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# Epistemic Governance in Higher Education

## Quality Enhancement of Universities for Development

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ISSN 2191-5482 ISSN 2191-5490 (electronic)
ISBN 978-1-4614-4417-6 ISBN 978-1-4614-4418-3 (eBook)
DOI 10.1007/978-1-4614-4418-3
Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2012940956



Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

# Acknowledgments

Work input of David Campbell for this book was inspired by work in context of the EUROAC project ["The Academic Profession in Europe: Responses to Societal Challenges (EUROAC)", CRP number "08-EuroHESC-FP-003", "VF15I00273"], awarded by the European Science Foundation (ESF), and specifically funded for Austria by the FWF (Austrian Science Fund, project number "I273-G17"). In particular, David wants to thank the following colleagues at the Institute of Science Communication and Higher Education Research (WIHO), Faculty for Interdisciplinary Studies (iff), University of Klagenfurt, for having created a creative intellectual atmosphere: Hans Pechar, for his guidance into the field of higher education research ("*Hochschulforschung*"), and furthermore to Gülay Ates, Angelika Brechelmacher and Elke Park. For any deficiencies or even possible errors in this analysis, only David is responsible. For a critical proofreading of an earlier manuscript version we also want to thank George S. Campbell.

# Contents

# Abstract

For the further progress of advanced knowledge society, advanced knowledge economy, and advanced knowledge democracy, universities and the higher education sectors are crucial for driving development. How should the governance of higher education, the quality enhancement of universities, and the careers of academic faculty (the academic profession) be organized? Epistemic governance introduces here a novel approach and understanding. Epistemic governance emphasizes that the underlying epistemic structure, the underlying epistemic base, or the underlying epistemic paradigms (knowledge paradigms) of those organizations, institutions, or systems (sectors), which should be governed, are being addressed. This defines a benchmark and set of criteria for internal and external governance in higher education that is interested in applying a good, effective, and sustainable governance. Quality assurance, quality enhancement, and quality management of higher education, from the perspective of epistemic governance, should also orient themselves to quality and quality dimensions that cross-refer to the underlying epistemic structure of higher education. In a traditional understanding, the academic career patterns of the academic core faculty at universities follow a tenure-track logic. Cross-employment (multi-employment), on the contrary, refers to academic faculty (the academic profession) with simultaneous employment contracts to more than one organization only within or both inside and outside of higher education. Epistemic governance, in combination with cross-employment, should add to the organizational flexibility and creativity of universities and other higher education institutions, supporting the integration of a pluralism and diversity of knowledge production (basic research in the context of knowledge application and innovation), the formation of nonlinear innovation networks, and providing a rationale for a new type of academic career model.

# Keywords

Epistemic governance · Higher education · Mode 1 and mode 2 knowledge production system · Mode 3 knowledge production system · Research and experimental development (R&D) · Innovation · Quadruple helix innovation systems · Quintuple helix innovation system · New public management (NPM) · Network governance · Public-private partnerships for research and technological development (PPP RTD) · Tenure-track · Tenured · Tenurable · Cross-employment · Multi-employment

# Chapter 1
# Introduction: Research Questions and Design of the Analysis of Governance and "Epistemic Governance" of and in Higher Education

In the following, we present a comprehensive analysis of *governance of and in higher education* that is based largely on a literature review, thus representing publicly accessible knowledge. We address and cover key publications on these topics, which were released in recent years. This also defines our first research question. Our second research question, however, is in analytical terms already more specific. We apply the concept of *"epistemic governance"* to higher education and elaborate in more detail what epistemic governance may mean for the governance of and in higher education (currently and in the future). *Epistemic governance refers to the epistemic structure and "knowledge paradigms" that underlie higher education.* We compare epistemic governance with the reviewed literature on higher education governance. After a definition of two key terms (governance and higher education) in Chap. 2, our analysis engages broadly in a reviewing and discussion of different concepts of governance of and in higher education (Chap. 3), and compares this with epistemic governance wherever necessary and appropriate. Epistemic governance as such we discuss and present in Sect. 3.2.2. In Conclusion, we then focus on possible implications of epistemic governance for the academic profession (academic faculty) and their academic careers.

Epistemic governance, as a concept and term, was recently introduced and published by Vadrot (2011).[1] She refers epistemic governance to socio-ecological issues. In the context of our analysis, epistemic governance is being applied for the first time to higher education. *Our proposition is that a good, effective, and sustainable governance of higher education is not possible, when the underlying epistemic structure and knowledge paradigms of higher education are not being addressed. For the purpose of quality assurance, quality enhancement and quality management of higher education* (*which we also discuss under the governance*

[1] See furthermore the summary in Campbell and Carayannis 2011, p. iv.

D. F. J. Campbell and E. G. Carayannis, *Epistemic Governance in Higher Education,* SpringerBriefs in Business, DOI: 10.1007/978-1-4614-4418-3_1,

*approach*), *different "quality dimensions" could be developed that again refer directly to the epistemic structure* (*knowledge paradigms*) *of higher education.* The analytical propositions, formulated here, should be understood as working hypotheses and input for a broader discussion on the topics that we see as relevant for the governance of and in higher education now and in the future.

# Chapter 2
# Conceptual Definition of Two Key Terms: Governance and Higher Education

## 2.1 Governance

In etymological terms, the origin of the word "governance" comes from the ancient Greek verb *kybernein* (κυβερνεῖν, infinitive) or *kybernao* (κυβερνάω, first person) that meant *steering*, guiding, or maneuvering a ship or a land-based vehicle, and was used the first time metaphorically by Plato for depicting the governing of men or people (people would be here the modern application). This etymological component of "steering" also is being reflected in the prefix of "cyber" (for example, in words such as "cybernetics"). In the modern English language, "governance" is related to "government" and to "govern" (European Commission 2001a, b).[1] Cybernetics deals with feedback and regulatory systems (Wiener 1948; Umpleby 1990). If this close link between government and governance be continued conceptually, then a definition of governance may be: *governance describes how a government governs*. One may also say, alternatively: *governance addresses how government governs based on feedback*. "*Cybernetic governance*" may be paraphrased as a *Governance of Governance*. There is some conceptual overlap between governance, steering, and also control (see Fig. 2.1 for an illustration). In context of society or the analysis of society, it can be proposed that governance is more comprehensive than steering, and steering is more comprehensive than control. Governance can apply, use, or pursue goals of a steering, but may not be restricted to steering. Steering may have an interest in control. However, it could be questioned whether a "control" of society or advanced society (and an advanced economy) is possible or even desirable. With the spreading of market economies and the collapse of Eastern European Soviet-style regimes, skepticism about the control capabilities increased. Control may be

[1] Compare also with the Wikipedia entries in English and German (retrieved January 1, 2011):
http://en.wikipedia.org/wiki/Governance
http://de.wikipedia.org/wiki/Governance

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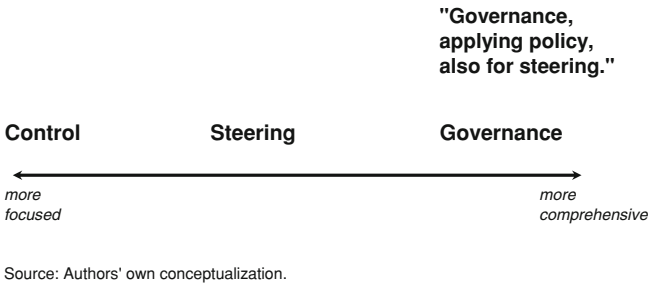



**Fig. 2.1** How focused or how comprehensively may "governance" and "steering" be defined?

feasible for machines. Social control also would have to be modeled upon feedback processes.

