of actors in the environment are maintained and realized by the organization.

Secondly, institutions contain **normative rules** which manifest in the form of expectations on the behavior of actors. Actors act according to norms and values that determine which structures, actions, goals, etc. are appropriate. Normative rules can be observed in roles or organizational routines. Normative rules correspond to **moral legitimacy**. Whether organizations have moral legitimacy depends on output, processes, structures, or charisma of leaders. Through socially accepted processes and structures that meet expectations, goals and results are controlled and moral legitimacy is achieved.

Thirdly, there are **cultural-cognitive rules**, based on widespread views, assumptions, and shared meanings. Alternatives to these views are inconceivable, which is why cultural-cognitive rules are followed unquestioned (taken-for-grantedness). **Cognitive legitimacy** corresponds to cultural-cognitive rules. It can be achieved when an organization has a meaningful and orderly effect and its existence is seen and understood as self-evident and unquestioned.

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**Table 1: Three pillars of Institutions and the attribution of legitimacy, based on Scott (2008, p. 51) and Suchman (1995)**
Krücken & Röbken (2009, pp. 327–328) emphasize the fact that current developments in the field of higher education can not be explained exclusively by neo-institutionalist assumptions, referring to Meyer & Rowan (2006) and Kraatz & Zajac (1996). Cai & Mehari (2015) show in their overview that almost half of all articles based on neo-institutionalism that are published until 2014 in the most important higher education journals involve also another approach in organizational theory. Levy (2006, 2008) pleads not only to address the passive transformation of the HEI to external institutional requirements, but to adopt a more actor-centered view.

Increased competition among universities and the associated efficiency requirements as well as increased accountability entail a stronger need to consider the market environment and the pressure caused by technical expectations on accountability, efficiency and effectiveness. It is no longer possible to refer exclusively to the relationship between the state and the professional environment in higher education (see also Kraatz & Zajac, 1996; Levy, 2006, 2008). As described further below, in the present article competition mechanisms in the form of a permanent order of quantitative comparison are regarded as rule systems as well. Competition as a governance mechanism, which is attributed to the market environment by Krücken & Röbken (2009, pp. 327–328), is ultimately induced by the state (Münch, 2007) and thus politically intended.

Nevertheless, this article does not take a completely deterministic view of the relationship between the environment and organizations in which interests are neglected. Organizations are accredited a certain choice as to how they react to their institutional environment. Thus, newer neo-institutionalist work places greater emphasis on the role of interests and strategic action and accordingly on active actors (for example Becker-Ritterspach & Becker-Ritterspach, 2006, pp. 114–115; Scott & Davis, 2007, p. 277). It is, however, to be borne in mind that the attempt to bring together institutions and interests is indeed attractive, but also problematic. The focus on the fact that when dealing with institutional expectations, organizations act strategically and based on their interests, risks marginalizing their special feature, namely their nature as objective and self-evident structures. Institutions would only be one arbitrary requirement for organizations among others (Puppis, 2008, pp. 125–126). This is why, according to Puppis (2008, p. 126), it is important to introduce the strategic response of organizations cautiously into theory. First, it must be considered that strategic reaction is possible only to regulatory and normative rules, but not to assumptions of self-evidence (cultural-cognitive rules). Secondly, it must be borne in mind that strategic and interest-based action does not exist independently of institutions and therefore a strategic action itself is institutionally shaped. Hence the scope for the expansion of a neo-institutionalist perspective with an interest-based and strategic action is limited. It is therefore necessary to use a concept of actors which takes into account the cultural imprint of the actors as well as their power of action (Walgenbach & Meyer, 2008, p. 118). Giddens' theory of structuration (1995) fulfills these requirements and reconciles the importance of institutions for formal organizational structures and processes with the interdependent actions of organizations (Puppis, 2008, p. 14). An integration of both approaches has already been established (for example Barley & Tolbert, 1997; Clemens & Cook, 1999; Wilkesmann, 2009).