## 2.2 Higher Education

A key source for the comparative analysis and study of higher education (HE) is the organization for economic cooperation and development (OECD). The OECD, as an international organization, is interested to collect and to produce information and knowledge of a high quality that follows good standards of transnational comparability. The "Frascati Manual" of the OECD focuses on how to measure scientific and technological activities by proposing a standard practice for surveys on R&D: "The term R&D covers three activities: basic research, applied research and experimental development" (OECD 2002, p 30; see also OECD 1989, 1994). For the institutional classification of the financing and performance of R&D, the OECD (2002, pp 51–74) identifies the following four sectors: business enterprise sector; government sector; private nonprofit sector; and the HE sector. The OECD (2002, p 68) offers the following definition for HE:

> All universities, colleges of technology and other institutions of post-secondary education, whatever their source of finance or legal status. It also includes all research institutions, experimental stations and clinics operating under the direct control of or administered by or associated with higher educations institutions. … The HE sector includes all establishments whose primary activity is to provide post-secondary (tertiary level) education regardless of their legal status.

HE and "tertiary education" overlap and coincide.[2] Universities are and represent crucial organizations (institutions) of the HE sector, however, universities are not the only higher education institutions (HEIs). Therefore, HEIs would be the most

[2] The analytical quality glossary (Harvey 2004–2009) defines tertiary education as: "Tertiary education is formal, non-compulsory, education that follows secondary education", also referring to the term of "third-level education" (http://www.qualityresearchinternational.com/glossary/tertiaryeducation.htm).

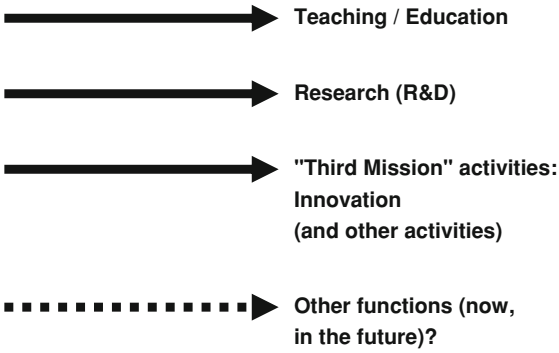



**Fig. 2.2** Functional profile of HE (universities, HEIs)

Source: Authors' own conceptualization.

comprehensive term, referring to universities and non-universities. What is the functional profile, what are the goals (objectives) of universities and the other HEIs of the HE sector (see Fig. 2.2)? Traditionally, HE addresses teaching (education) and research. The concept of the Humboldtian "unity of research and teaching" (*Humboldtsches Bildungsideal, Einheit von Forschung und Lehre*)[3] underscores the mutual cross-references between research and teaching that are so essential for many universities. Universities engage in teaching and in research. Concerning research (R&D), the HE sector (here again the universities) focuses first of all on basic research (see, for example, on the U.S HE sector the National Science Board 2010, p 15 [Chap. 4]). In recent years there have been discussions, to which extent these two core functions (core dimensions) of teaching (education) and research still describe sufficiently the HE sector, or whether it would be additionally necessary also to think of so-called "third-mission" activities. "Can academia encompass a third mission of economic development in addition to research and teaching? … A 'second academic revolution' seems under way since World War II, but more visibly since the end of the Cold War" (Etzkowitz and Leydesdorff 2000, p 110). Here, it is being considered that universities and the HE sector should create a knowledge that contributes to the development of society (and democracy) and that is also economically feasible. In this understanding, the universities and HE sector are crucial for the advancement of knowledge-based societies, economies, and democracies, with the more recent preference to speak directly of knowledge societies, knowledge economies, and knowledge democracies (Carayannis and Campbell 2011, 2012, p 55). Lundvall (1992, p 1) stresses that

[3] Pasternack (2008, p 20) asserts that Wilhelm von Humboldt himself did not use the phrase of a "unity of research and teaching" in a literal sense, but that this wording was created later in the process of interpreting the work and scholarship of Humboldt. According to Pasternack, Humboldt emphasized two aspects in reference to the understanding of that phrase: first, to define the sciences as an ongoing research process; second, to distinguish between teaching (and education) at schools and at universities.

> …it is assumed that the most fundamental resource in the modern economy is knowledge and, accordingly, that the most important process is learning. The fact that knowledge differs in crucial respects from other resources in the economy makes standard economics less relevant.

The processes of linking knowledge creation and knowledge production of the HE sector to knowledge application, knowledge use and knowledge diffusion are also being reflected in the concept of innovation (Carayannis and Campbell 2010, p 45). Innovation, therefore, represents an important example for those new third-mission activities of universities and other HEIs. The concept of the "Entrepreneurial University" (Etzkowitz 2003) addresses such issues. Etzkowitz and Leydesdorff (2000, p 111) define the Triple Helix model of knowledge and innovation on the basis of "University–Industry–Government Relations", the Quadruple Helix adds here the perspectives of a "media-based and culture-based public" and of "civil society" (Carayannis and Campbell 2009, p 207, 2011, 2012, pp 13–14), and the Quintuple Helix contextualizes the Quadruple Helix in context of the "natural environments" of society (Carayannis and Campbell 2010, p 62). Other examples for third-mission activities of HEIs would be the "civic mission" of "civic education".[4] We can only speculate, whether during the further course of the twenty-first century an additional fourth function (dimension) might arise for HE systems, which does not exist on our conceptual maps so far. In intellectual terms, it appears always necessary to think about the "future of the university" (Mittelstrass 2010).

The two periodical key publications and key data bases (sets of indicators) of the OECD, which refer to HE, are: "Education at a Glance" (e.g., OECD 2010, 2011b)[5] and the "OECD Science, Technology and R&D Statistics" (OECD 2011a, 2012). The later combines and integrates the data bases "Research and Development Statistics" and "Main Science and Technology Indicators".[6] While addressing HE, these data bases, however, are also broader than only HE. "Education at a Glance" covers the whole education spectrum, but includes also the tertiary education that is being delivered by the HE sector. The same is true for the "OECD Science, Technology and R&D Statistics" that refer to the whole research and experimental development (R&D) spectrum, including the R&D of the HE sector. This implies that the OECD approaches here HE from two different functional sides, from education (teaching and education) and research (R&D), but, so far and for the moment, there exists no OECD data base (periodical publication) of equivalent format that focuses on HE comprehensively in the sense of addressing the whole functional profile and spectrum of HE (see again Fig. 2.2). Of course, the higher-education-oriented data of "Education at a Glance" and the

[4] See here also the research work of Professor Jasminka Ledić and of her Croation research team.

[5] See on the OECD website: http://www.oecd.org/document/2/0,3746,en_2649_39263238_48634114_1_1_1_1,00.html.

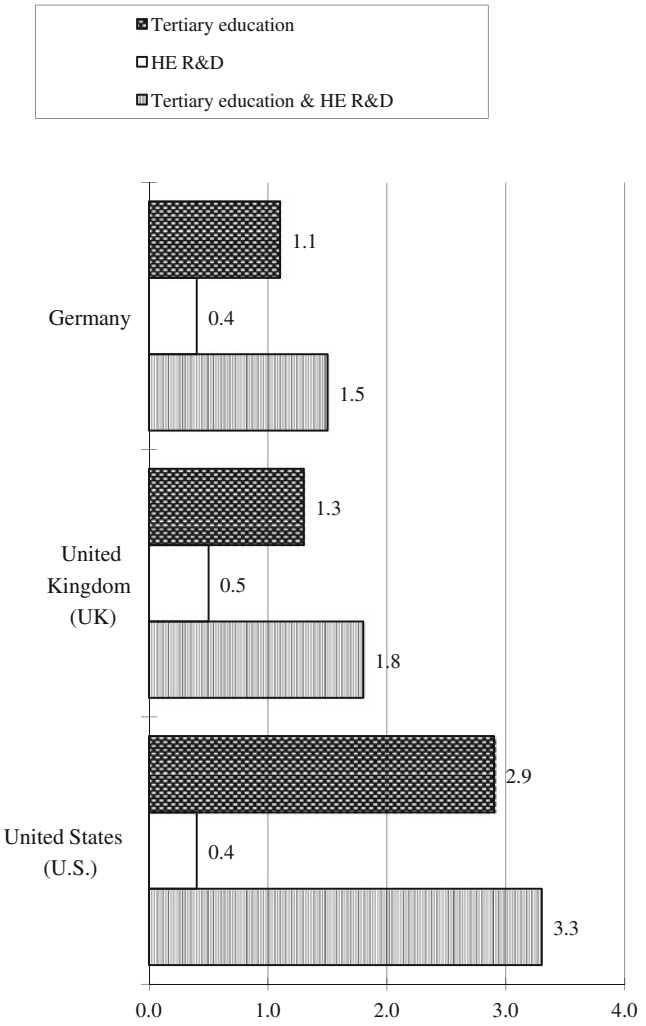
[6] See also on the OECD website: http://www.oecdbookshop.org/oecd/adv_search.asp?CID=&LANG=EN.

higher-education-oriented data of the "OECD Science, Technology and R&D Statistics" can be aggregated together jointly, and there is good reason to believe that this will produce a good and comparable assessment of the performance of the HE sector. However, we then still face potential problems in detail: first, what is with the coverage of functions of HE other than education (teaching and education) and research (R&D); second, how sure can we be that there may not be some boundary problems between these two OECD data bases, complicating the simple adding-together of data? Such issues certainly challenge comparative analyses that are interested in carrying out in-depth analysis of the academic profession (academic faculty) and their careers in the HE sector.