The aim of theory of structuration is to resolve the dualism of action and structure by the duality of structures. Actors always refer to structures in their actions. Both theories thus emphasize routine action. However, human consciousness is limited and therefore unrecognized structures exist, which can lead to unintended action sequences. The action concept of theory of structuration also emphasizes that the actions of actors do not always produce intended results. Giddens does not equate structure with coercion. Structures not only restrict, but also enable action. Strategic action is thus made possible only through structures - or in neo-institutionalist terms: through institutions (Walgenbach & Meyer, 2008, p. 133). The duality of structures means that structures represent the medium as well as the result of social action (Walgenbach, 2014, p. 406). By the fact that actors refer to structures in their actions recursively, they (re-)produce the structures that restrict and enable their action (Giddens, 1995, p. 70).

By replacing structures with institutions, it is possible to observe the institutional environment of organizations recursively, thus emphasizing the duality of institutions. Hence, organizations are also creating and changing institutional expectations (Puppis, 2008, p. 129). In this way, strategic action from theory of structuration can be integrated into the neo-institutionalist organization theory, without incurring a contradiction with its basic theoretical assumptions (Walgenbach & Meyer, 2008, p. 135). Puppis (2008, p. 127) concludes that the neo-
institutionalist organization theory thus needs to be complemented by the second half of the reciprocal recursive relationship between the organization and the environment in order to take proper account of the action of organizations. The process of institutionalization is influenced by organizations both strategically and according to institutional expectations. As described above, however, only regulative and normative rules can be influenced strategically. It should also be borne in mind that strategic action is always based on institutional principles. Otherwise, the two perspectives - the concept of strategic action and the concept of the pursuit of legitimacy - would contradict each other. The coupling of the two theories allows to deal with the influence of institutions on organizations, as well as with their strategic responses.

2.2. Environmental changes: growth, differentiation and autonomy

According to Heintz (2008, p. 111), the central drivers of the organizational integration of HEIs are autonomy, transparency, competition and funding. This chapter looks at the increased institutional autonomy and also deals with growth and differentiation processes.

In complex heterarchic knowledge societies, great expectations are placed on the generation of robust knowledge and the creation of innovations (Vosskuhle, 2008, p. 16; Schuppert, 2007, p. 291). Various actors - especially science, and thus HEIs - are involved in problem solving. HEIs become central institutions in the knowledge society (Willke, 1995, 2000, p. 91; Vosskuhle, 2008, p. 18; Rammert, 2003; Mirowski & Van Horn, 2005). As a result, the higher education system in general and higher education in particular is growing in modern societies. This can be seen, for example, in the growth in student numbers or in the valorization and expansion of the research function and third mission activities of higher education institutions (Gulbrandsen & Slipersæter, 2007; Hüther & Krücken, 2015; Musselin, 2007).

A consequence of the growth is a steady differentiation and pluralization of the higher education system (de Boer et al., 2017; Enders, de Boer, & Weyer, 2013; but also Meek, Goedegebuure, & Kivinen, 1997). This is reflected in Switzerland through the establishment of universities of applied sciences (including music and art colleges) as well as universities of teacher education, whose profile is supposed to be differentiated from traditional universities (Jarren, 2016, p. 41).

In addition to these two types of HEIs, there are other recognized or accredited Swiss higher education institutions. These different higher education organizations also have different sponsors (cantons, partnerships of cantons, confederation, private entities) (swissuniversities, 2016; BBT, 2009, pp. 5–6). In addition to this external differentiation, there is also an internal differentiation within individual HEIs, which can be seen for example in new curricula or organizational units (such as internal research groups).