Figure 2.3 displays for Germany, the UK (United Kingdom) and the US (United States) the empirical results when expenditure on tertiary education and on HE R&D is being added together for the year 2006, based on OECD data (OECD 2009, 2011a), and expressed as a percentage of the gross domestic product (GDP). We see that tertiary expenditure for education is clearly higher than tertiary expenditure for research (the ratio in favor of education is in the UK 2.6, in Germany 2.8, and in the US even 7.3). In Fig. 2.4, the tertiary expenditure for education and research is being differentiated according to public and private funding resources (again Germany, the UK and the US in comparison, for 2006, based on OECD 2009, 2011a).[7] A first assessment of the empirical results leads to the following observations and propositions for the presented three-country sample: (1) In all three countries the public financing clearly dominates the HE research. (2) In Germany and the UK public financing dominates tertiary research as well as tertiary education. For those countries it appears plausible, at least to a certain degree, to see HE as a sector that still could be interpreted as belonging to the "public sphere" of society. If so, then the application of a public management perspective for the analysis or governance of HE makes particularly sense.[8] We can speculate whether the examples of Germany and the UK allow us to conclude or postulate here a general picture or a general evidence for HE in Western Europe. (3) In the US, the public financing dominates the research that is being carried out in the HE sector. However, tertiary education, on the contrary, is clearly dominated by private financing. In fact, the private financing for tertiary education alone (even without the private financing of HE research) already outpaces the combined public financing for tertiary education and tertiary research.

[7] As a systematic estimator for public financing of R&D in HE we only refer to "government" (the category government combines "direct government" and the "general university funds, (GUF)"). This probably underestimates the public funding share, because in the funding category of "funds from abroad" there are also public components: for example, other national governments, the European Commission and international organizations (see OECD 2011a, 2012). Only in the case of the UK, we corrected our calculations for this bias of an underestimation of the public in the funding resources from abroad (see again the Figs. 2.4 and 2.6).

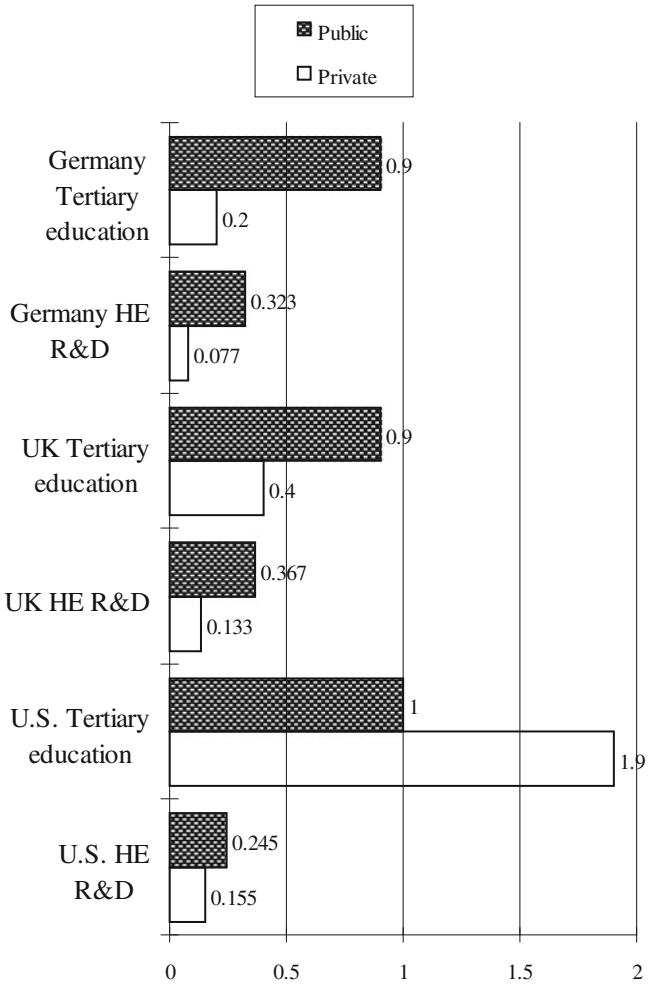
[8] See later in Sect. 3.2.3 our discussion on the "public management perspective" in context of the "new public management narrative" (Ferlie et al. 2009).




Source: Authors' own calculations based on OECD (2009 and 2011a).

**Fig. 2.3** Expenditure on tertiary education and HE R&D as a percentage of GDP (2006)

This leads to conceptual ambiguities (at least from a European perspective): Does HE in the US fall into the "public sphere", the "private sphere", or a "hybrid sphere" of American society? The possible application of a public management perspective to HE implies for the US context additional ramifications that differ from Western Europe. Taking into account the sheer volume or size, it becomes evident that the US-HE system is comparable to the comprehensive HE in Western




Source: Authors' own calculations based on OECD (2009 and 2011a).

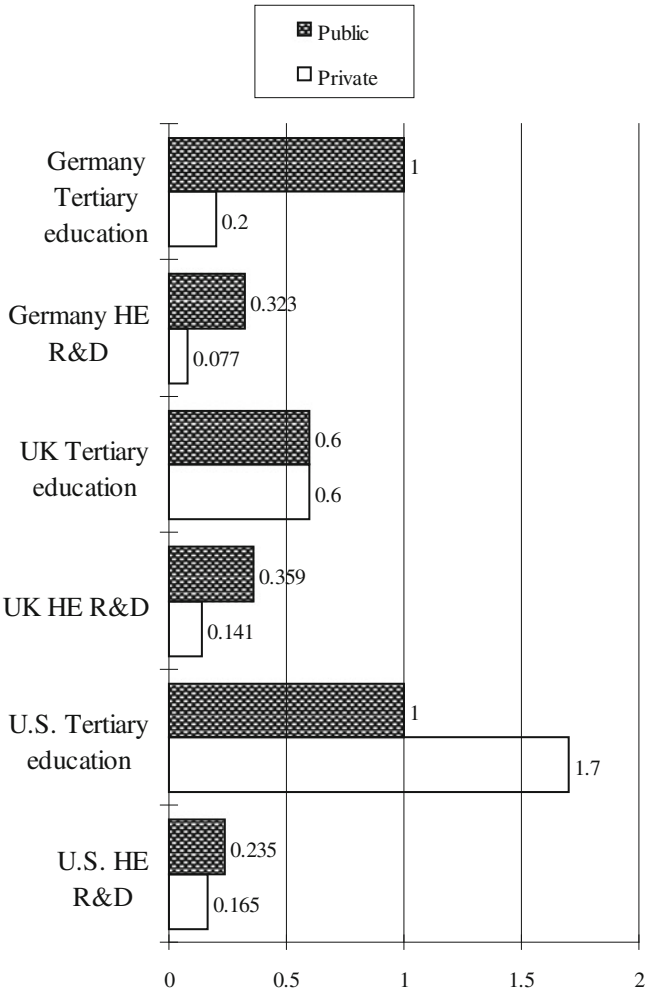
**Fig. 2.4** Public and private financing of expenditure on tertiary education and HE R&D as a percentage of GDP (2006)

Europe. Therefore, a particular challenge for Western Europe appears to be, whether or not a trendsetter role could or should be assigned to HE in the US, in terms of analysis and in terms of governance. Does the present situation in American HE tell us something about the European future? It is just as legitimate, of course, to ask what the US can or could learn from HE in Western Europe generally, and the different national HE systems across Western Europe more particularly?