A third process is reflected in the increasing gain of autonomy of the HEIs towards politics. Although politics is still governing by structural interventions and institutional governance (Schneider & Kenis, 1996; Schuppert, 2006, p. 459), HEIs are increasingly dismissed from the administrative sphere of the state (Enders et al., 2013; for Switzerland: Lepori, 2007; Jarren, 2016, p. 41), albeit to varying degrees (see for example “Autonomy Scorecard” of the European University Association, Estermann, Nokkala, & Steinel, 2011). The role of the state towards the HEIs is thus changing: there is a shift from micro management to input / output regulation of HEIs from the perspective of the state. The new leitmotiv is the “regulation from a distance” (Hüther & Krücken, 2015, p. 60). The state provides the framework conditions and general objectives, and the HEIs autonomously decide how the individual objectives are achieved. Lange & Schimank (2007, pp. 541–542) empirically show that state regulation is reduced in those countries in which it is strongly developed, while hierarchical self-regulation, network regulation via external stakeholders as well as regulation through pressure of performance is strongly expanded everywhere.

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1 see Federal Act on Funding and Coordination of the Swiss Higher Education Sector (HFKG): Institut de hautes études internationales et du développement (IHEID), Genève and Stiftung Universitäre Fernstudien Schweiz, Brig; the Swiss Federal Institute for Vocational Education and Training according to the Federal Act on Vocational and Professional Education and Training (BBG Art. 48) as well as HEI accredited by the Swiss University Conference: Facoltà di Teologia di Lugano; Franklin University Switzerland; Staatsunabhängige Theologische Hochschule Basel; Theologische Hochschule Chur (THC).
As against for example the health system, not all citizens are included in the science and higher education system, which has consequences for their legitimation. Combined with the above-described change in the system, this means that science has to legitimize itself more and more through its achievements and no longer through the "hope in unexpectedly performed achievements" ("Hoffnung in unerwartet erbrachte Leistungen", Jarren, 2016, p. 41). Institutional differentiation and gain in autonomy lead to a massive competition among the various HEIs (Hüther & Krücken, 2015, p. 59; Nievergelt, 2013, p. 9). The distribution of material resources and institutional safeguarding are driving this competition forward. The distribution of resources is partly linked to the achievements of HEIs, whereby the performance is measured in comparison with other HEIs. Lange & Schimank (2007, p. 525) call it the governance mechanism "competitive pressure" in and between HEIs. It is not about proper market competition, but much more about quasi-markets, which are constructed by means of evaluations and comparisons. This results in an increase in competition in the higher education system, where resource allocation based on a quantitative comparison order ("quantitative Vergleichsordnung", Heintz, 2008, pp. 114–115), understood as institutional environment of a HEI, plays a central role for the later discussed reactions of the HEIs. The institutional character of this quantitative comparison order respectively of the quasi-markets constructed through evaluations and comparisons emerges from the fact that this rule system is permanent – an important aspect of neo-institutionalist definitions of institutions (Jepperson, 1991, p. 149). As soon as an arrangement of comparisons, including corresponding operationalizations, is established, this can no longer be negotiated, for a change would undermine the logic of the comparison.

Heintz (2008, p. 112) critically describes these developments. Flying the flag of efficiency and performance orientation, the attempt is being made to make "normal" organizations from HEIs, which follow a business-like logic and are similarly controllable.

2.3. Reactions to environmental changes: Professionalization of management and standardized performance measurements

Higher education research discusses HEIs' responses and the related transformations from HEIs to new organisational forms. When arguing on the basis of the above-described relations between the organization and the environment, the responses are a result of environmental changes, irrespective of whether or not it is a passive takeover of institutional requirements or a strategic response to given institutional structures. Heintz (2008, pp. 113–114) argues that the so-called organizational integration ("Organisationswerdung") of higher education institutions is a reaction to external governance mechanisms. Although governance mechanisms exist alongside politics, politics account for environmental changes, as it is the politicians' task to set the legal guard rails and provide basic funding, ie a large part of the economic resources. The above-described quantitative comparison order as an institutional environment resulting from different conversion processes is the starting point for the reactions described in the literature. Two forms of reactions are distinguished, which are interdependently linked: on the one hand, reactions having an influence on the structure of the HEI (managerialisation, extension of formal structures and professionalization of science management) and, on the other hand, reactions that can be seen as output or rather instrument or action of a HEI (standardized performance measurements and comparisons).

A central structural reaction is the managerialisation of the HEI, which is due to the increasing institutional autonomy from the state and to competition mechanisms. Hereby, to a different extent in each HEI, the organizational self-government model, on the one hand, and the management model, on the other, merge into hybrid forms of HEI organization (CHESS, 2016; Nievergelt, 2011, pp. 9–11). In this context, the concept of "managed" HEIs is used. Lange & Schimank (2007) empirically prove this process by analyzing developments of higher education governance towards the New Public Management model in different countries. This development towards more hierarchical decision-making structures is at odds with the classical notion of self-organized professions.

Related to this, the expansion of formal structures is increasing, as a result of the expansion of action and decision-making competences vis-à-vis the professorate. The establishment of the management culture goes hand in hand with the transformation of the HEI structure (Heintz, 2008, p. 113). As a result, the HEI increasingly becomes an organizational actor who gains
autonomy from the state. It is important to note that the growing institutional autonomy is indeed changing the mode of governance, but not its intensity. One could assume that a higher presence of principles of top-down management would lead to a reduction in governance structures and processes. Empirically, however, it results in an increase in formal structures. This can be explained by the fact that the strengthening of management levels of a HEI is put into effect by means of a shift of decision-making competences from the state to the individual levels of management inside the HEI, in the sense of self-administration (Hüther & Krücken, 2015, p. 60).

A further reaction is the professionalization of science management. Within the organizational units of HEIs, there is a growing need for professional employees who are able to assume management and administrative responsibilities with regard to financial, strategic and infrastructural issues. In addition, the third space is growing, i.e., those positions in between administrative and scientific tasks (CHESS, 2016; Kehm, Merkator, & Schneijderberg, 2010; Nievergelt, 2011, pp. 11–12).

These structural reactions are accompanied by an instrumental one, namely the establishment of standardized performance measurements and comparison between HEIs. This development is characterized by the fact that organizations are increasingly confronted with formal responsibility, accountability or control of internal processes. This is reflected in the increasing amount of external evaluations and assessments of the achievements in the HEIs' performance areas and the associated participation in rankings (Hazelkorn, 2015; Hüther & Krücken, 2015, pp. 48–49), which, according to Loprieno (2016b), have become, since 2010, of increased importance also in Switzerland. This results in a concrete attribution of benefits to and within the overall organization, which is opposed to the principle of a HEI as loosely coupled anarchy. This development is strongly linked to the development of management capacities and the managed HEI. The quantification and visualization of the achievements of a HEI is a consequence of the competitive pressure and an opportunity to legitimize the produced innovations, the creation of knowledge and the organization’s position in the market.

3. Case studies: instruments for legitimation and development in response to environmental changes

This chapter shows how the legitimation of achievements, governance structures and the strategic orientation towards future challenges have been and still are designed in an expert organisation, a HEI, using the example of the Zurich University of Applied Sciences (hereinafter referred to as ZHAW) in Switzerland. The first instrument, the catalogue of key figures, presents an evaluative internal view, while the second one (strategic observatory) is a development tool allowing for a prospective exterior view. The two instruments were conceived by the ZHAW’s higher education development unit in cooperation with further organizational units of the HEI. The instruments can be seen as a reaction of the ZHAW to the above-described changes in the environment as well as to the adaptation of organizational structures and instruments. They are the result of processes of managerialisation, the expansion of formal structures, the professionalization of science management as well as the standardized performance measurements. The catalogue of key figures as well as the strategic observatory serve science management and allow the HEI's management levels to manage the HEI on the basis of evidence.

In this article, the methodology for the conceptual design of the instrument will be discussed more closely for the case of the catalogue of key figures, while considering the strategic observatory the focus is on the analytical methods used during the initial implementation.
3.1. Catalogue of Key Figures

3.1.1. Structure of the catalogue

Based on legal requirements (HEdA²), the quality strategy 2015-2025 of the ZHAW (ZHAW, 2016) states the following: "Governance and quality development are based on relevant qualitative and quantitative information." The catalogue of key figures is developed on the basis of these specifications and serves to meet the need for quantitative information and simultaneously supports management, quality development and accountability. It is a system that produces, procures, distributes and processes information in the form of key figures.