Source: Authors' own calculations based on OECD (2011b and 2012).

**Fig. 2.5** Expenditure on tertiary education and HE R&D as a percentage of GDP (2008)

In the Figs. 2.5 and 2.6, our calculations for the expenditure and the public and private financing of tertiary education and HE R&D in Germany, the UK and the US are being updated in reference to the year 2008 (see also OECD 2011b, 2012). For the UK, we see that now the private funding of tertiary education is at balance




Source: Authors' own calculations based on OECD (2011b and 2012).

**Fig. 2.6** Public and private financing of expenditure on tertiary education and HE R&D as a percentage of GDP (2008)

with the public funding. When we compare the situation in 2008 with earlier in 2006, does this allow us to suggest a proposition on whether or not there operates a certain trend or momentum favoring a faster growth of private financial resources for tertiary education and R&D in HE?

# Chapter 3
# Governance: Governance of and in Higher Education

## 3.1 Governance: The Increasing Complexity of Governance, Self-Governance, the "Evaluative State", Markets and Quasi-Markets

Conventionally, in a standard understanding, governance is being associated with governments. However, governance also could be used more generally with regard to strategies and decision-making of political and non-political organizations and institutions.[1] Under the general title of "good governance" the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) defines governance as: "the process of decision-making and the process by which decisions are implemented (or not implemented)" (ESCAP 2011, p 1). Huisman (2009, p 2) points toward the importance of the state-society relationship for public policy: "One of the central notions in public administration and public policy and

[1] In context of higher education, the concept of the organization conceives higher education more as a "social organization", focusing also on the social structures and processes of the (individual) members in such organizations. The perspective of HEIs (Higher Education Institutions), on the contrary, emphasizes seeing higher education in reference to institutional aspects, exactly as a "(public) institution", looking more closely on the (official) functioning of the higher-education institution internally and the (governance) interaction between the higher-education institution and the government and other external institutional actors. Universities and other HEIs, therefore, can always be approached from an organizational as well as an institutional perspective. The glossary of EVALAG (Evaluationsagentur Baden-Württemberg) states here: "Die Begriffe 'Institution' und 'Organisation' sprechen zwei unterschiedliche Aspekte der Hochschule an: Die Hochschule als soziale Organisation ist gekennzeichnet durch das Zusammenwirken von Individuen und Kollektiven auf der Grundlage geronnener sozialer Regeln. Organisationen haben die Fähigkeit zur kollektiven Willensbildung und Steuerung des Handelns bzw. Verhaltens ihrer Mitglieder. Die Hochschule als (staatliche) Institution ist gekennzeichnet durch Regelwerke der Verteilung und Ausübung von Macht, der Festlegung von Zuständigkeiten und Verantwortlichkeiten, der Verfügung über Ressourcen sowie durch Hierarchien bestimmter Ausprägung" (EVALAG 2011, p 1).

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political science is the relationship between state and society and—more specifically—whether, and if so how, the state (government) should steer, plan, regulate and control societal sectors (and individuals). The basic questions around this relationship relate to the division of responsibilities between the nation-state … and public and private institutions as well as individual citizens." For our context we want to propose that the terms of "societal sectors" and of the different "systems (subsystems)" of society could be used as interchangeable concepts. Examples for different systems of society are the political system, the economic system and the higher education system (labeled by the OECD officially as higher education sector). Policy actions of the government can be regulative, financial or communicative (Hood 1983). Huisman (2009, p 2) stresses that in "the traditional literature, governance is almost synonymous with government" when considering processes of governing: "In this setting, governmental policies were the main steering instruments to give direction to the state's role in societal affairs, acknowledging that there were quite different manifestations of the state's role."

A system consists of "elements" or "parts" and a "self-rationale" or different self-rationales (Carayannis and Campbell 2006, pp 5, 10; Carayannis and Campbell 2009, p 204; see also Box A in Sect. 3.2.2). As one functional definition of governments or the political system more broadly, we, therefore, could propose: *government governs or wants to govern society. With policy the government governs* (*steers*) *or intends to govern* (*to steer*) *society and the different systems* (*subsystems*) *of society, including the economy and the higher education sector*. This governance function of governments can also be seen as a "self-rationale of the political system" (Carayannis and Campbell 2006, p 9):

> The political system has or should express a responsibility for the overall performance of a society. The 'governance of society' can be defined as a self-rationale of politics: through policy (policy-making) and legislation or—alternatively—steering, coordination and communication the political system attempts to influence the dynamics of a society and economy, and tries to support the performance (and self-rationales) of the other systems (Campbell 2001, p 428).[2] Put in summary, the political system is interested in effectively stimulating and coordinating the performances of the other systems and thus enhancing a synergetic performance surplus.

The concept of the "political economy" focuses on state-economy interactions, but again framed in the context of society. Sodaro (2004, p 297) presents this in the following way: "Political economy is the study of how communities pursue collective economic goals and deal with conflicts over resources and other economic factors in an authoritative way by means of government". Sodaro (2004, p 308) integrates this definition into his broader definition of the welfare state: "Broadly defined, the welfare state is a form of political economy in which the state assumes responsibility for the general welfare of its population, especially its most vulnerable elements, through spending on such items as education, housing, health

[2] Later, in Sect. 3.2.2, we develop how the underlying "knowledge paradigms" of higher education express a decisive influence on the higher education system.

care, pensions, unemployment compensation, food subsidies, family allowances, and other programs." It should be emphasized that Sodaro qualifies education as an element belonging to the welfare state.

The complexity of governance and the complexity of our understanding of governance have increased considerably during recent years. Rhodes (1996) raises the question of whether or whether not there could be a *Governing without Government?* Rhodes (1996, p 653) distinguishes between the following "uses of governance": "as the minimal state"; "as corporate governance"; "as the new public management" (NPM); "as good governance"; "as a socio-cybernetic system"; and as "self-organizing networks". "Initially, the 'NPM' had two meanings: managerialism and the new institutional economics. Managerialism refers to introducing private sector management methods to the public sector. …The new institutional economics refers to introducing incentive structures (such as market competition) into public provision".[3] Rhodes (1996, p 652) is inclined to emphasize particularly the self-organizing networks: "I stipulate that governance refers to 'self-organizing, interorganizational networks' and argue these networks complement markets and hierarchies as governing structures for authoritatively allocating resources and exercising control and co-ordination". In the words of Rhodes (1996, p 658) "Governance is about managing networks", and "I use the term network to describe the several interdependent actors involved in delivering services" (Rhodes 1996, p 658). Shared characteristics of this network-style governance are for Rhodes (1996, p 660): "Interdependence between organizations"; "Continuing interactions between network members"; "Game-like interactions"; and: "A significant degree of autonomy from the state. Networks are not accountable to the state; they are self-organizing".[4] A few years before Rhodes, already Raab (1994, p 17) posed:

> New forms of governance constitute attempts to cope with the complexity, dynamics and diversity of socio-political systems through more effective instruments than were disposed of by traditional mechanisms of state control or the market. These instruments may take the form of co-ordinated action in networks linking many organizations, some of which are self-regulating, and in which governance may steer 'at a distance' … but may not necessarily control or determine outcomes.

*Steering at a distance* was introduced as a new paradigm by the public governance of higher education in the Netherlands (Kickert 1995).[5] Geuna et al. (2003) also raise the question whether or not the governance of higher education should refer more to science-as-a-public-good or to science-as-a-network (see Sect. 3.2.3 later on).

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[3] See later in Sect. 3.2.3, how Rhodes (1996) influenced the "Network Governance" narrative of Ferlie et al. (2009).

[4] See also Rhodes (2008) and Rhodes et al. (2009).

[5] According to Raab (1994, pp 17, 20), Walter Kickert presented his article (Kickert 1995) already earlier as a paper during a workshop organized by the European Consortium for Political Research at the University of Essex, back in 1991.