The ZHAW’s catalogue of key figures consists of several cockpits which include key figures from a range of registers of key figures (see Figure 2). Both the cockpits and the registers of key figures can be completed and expanded in the course of time. Hence, the system is reactive and adaptive.

Figure 2: Scheme of the catalogue of key figures ZHAW with examples for cockpits and registers of key figures.

A cockpit always has a specific application context and serves a specific customer (for example, HEI management, managements of departments or study courses, politicians, rankings). A register of key figures refers to a specific source or information supplier.

Parallel to the development of the first cockpit "strategy and quality" described below, a pool of key figures was started, which is a continuing process. The foundations for the creation of this pool were stocktaking by the departments, administrative and support units (finances & services, departments of teaching & learning, research & development, etc.), guidelines and recommendations for universities coming from national institutions (eg in the area of diversity, sustainability, etc) (BBT, 2010; Hofmänner & Pohl, 2010; Schweizer Verband studentischer Organisationen für Nachhaltigkeit (SVN-FDD-FSS), 2016), as well as guidelines and recommendations from international studies and institutions (Brandenburg & Federkeil, 2007; Duong, Hachmeister, Roessler, & Scholz, 2016; Grözinger & Leusing, 2006; Hachmeister, Mö llenkamp, Roessler, & Scholz, 2016; Slunder, 2008; Tropp, 2002).

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² In the Federal Act on Funding and Coordination of the Swiss Higher Education Sector (Higher Education Act, HEdA) the entire higher education area in Switzerland (universities, universities of applied sciences and universities of teacher training) is regulated. The purpose of the HEdA is to define the objectives and principles of organization, procedures, coordination, quality and competitiveness of the higher education sector in Switzerland (see HEdA Art.1)
3.1.2. Methodical development of the cockpit “strategy and quality”

The development of the cockpit “strategy and quality” took place in several stages:

In a first step, the current state of all existing indicators was collected throughout the HEI. This step of analysis was conducted with a quantitative survey, in which the managers of the higher-level organizational units were required to record the key figures and related information (for example, data gathering instruments, metadata, etc) in a spreadsheet. On the basis of this first step, it was possible to determine whether the future cockpit (target state), which is based on the strategic and qualitative objectives of the ZHAW, requires a reduction, rebuilding or a new construction of the actual state. In addition, this allowed building the implementation of the cockpit based on information on existing key figure systems, which can be adopted and/or adapted in the future.

In a second step, the key figures for the cockpit "strategy and quality" were derived from a document analysis of the mission statement, the ZHAW strategy 2015-2025 and the quality strategy 2015-2025 (ZHAW, 2015, 2016). Key figures have not been established for all quality requirements. Many quality requirements can only be assessed by means of narrative and dialogue, provide information on the existence of a specific document or refer to prospective developments of new offers or are not relevant for strategic management through the executive board. For those strategy and quality requirements, which were judged to be suitable for the cockpit, key figures were formed taking the research literature into account. These figures were divided into corresponding categories.

In a third step, the target state was reviewed and prioritized in a workshop in which all representatives of the higher-level organizational units of the ZHAW were represented. The focus in this workshop was on the use of the figures for the executive board.

In a fourth step, the prioritized target state was consolidated once again and shortened also by the executive board in order to determine the relevant key figures for strategic management at the level of the executive board.

3.2. Strategic observatory

ZHAW's quality strategy 2015-2025 (ZHAW, 2016) provides for a "strategic observatory" as a tool for governance (Wassmer, Wilhelm, & Probst, 2017). Against the background of a growing differentiation of societal sectors and the associated environmental complexity (Schimank, 2007, pp. 10–14), as well as the resulting developments and trends that may affect a HEI in the future, a HEI management needs to have the highest possible evidence for its strategic decisions. The description of possible future developments and risks and the "resilience" of the knowledge used and the assumptions made play a central role in a strategic development and planning tool.

3.2.1. Horizon Scanning: definition and demarcation

The ZHAW’s higher education development unit has therefore developed a strategic observatory, based on a "horizon scanning", which monitors the environment of ZHAW. The aim of the project is to identify and analyze future issues and transformation of education and research, considering social, technological, cultural, economic and ecological developments relevant to ZHAW, to improve the security and evidence of development and planning decisions of the HEI management and thus to strengthen the anticipatory leadership.

There is no uniform and systematic conceptual understanding of horizon scanning (Behrendt, Scharp, Zieschank, & van Nouhuys, 2015, p. 24). In general, it can be said that horizon scanning aims to identify diffuse, weak and thus inconspicuous indications of still hazy, blurred, emergent developments in early phases in order to be able to illuminate them in terms of their social relevance and possible positive and negative consequences (Bovenshulte, Ehrenberg-Silès, & Compagna, 2014, pp. 14–15). The approach is used mainly in political, environmental and technological areas, but increasingly also at HEIs. Great Britain, for example, has a higher education think tank called Observatory on Borderless Higher Education, which regularly presents a horizon scanning (Lawton et al., 2013).

In the context of a strategic observatory, horizon scanning offers advantages compared to other approaches to early detection (Gotsch, 2009, pp. 7–11): the advantages over future studies
(including scenarios, impact and trend analyzes, follow-up assessments) is that no particular starting point is referred to. This strengthens the possibility of searching for the not yet known. In addition, horizon scanning is more continuous and less punctual (Behrendt et al., 2015, p. 26; Gotsch, 2009). Vis-à-vis foresight studies - provided that a communicative and participative interpretation are used – horizon scanning provides a less resource-intensive analysis, although the strategic observatory is also based on communicative methods of data collection. In addition, the strategic observatory is roughly equivalent to a foresight process, since, apart from the actual heart of the horizon scanning, an assessment is planned and possible adaptation and directional changes of the strategy as well as possible projects to be initiated are included. However, since the fine-grained methodological focus is placed on the actual horizontal scanning, we can derive concrete variables for document analysis according to Behrendt et al (2015, p. 52; see also Gotsch, 2009, p. 8; Habegger, 2009; Herzog & Prior, 2013). Advantages compared to megatrends consist in the analysis on a deeper level of abstraction, which allows for a stronger differentiation and a more detailed analysis.

3.2.2 Phases of the strategic observatory and methodical conception

The literature identifies ideal typical steps of a horizon scanning. The developed method by the ZHAW is based on these steps and extends them in compliance with the organizational conditions and the objectives of the HEI (see Figure 3).
Basically, three abstraction levels must be considered: On the first stage, clusters are defined (= step 1). On the second stage, topics are collected, systematized and framed in the clusters (= steps 2-4). At the third level, trends, drivers of trends, emerging issues, etc are identified and discussed or validated within the topics (= steps 5-6).
The first step is the field definition. The executive board establishes and prioritizes the clusters to be analyzed in an observatory cycle. This is done on the basis of an auxiliary grid, an exposé presented by the higher education development unit, which also includes the opinions of external experts, as well as its own considerations and additions. The grid consists of a cross between high school policy trends and megatrends\(^3\), that are interesting and relevant for a HEI (vertical axis) as well as the strategic and qualitative objectives of the ZHAW (ZHAW, 2015, 2016) (horizontal axis). In order to ensure a specialist selection of clusters, these are prioritized and commented on by the higher education development unit and by external experts (futurologists and higher education researchers). On this basis, the HEI management defines the scan field and prioritizes the clusters. These clusters are processed in the further steps.