Systems theory emphasizes the increasing complexity of society as well as the increasing complexity of attempts of trying to "steer" society or the different systems (subsystems) of society.[6] In that context, systems theory has an inclination to focus on the "self-organization" of society, speaking also of self-reference and "self-steering". *Modern society has become so complex, so that governance is only possible by leveraging processes of self-organization, self-steering and self-governance*. Willke (1998, p 1) asserts that according to systems theory the only "steering" or "governance" (*"Steuerung"*) possible is a steering or governance based on the self-steering or self-governance of the different systems of society.[7] The German-language systems theoretical term of *"Steuerung",* as being used for example by Willke, probably could be closest translated into English with "steering", but may also be further interpreted as a form of governance. Willke (1998, p 1) portrays a "paradoxical steering skepticism" ("*paradoxe Steuerungsskepsis*"). From a systems theoretical viewpoint, the steering is challenged by "state failure" ("*Staatsversagen*") as well as "market failure" (*"Marktversagen"*), and thus is interested to develop a new perspective for successful steering and governance in and of advanced societies (Willke 1998, pp 1–2). Willke (1989, pp 44–54) discusses self-reference in connection with the *"Entzauberung von Hierarchie als Ordnungsprinzip"* ("disenchantment of hierarchy as an organizing principle"). According to Willke (1989, pp 130, 134), only such (external) governance of "social systems" (i.e. the subsystems of society) is possible, successful or sustainable that acknowledges the self-rationale (self-logic) of the different subsystems. External governance, therefore, should be more understood as a form of "guidance for self-steering" (*"Anleitung zur Selbststeuerung"*),[8] a "controlled motivation for a self-change of autonomous systems" (*"kontrollierte Anregung zur Selbständerung autonomer Systeme"*)[9] or "incentives for a self-change" (*"Anreize zur Selbständerung"*). Willke (1989, p 134) introduces here the idea of a

[6] For an example of an interesting analysis of the applicability of systems or networks to the field of research policy, see Kritzinger et al. (2006).

[7] "Zum einen hat sich eine systemische Steuerungstheorie damit auseinanderzusetzen, dass die neuere Systemtheorie Steuerung überhaupt nur in der Form der Selbststeuerung begreiflich machen kann. Sie betont mit triftigen Gründen die Eigenlogik, Autonomie und operative Geschlossenheit komplexer System und schließt daraus, dass eine direkte externe Beeinflussung oder Steuerung keinen Erfolg haben kann" (Willke 1998, p 1).

[8] "Es erscheint deshalb angebracht, eine angemessene Konzeption der Intervention in komplexe Sozialsysteme zu entwickeln. Diese sollte nicht mehr auf der Vorstellung direkter kausaler Steuerung gründen, sondern auf der Vorstellung einer *Anleitung zur Selbststeuerung*. Komplexe Systeme, die an ihren eigenen spezialisierten Operationsmodus gebunden sind, können Außenwirkungen überhaupt nur dann als Informationsangebote 'verstehen' und auswerten, wenn diese in einer Form vorliegen, die nach den Suchschemata (Beobachtungskriterien, Leitdifferenzen) des intervenierten Systems Sinn machen" (Willke 1989, p 130).

[9] "Erst die allmähliche Einsicht in die Besonderheiten der Operationsweise komplexer, selbstreferentieller Systeme verhilft dazu, die Problematik korrigierender Intervention in einen geeigneteren Bezugsrahmen zu bringen: in denjenigen der Bedingungen der Möglichkeit einer kontrollierten Anregung zur Selbständerung autonomer Systeme" (Willke 1989, p 130).

"decentralized context steering" or a "decentralized steering by context" (*"dezentrale Kontextsteuerung"*), meaning that external actors of governance, interested in influencing or changing the self-steering of social systems, can try to change the context or contextual conditions of exactly that system.[10] This implies that possibilities or options for steering are nowadays more modest (more limited) and might even become further modest (further limited). For a system (subsystem) of society the other systems (subsystems) behave as environments or as social environments (Willke 1989, p 86; see also Luhmann 1988, p 292).[11] This steering-approach of a decentralized *steering by context* (or via *context*) also implies conceptually that possibilities or options for a steering are being reduced or constrained. A simple external steering (governance) of systems (subsystems) appears no longer feasible. Willke (1983) speaks here also of the *"Entzauberung des Staates"* ("disenchantment of the state"). Higher education certainly qualifies as a system (subsystem) for applying systems-theory thinking. Perhaps it is also achievable to conceptually bridge or link systems (the "parts" or "elements" and the self-rationale of systems) with "clusters" and "networks", to further advance analyses of knowledge and innovation (Carayannis and Campbell 2006, p 10; 2012, p 10). This means that in conceptual terms the question or challenge arises, whether or not "systems" could be re-modeled and re-interpreted according to the characteristics or properties of "networks" (and vice versa).

Policy or policies qualify as key steering tools for governments and for governance. "In this setting, government policies were the main steering instruments to give direction to the state's role in societal affairs…" (Huisman 2009, p 2). However, the state and the governments lost their *far-reaching monopoly of and over governance* during the last years and decades, also in a conceptual sense, which is just as important as the unfolding (and identification) of empirical trends. In parallel to governments, also non-governmental institutional and organizational actors engage increasingly in governance. Governmental and/or non-governmental

[10] "Möglich sind *kontextuelle Interventionen,* die in Form einer Optionenpolitik die Kontextbedingungen für ein System oder Problembereich verändern und andere Optionen ins Spiel bringen. Ich habe dies in anderen Arbeiten ausführlich als Idee der *dezentralen Kontextsteuerung* erörtert… Und erst die Fähigkeit zu einem reflexiven Verstehen der Operationslogik anderer Systeme ermöglicht es einem Akteur, Interventionen so anzusetzen, dass damit Änderungsprozesse nicht blockiert, sondern Anreize zur Selbständerung gegeben werden" (Willke 1989, p 134).

[11] "In der neueren Systemtheorie tritt dieses Paradigma von Teil und Ganzem in den Hintergrund und wird ersetzt durch die leitende Vorstellung einer *Differenz von System und Umwelt*. Zwar bilden entwickelte Systeme, etwa Gesellschaften, durchaus auch interne Umwelten aus im Sinne domestizierter Räume, in denen sich die Subsysteme des Gesamtsystems bewegen. Doch kann das Verhältnis zwischen Systemen und Subsystemen nicht mehr begriffen werden als die Beziehung zwischen einem Ganzen und seinen Teilen. Vielmehr wird es nun verstanden als *intersystemische* Beziehung, welche im Medium einer gemeinsamen unterschiedlichen Umwelt die je spezifischen System-Umwelt-Relationen partiell autonomer Systeme umfasst" (Willke 1989, p 86).

actors create *networks of governance*.[12] We already cited the network-oriented propositions of Rhodes (1996) on options and the possibility of a *governing without government* that may also be re-phrased to forms of *governance without government*. Huisman (2009, p 2) summarizes these trends of a policy transformation in the following way: "In recent decades, the general role of government as the 'lone coordinator', particularly in Western Europe, has changed. Partly, its steering role has been eroded by challenges to the efficiency and effectiveness—and thus the legitimacy—of the traditional state model." Pluralism in society increases (van Heffen et al. 2000). New "coordinators" and new modes of governance and new principles of steering entered the "policy arenas", for example: "quasi-markets" (LeGrand and Bartlett 1993), network-based governance (Rhodes 1996), NPM (Ferlie et al. 1996; Pollitt 2003), governance in a multi-actor and multi-level framework (Peters and Pierre 2001), and forms of interactive governance (Denters et al. 2003). Treib et al. (2007, p 8) assert that there can be very different "steering modes" of governance and the actors involved may be "public actors only", "public and private actors" as well as "private actors only". In a "typology of modes of governance in the politics dimension", Kritzinger and Pülzl (2008, p 295) distinguish between "Statism (public actors)", "Corporatism (social partners and public actors)" and "Pluralism (private and public actors)". In their typology of modes of governance in the "polity dimension", Kritzinger and Pülzl identify "Hierarchy" and "Market" as the two dominant structures (structural principles) for their proposed analytical model of governance. Clarke and Newmann (1997, p ix) suggest the concept of the *Managerial State:* "We talk about the *managerial* state because we want to locate managerialism as a cultural formation and a distinctive set of ideologies and practices which form one of the underpinnings of an emergent political settlement. The book sets out to explore the impact of managerialism on key sets of relationships: those between state and citizen, between public and private, between the providers and recipients of social welfare, and between 'management' and 'politics'". Ferlie et al. (2008; 2009) are inclined to emphasize a so-called "public management perspective" with regard to steering and governance. Other newly emerging conceptualizations of the state, the government and governance are: "Competition State" (Cerny 1997); "Regulatory State" (Moran 2002); "Audit Society" (Power 1999); "Managerial State" (Clarke and Newman 1997); "Enabling State" (Gilbert and Gilbert 1989; Page and Wright 2007); "Contract State" (Di Francesco 2000; Spoehr 1999); and "moderation of politics" and "procedures of evaluation as a medium for moderation