The second step is explorative scanning, in which topics are determined in the clusters defined by the executive board. There are several parallel explorative scannings. In addition to the higher education development unit, further interested investigators from ZHAW’s organizational units can participate in the conducting of explorative scannings. The willingness to participate as well as the allocation of the clusters to be worked on is carried out on a voluntary basis by the respective investigator. The higher education development unit undertakes those explorative scannings, which are not carried out by other investigators. This procedure ensures a high level of motivation and a high commitment to the minimum standards to be fulfilled (see procedural governance). In order to consolidate the results of the various explorative scannings, certain minimum standards must be met. Minimal standards refer to the execution of a document analysis with external sources, where the document body and the examination unit are defined\(^4\), the analysis procedure and the instrument are specified, disclosed and the results presented. Apart from these minimum standards, the various investigators are free in their conducting of exploratory scannings.

Analyses by the higher education development unit are carried out by means of a summary or structuring / categorization (Künzler, 2009, pp. 162–164).

A third step is the systematization of the findings in which the higher education development unit processes the findings of the pre-trial processes. On the basis of the prepared knowledge a recommendation of the topics to be deepened in the focused scanning is worked out, which is then presented to the executive board.

A fourth step is the framing, where the executive board management defines the topics to be deepened.

The fifth step is the real heart of the strategic observatory, where focused scanning and a focus group discussion are carried out. In focused scanning, trends, emerging issues and weak signals are identified in the topics. Again, several focused scannings run in parallel, designed according to the same logic as in explorative scanning. The results must be presented by the investigator in the form of concise theses.

Focused scanning by the higher education development unit is based on an analysis heuristic which allows identifying various variables (derived from the analysis of Behrendt et al., 2015) in the documents. The variables serve as a heuristic framework (Künzler, 2009, pp. 162–164), with the help of which the analysis takes place.

The results of the different focused scannings, presented in the form of theses, are discussed and validated in focus group discussions with experts. This increases the content of future knowledge, creativity and imagination in the identification of drivers for change and future issues. This is an extension and validation of already identified theses.

The sixth step is the validation, in which the results from the focused scannings and from the discussions with the experts are discussed and validated by the executive board, with a perspective to possible adaptations and changes of direction of the strategy and with regard to new projects to be initiated.

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4 Quality criteria in the selection of documents: thematic proximity, timely publication, credibility / reputation.
3.3. Theoretical localisation of the instruments

In the following section, the two presented instruments are theoretically located. This will clarify which instrument was implemented in the institutional environment based on what expectation, and which form of legitimacy is produced by it, respectively which instrument was conceived for reasons of strategic benefits.

By implementing the catalogue of key figures, the ZHAW pursues the intention to meet regulatory and normative expectations of its environment and to achieve pragmatic and moral legitimacy accordingly. With its introduction, the ZHAW strives for pragmatic legitimacy by complying with the formalized rules of the Federal Act on Funding and Coordination of the Swiss Higher Education Sector. These require that higher education institutions are responsible for the introduction and maintenance of a quality assurance system, which systematically contributes to providing relevant and up-to-date quantitative and qualitative information. In addition to the observance of regulative rules, this allows complying to the norm of comparability in the governance mechanism “competition pressure” and thereby striving for moral legitimacy. The catalogue of key figures is an instrument that tries to implement a process socially accepted in the higher education system. The norms of the order of quantitative comparison hold that the generation of key figures that measure the output of an organization is appropriate for the purpose, namely the existence of the organization in this competition regime.

In the context of competitive structures of expectations (which are based on a comparative order) the strategic observatory, on the other hand, has a strategic component and is thus directed more strongly by interests. The aim of the instrument is to react to future developments. The fundamental point remains to persist within the competitive pressure and thus the normative rules of the comparison. However, an attempt is being made to use this instrument to generate advanced knowledge which offers more space for future positioning in the competition. It is therefore attempted to proactively influence future changes, which also affect management, structures, professionalization of the personnel as well as performance measurement. The reason for the instrument is therefore the institutional order. However, the instrument does not represent an unintentional adaptation to this environment, but tries to generate a strategic benefit.

3.4. Conceptual and methodological reflection of the instruments

In the following, the conceptual and methodological challenges of the two instruments are discussed.