[12] It could be argued that institutionally (de facto) the supranational EU resembles only a "weak state", i.e. a weak government. However, in terms of sustainable policy, the EU imposes a regime of "strong governance" (at least in some policy fields). The proposition here, for the EU, would be the paradoxical correlation of a weak government in combination with strong governance.

(negotiation)" (Kuhlmann 1998).[13] Neave (1988, p 7) speaks of the "Rise of the Evaluative State", addressing the relationship between government and higher education (see also: Neave 1998; Neave and Van Vught 1991; and Maassen 1997).

What have these new propositions and concepts about governance in common? Too simple approaches of governance, where governments are interested to express a direct "control" over society trough a massive policy-steering, become less and less realistic or feasible, at least for advanced and knowledge-based societies, economies and democracies (see again Fig. 2.1).

> The successful governance by a government requires increasingly an overlapping interplay of governmental governance with the self-governance of the governed systems, sectors, institutions and organizations of society. This interplay of external and internal governance should create a surplus and additionality for governance.

The productive interaction of governance and self-governance demands further that external governance is sensitive for the self-rationale, objectives and the underlying paradigms that structure and process the systems (subsystems), sectors and institutions of society.[14] Without knowing what the objectives and rationales of the systems and institutions are, governmental governance runs a high risk of failing. Governmental governance depends crucially on information and feedback. Therefore, concepts of cybernetics and systems theory might offer interesting benchmarks and orientations. As already stated earlier, governance should take into account how government should or could *govern also based on feedback*. In context of this new understanding of governmental governance, new and "innovative" roles are being offered to governments, allowing for key governance functions being such as coordination, communication, negotiation and networking. Sustainable governance and policy are knowledge-based in the sense of supporting the creation and diffusion of knowledge, furthermore attempting to apply knowledge-based policy, and providing governments with the capabilities and properties of acting as an "evaluative state". This all is being bundled under the umbrella of *good governance*. *Good governance also addresses how governmental governance aligns with non-governmental governance in networks of good governance.*

The proclaimed spreading of markets into the public sphere, for example as being exemplified by the concept of "quasi markets" (LeGrand and Bartlett 1993; Denters et al. 2003) and definitions of NPM (Rhodes 1996, p 655), often is interpreted as a diffusion of economic rationales out of the economic systems into other systems (subsystems) or sectors of society. "Currently a comprehensive spreading of an economic rationale is postulated. In that context, markets often are classified as an economic concept, integrating the principles of supply and

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[13] "Moderation of politics" falls here more in line with a "negotiation of politics", when Kuhlmann (1998, p 167) emphasizes that his book reflects on "… zu den Bedingungen der Möglichkeit der Moderation von Politik und der Bedeutung von Evaluationsverfahren als Moderationsmedium".

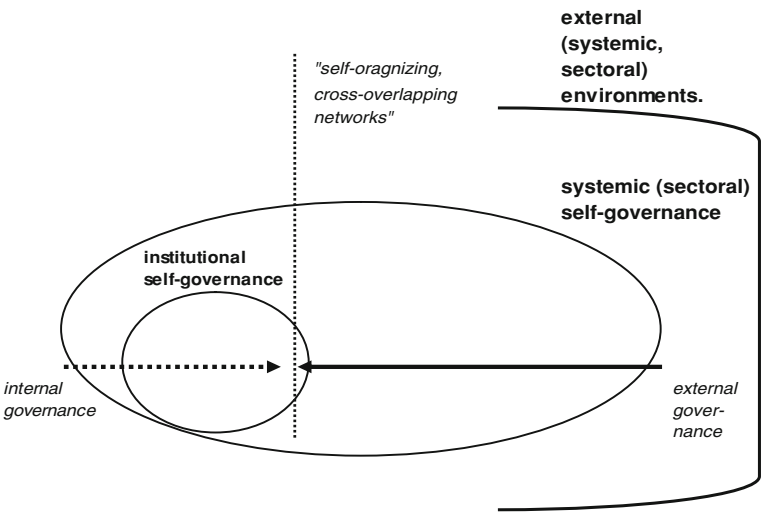
[14] See and review later, in Sect. 3.2.2, the arguments, how the "self-rationale" and the underlying "knowledge paradigms" of higher education interfere and interplay.

demand" (Carayannis and Campbell 2006, p 3). At the same time, however, this primary or only economic understanding of markets could be questioned. Markets (quasi-markets) could be re-modeled more generally as systems being driven by interaction and feedback: "(*economic*) *markets = a specific type of a system?*", and the "systems theoretical approach to markets may interpret the market as a system, operated by complex feedback mechanisms (coupling inputs and outputs), which, in an economic context, refer to the interaction of supply and demand" (Carayannis and Campbell 2006, p 3). *In that sense markets* (*quasi-markets*) *are potentially helpful in supporting the self-governance of systems, of sectors and institutions*. Put in other words: governance of advanced societies, relying substantially on self-governance, might be complicated should market (quasi-market) structures not have matured and diffused. A lack of markets (quasi-markets) may correlate with extremer forms of hierarchy, correlating perhaps with a governmental interest of wanting to control society more directly, which again would be at conflict with complexity and the prerequisites and requirements of complexity of advanced societies. Of course, there also can be an overemphasis on markets. However, a spreading of markets (quasi-markets) could claim some plausibility, as long as markets are not only being understood purely economically. Thus it appears necessary to prevent a total and complete capturing of the markets (quasi-markets) by the economic rationale. "Phrased simply, wealth creation defines a primary function of an economy" (Carayannis and Campbell 2006, p 9). Non-economic markets must express rationales different from economic markets.

## 3.2 Governance of and in Higher Education

Figure 3.1 depicts visually, how internal governance and external governance possibly relate to each other. "Institutional self-governance" (for example, of universities or other HEIs) focuses on the "internal governance", which, however, is also exposed to the impact of external governance (attempts) of other institutions or systems (sectors). A whole system (subsystem) or sector of society, such as the *higher education sector,* displays the *interplay of internal governance* (*institutional self-governance*) *and of external governance*. To the extent that this interplay takes place "within" the boundaries of the system, this interplay still could be interpreted as a form of self-governance at the systemic macro-level. However, a system (sector) may also be accessed by external governance from outside of the system, i.e. the external governance attempts from other systems (sectors) and their institutions.[15] Traditionally, governance was associated closer

[15] Referring to systems theoretical notions, "external governance" also could be interpreted as something that constitutes (co-constitutes) an "external environment" for institutions, sectors and systems, since institutions (sectors, systems) must adapt or at least reflect on their external (social, societal) environments, including external governance attempts (see again our analysis in Sect. 3.1 and the specific references to Willke 1989, and Luhmann 1988).




Source: Authors' own conceptualization.

**Fig. 3.1** The institutional and systemic interplay of "internal" and "external" self-governance

with governments. Only more recently, non-governmental governances were added in conceptual terms to governmental governance. Focusing on the relationship of governments (political system) and higher education (higher education system), one can set up the proposition that this was originally understood more as a *governance of higher education.* With a growing awareness for self-governance and internal governance, this governance-of-higher-education gradually has become replaced by a *combined governance of higher education and governance-in-higher-education*. *Interplay and interfaces of external and internal governance of higher education* are important, but define and represent also crucial challenges for higher education. These interplays manifest themselves in complex, self-organizing and cross-overlapping networks that cross-cut institutions and sectors, following patterns of cooperation and competition at the same time, a dynamics of *"co-opetition"* (Brandenburger and Nalebuff 1997). We already cited the metaphor of Rhodes (1996, p 658), who portrays "Governance as Self-organizing Networks" (see also Goodwin 2009).

### *3.2.1 Governance of Higher Education in the Knowledge Society and Knowledge Economy: The "Knowledge State"*

Theories of the knowledge-based society and knowledge-based economy assert that knowledge becomes increasingly decisive for the further development and progress of the economy and society (Rodrigues 2002; Carayannis and Campbell

2009). Lundvall (1992, p 1) proposes "… that the most fundamental resource in the modern economy is knowledge" and "… that the most important process is learning".[16] This growing importance of knowledge for the advancement of economies and societies is also being conceptually emphasized by the current inclination not to speak of a knowledge-based economy or knowledge-based society, but more of a knowledge economy and knowledge society. In addition, the knowledge economy and knowledge society are being complemented by a knowledge democracy (knowledge-based democracy) (Carayannis and Campbell 2006, p 19; 2009, p 224; Carayannis and Campbell 2010, p 52; 2012, p 55). The concept of the political economy focuses on the interface of politics and society *or* politics and the economy. Already in Sect. 3.1 we introduced the terms of political economy and of the welfare state, reviewing the scholarly work of Michael J Sodaro. According to Sodaro (2004, p 308), welfare state is a form of a political economy. We want to propose that in context of the knowledge economy and knowledge society also the political economy of the welfare state is challenged to develop further a specific profile.[17]

We suggest the following functional definition for political economy in context of knowledge society and knowledge economy, with cross-ramifications for the knowledge democracy:

> for the knowledge society and knowledge economy the political economy emphasizes (should emphasize) that the state (government) supports and leverages knowledge (including research, education) and innovation for the welfare of society and the performance of an economy.

In this context, therefore, one could also introduce the concept of the "Knowledge State" (Campbell 2006a, pp 25–27). The political system, more specifically governments, expresses a functional interest in governing society and also the economy. This, in fact, represents a possibility for how to define political systems and governments (from a functional logic and perspective). The

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[16] Lundvall (1992, p 18) describes this knowledge in and for the knowledge economy in the following terms: "Knowledge does not decrease in value when used. On the contrary, its use increases its value; i.e. knowledge is not scarce in the same sense as other natural resources and technical artifacts. Some elements of knowledge may be transferred, easily, between economic agents while others are tacit and embodied in individual, or collective, agents."

[17] Conceptually, of course, political economy and the knowledge economy can be constructed or interpreted as an antithesis. This is partially done by Leydesdorff (2012, pp 25, 32), when he asserts: "In a knowledge-based economy—as against a political economy—the structure of society is continuously upset by transformations which originate from the techno-sciences. … The transformation from a political economy to a knowledge-based economy became a major driver of the competition at the macro-level after the fall of the Berlin Wall and the demise of the Soviet Union (1990–1991). The political economy was gradually transformed into a knowledge-based economy because the battle between different ways of shaping political economies has become obsolete". In our analysis, presented here, we are more inclined of not interpreting political economy and knowledge-based economy (knowledge economy) as conceptually adverse. We prefer *to understand the knowledge economy as defining and delivering a specific context for political economy or the development of political economy*.

complexity of modern society also implies that governance is often connected with processes of self-organization and self-steering, thus also involving self-governance (see again Sect. 3.1). The "innovation system" may be understood as a system that cross-overlaps with other systems, such as the political system, the economic system, the research (R&D) system, the education system, or also the higher education system (HE sector) (Carayannis and Campbell 2006, p 17). The following characteristics could be interpreted as being key and decisive for the "knowledge state" (Campbell 2006a, p 26): (1) Politics acknowledges the importance of knowledge for society, the economy and democracy. (2) Politics is interested in promoting knowledge, the different knowledge bases and knowledge systems. (3) Through knowledge and innovation policies, politics wants to support economic development, by making the knowledge base of society available to the economy. (4) Economic development and performance, however, should also contribute to a further sustainable development of the knowledge base of society. By this the interests and knowledge interests of society, the economy and democracy are being balanced.

Pechar and Andres (2011) draw a direct conceptual link between "welfare regimes and higher education". Central propositions of Pechar and Andres (2011, p 25) are: "All Organization for Economic Cooperation and Development (OECD) countries have experienced an unprecedented expansion in higher education during the second half of the twentieth century. This was only possible because higher education became part of national welfare policies. OECD countries differ, however, with respect to the significance of education, and more specifically, higher-education policies within their overall framework of welfare policies. We employ the concept of the 'welfare regime' and a 'trade-off' hypothesis to understand the different national approaches to higher-education participation, funding, tuition, and student financial aid." *Welfare regime* may be understood here as an interchangeable phrase with *welfare state* (see above). If so, then we are in a position of creating a direct conceptual link between welfare state, welfare regime, political economy, and higher-education policies that certainly is also of crucial relevance for governance and for the governance of higher education more concretely. For the purpose of a practical and data-based testing of different hypothesis, Pechar and Andres (2011, pp 27–28) refer specifically to the typology of welfare regimes that was developed by Esping-Andersen (1990). For Esping-Andersen (1990, p 26), one approach of distinguishing between different "welfare-state regimes" is: "As we survey international variations in social rights and welfare-state stratification, we fill find qualitatively different arrangements between state, market, and the family. The welfare-state variations we find are therefore not linearly distributed, but clustered by regime-types". Esping-Andersen (1990, p 37) refers to "de-commodification" for grouping together a typology of welfare-state regimes: "The variability of welfare-state evolution reflects competing responses to pressures for de-commodification. …Rather, the concept refers to the degree to which individuals, or families, can uphold a socially acceptable standard of living independently of market participation." Esping-Andersen (1990, pp 50–54) identifies three types of welfare regimes (see also Pechar and Andres 2011): *liberal welfare regimes* (for

example Canada and the U.S., Australia and New Zealand, the UK); *conservative welfare regimes* (for example Austria, France, Germany, the Netherlands and Belgium, Switzerland, Italy); and *social-democratic* (*universal*) *welfare regimes* (for example Norway, Sweden, Denmark, and Finland). It would be interesting, of course, to extend this typology of welfare regimes more broadly and globally, to see whether or not this three-fold typology would be sufficient or whether additional types of welfare regimes should be suggested and therefore added.

For the innovation system obviously knowledge as well as the application and use of knowledge for problem-solving are key and important (Carayannis and Campbell 2010, p 45). This broad and hybrid overlapping and inter-linking of the innovation system into the other systems (spheres) of society creates a very specific interface for politics/society and politics/economy, framing new windows of opportunity for the political system (government) for governing society and the economy. Via (*through*) *the innovation system, the political system can attempt approaching to govern and/or to steer the other systems* (*sectors*) *of society.* Here the specifics of the political-economy regime require that the policies, which the political system applies, are either directly knowledge policies or are indirectly knowledge-based policies or, at least (as a minimum condition), take the context of the knowledge society and knowledge economy into account. Innovation systems unlock and leverage political governance perspectives: "Through innovation policy, however, which recognizes more specifically the conditions and ramifications of knowledge, the political system also projects an indirect and 'mediated', knowledge-tailored, influence on the economic system. This understanding underscores the interpretation and valuation of the innovation system as an interface between politics and the economy. The concept of the knowledge-based economy and society even suggests that in many contexts an innovation policy may be more effective in supporting economic performance than traditional economic policy. In advanced societies the indirect coupling of the political and economic systems, through the innovation system that overlaps with politics and the economy, gains considerably in importance. Discursively, this implies that for knowledge-based economies and societies the innovation system and the innovation policy might define a crucial area for analysis under the premises of Political Economy or International Political Economy" (Carayannis and Campbell 2006, pp 18–19). To a certain extent, *innovation policies may be interpreted as a new next-step stage of economic policies* (but not only). The degree or extent, to which a political system or government has transformed economic policies to innovation policies, might serve as a good benchmark for measuring how mature or how advanced the governance regime of a political system already is. Innovation policies, in addition, offer to the political system (government) the opportunity to govern (to attempt governing) very different knowledge-based systems. This knowledge component of innovation policies, however, also spans and generates a comparative frame of reference for policies and defines a content-based relationship of all (almost all) innovation policies, because "knowledge" represents one of the intrinsic joint elements of innovation policies, irrespective of the area or policy field to which the different policies are being applied.

Commonly, or at least often, it is being argued that the higher education sector ("university system") is playing an increasingly important role for the knowledge economy and knowledge society (also knowledge democracy). Knowledge economy and knowledge society depend crucially on knowledge, also on high-quality knowledge. Universities, higher education institutions (HEIs) and the higher education sector in general create such key knowledge that then is accessible for the economy and the society. Higher education delivers tertiary education (and teaching), research or R&D (with a particular emphasis on basic research) and, additionally, so-called "third mission" activities (for example innovation) (see again Fig. 2.2 in Sect. 2.2). Etzkowitz and Leydesdorff (2000, p 109) emphasize that the "… Triple Helix thesis states that the university can play an enhanced role in innovation in increasingly knowledge-based societies" (p 109).[18]

> This increasing importance of higher education for the progress and continued evolution of knowledge economies and knowledge societies (and knowledge democracies), therefore, also adds plausibility, why the governance of higher education is becoming more important: in conceptual terms as well as in policy terms.

Is the proposition correct that higher education converts into a key sector for further advancing knowledge economies and knowledge societies knowledge-based, then the governance interests of the political systems and of governments also must address higher education. In fact, governing society (and the economy) via (through) innovation policies (Larédo and Mustar 2001) overlaps partially with higher education policies. Or, to turn the argument: in the long run, there can be no advanced innovation policy without a mature or a to-be-further-developed higher education policy. *We should expect higher education policies to rise on the agenda of policy-making of governments or states*. New developments in the policy field of higher education are crucially important. Higher education, at the same time, represents a sector and policy field, where governments also often were or are inclined to apply new policies. Huisman (2009, p 3) underscores this assertion: "Like many other societal sectors, higher education has not been left untouched by changing views on and manifestations of governance. Indeed, in many Western countries, higher education has been among the front-runners—although not always wholeheartedly—in experiments with changing steering approaches … In general, this change implies less governmental interference in higher education affairs or a change from *ex ante* control to *ex post* evaluation and more apparent autonomy for higher education". Huisman (2009, p 4) refers here also to the notion of "The Invisible Hand of Governance". Put in summary, Huisman (2009, p 3) points to the following trends and proposes for a further discussion the following reflections: (1) Higher education systems differ concerning the speed and the location (area of application) of governance policies that address higher education. (2) The "evaluative state" and "steering from a distance" somehow balance

[18] It is almost impossible to imagine a progress of knowledge economy and knowledge society (in context of the twenty-first century, but also later) without a further development of higher education, whatever form higher education may take in the future.

(counterbalance) the spreading of markets or quasi-markets. (3) More and more an interplay of "domestic and supranational policies and steering approaches" for higher education can be observed. In a final consequence, this may also lead to effects of "multi-level governance" (Hooghe and Marks 2001).

### 3.2.2 *"Epistemic Governance" of and in Higher Education: "Mode 1", "Mode 2" and "Mode 3"*

Vadrot (2011, p 50) introduced the concept of "epistemic governance" to the academic debate. She defines epistemic[19] governance in the following way:

> In this context the conceptual framework of 'epistemic governance' aims to address the power relations in the modes of creating, structuring, and coordinating knowledge on socio-ecological issues. … By looking at the interrelation between policy-making and the production of scientific knowledge in defining and addressing socio-ecological problems it takes the selectivity of knowledge creation based on power relations into account … The attempt to elaborate a common and shared knowledge base jointly by political actors and scientific communities call for the conceptual framework of 'epistemic governance' that allows for the analysis of the re-production of coupled socio-economic and natural systems … Finally, the production and use of knowledge is seen to be linked to questions of relational, structural, and soft power, and to the relationship between science and policy. This relationship is not linear, but full of complex references and co-constituting.[20]

For the purpose of analyzing governance of and in higher education, we employ the concept of "epistemic governance", but want to develop this concept further and in a novel way and approach. We propose the following definition as point-of-departure for our analysis: *Epistemic governance implies that the underlying epistemic structure, the underlying epistemic base or the underlying epistemic paradigms of those organizations, institutions or systems* (*sectors*)*, which should be governed, are being addressed.*[21] The underlying epistemic structure or the underlying epistemic paradigms indicate (indicate also) what the "self-rationale" of the organizations or systems is (see our summary of systems theory in Sect. 3.1). Is there any organization, institution or system, without an underlying epistemic structure? For some organizations or institutions this may be the case (but perhaps unlikely), for a whole system or sector this would be only difficult to imagine. The underlying epistemic structure may be explicit. Is the underlying

[19] In context of our analysis we leave it open whether or not "epistemic" and "epistemological" could be used interchangeable or whether there is (a slight) difference in meaning.

[20] See also Vadrot (2008) for an earlier writing of Vadrot.

[21] It would be a separate, but of course interesting discourse, to inquire, how epistemic governance may relate to "epistemic communities" (e.g., Carayannis et al. 2012) or "epistemic democracy" (for example, Fuerstein 2008; Rothstein 2011).

epistemic structure not explicit, perhaps it exists, operates and drives implicitly. The underlying epistemic structure, of course, even could be conflicting, contradictory or heterogeneous. This would imply that there is not only one dominant (over-dominant, domineering) epistemic paradigm, but that a pluralism of paradigms co-exists, perhaps competing, perhaps co-evolving, however linked together in patterns and trends of "co-opetition" (Brandenburger and Nalebuff 1997). Should organizations, institutions or systems (sectors) be based on an underlying epistemic structure, then one indication appears evident: *good, sustainable and effective* (*external and/or internal*) *governance of organizations, institutions or systems* (*sectors*) *is in the long run only possible, when the underlying epistemic structure, the underlying epistemic base or the underlying epistemic paradigms are being addressed.* The formulation, development or implementation of objectives, far-reaching goals and effective policy-making are for the governance process only realistic, when the underlying epistemic structures are being taken into account. Is the underlying epistemic structure heterogeneous, pluralistic and diverse, then this further challenges governance.

Universities, HEIs and the higher education sector as a whole are crucial for the further advancing and advancement of knowledge economies, knowledge societies and knowledge democracies. What is the underlying epistemic structure of universities and of the higher education sector? HEIs create and produce knowledge, across the functional spectrum and profile of: tertiary education (and teaching), research or R&D (basic research) and the "third mission" activities (for example, innovation). *What are the "knowledge paradigms"* (*paradigms of knowledge*) *that carry and drive higher education?* Since knowledge creation and knowledge production are so essential and key for HEIs and the higher education sector all together, it becomes, it is evident that the type of knowledge being produced or the paradigms that underlie the produced knowledge certainly belong to the underlying epistemic structure of higher education.

> "Epistemic" governance of and in higher education therefore requires that the underlying epistemic structure of higher education and, more particularly, also the underlying paradigms of the produced knowledge are being addressed. Epistemic governance refers directly to the underlying "knowledge paradigms" of higher education that carry and drive higher education

(for a possible visualization, see Fig. 3.2). Is epistemic governance being connected or being processed on the basis of QM [quality assurance (QA), quality enhancement (QE)], then these "knowledge paradigms" can be translated into "quality dimensions". What the knowledge paradigms are for epistemic governance, are the quality dimensions for QM (see Sect. 3.2.4 later on). *This emphasizes our understanding that all forms of comprehensive and sustainable QM in higher education must also refer to the underlying epistemic structure of higher education* (at least implicitly). Otherwise it is not possible, at least not convincingly or in a sufficient manner and way, to define, what quality is in and for higher education. Every epistemologically blind QM represents only a constrained QM system in higher education.