The main challenge of the catalogue of key figures was to implement an instrument that was both comprehensive as well as slim and thus resource-saving. On the basis of the results provided by the instrument, the relevant customers of the cockpits should have sufficient information to make strategic decisions. This can only be achieved by means of a secure and broadly based data situation. In addition, the intention was that fewer ad hoc surveys, which are also resource-intensive, should be designed in the future, thanks to a comprehensive system. On the other hand, it is not necessary to generate an unjustified amount of data, for which the purpose of governing the HEI is not given. This initial situation led to the consideration of a modular system, which can be completed and extended as required over time. The responsive and adaptive system can thus take up potential new normative and regulatory expectations from the environment in the form of the expansion of new cockpits and key figure registers.

As described, a cockpit “strategy and quality” was also developed. This cockpit is used to assess the governance, performance and financial resources at the level of the entire HEI. Considering the fact that the different departments differ strongly in their history and resources and therefore also achievements, it is important to include key figures that fit this initial situation. The rigorous operationalization of the demands of the mission statement as well as the HEI and quality strategy allowed it to generate a legitimation for the services and structures to be recorded. The basis was thus documents which were conceived already in several consultation and decision-making procedures.

From the methodological point of view, a major challenge above all was the collection of existing data acquisition systems, as well as associated metadata and key figures. The departments were commissioned to map all existing collection instruments into a given
spreadsheet. The trade-off between simplicity for completeness and complexity for a sufficiently high level of detail was a difficult balancing act, which has not always been quite successful. In addition, the reconstruction of past surveys, especially those which were carried out only once, was difficult. Data consolidation was correspondingly complex. Hence it must be assumed that the collection of the recording instruments is not complete.

Considering the strategic observatory only two conceptual challenges can be addressed, as the first collection cycle is still pending. The biggest challenge was the management of the integration of other organizational units, which also participate in the scannings, in addition to the higher education development unit. Due to different methodological approaches it could be assumed that the agreement on a common analysis procedure would be difficult to accomplish. On the other hand, however, it is not appropriate if each unit carries out its own analyses without coordination with other units. This initial situation led to the decision of the higher education development unit to foresee procedural governance. This makes it possible to specify the objectives as well as minimum standards, within which other investigators can freely choose which analysis methods they use for the scannings.

A second challenge lay in the definition of the scanning field. In this respect, it was of high relevance that a regular selection of the totality of the trends determining the initial scan field was made. In order to determine the totality of the scan field, besides a system of megatrends proposed by a renowned futurologist also a list of inductively developed higher education policy topics was included. In the field definition, the scan field is further limited. In this regard, there is a trade-off between an interest-based and a scientific definition of the subjects to be scanned. The first thematic definition of the scanning field is of high relevance and determines the further phases of the strategic observatory to a maximum. It is therefore necessary to select an initial selection of the topics to be worked on on a scientific basis (by means of expert interviews with futurologists and higher education researchers). This first selection can then be narrowed down in a further step by the executive board, based on reflections on interest and strategy.

4. Conclusion: autonomy gain leads to new dependencies

These explanations show that the autonomy gain from universities is to be viewed dialectically. As a result of and simultaneously with the autonomy gained by HEIs from politics and the associated competitive pressure, the level of their degree of commitment has increased, resulting in a stronger need to visualize and legitimize their achievements. The emancipation from the political authority is replaced by a necessity for the fulfillment of a service mandate (Heintz, 2008; Loprieno, 2016b). The price of institutional autonomy thus lies in the improvement of self-organization and the establishment of legitimation strategies. Politics and science are therefore still interdependent (for example Loprieno, 2016a; Wassmer, Schweizer, Studer, & Leonarz, 2015).

Through the above described instruments, the ZHAW is firstly able to give an account of its structures, processes and its scientific activities, and secondly, it has the possibility to actively shape the future orientation of the HEI and thus its further achievements in competition within the higher education system and to position itself actively. In doing so, ZHAW succeeds in reacting to the described processes in the higher education system - both in response to institutional influences as well as driven by its interests and strategic direction.
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References:


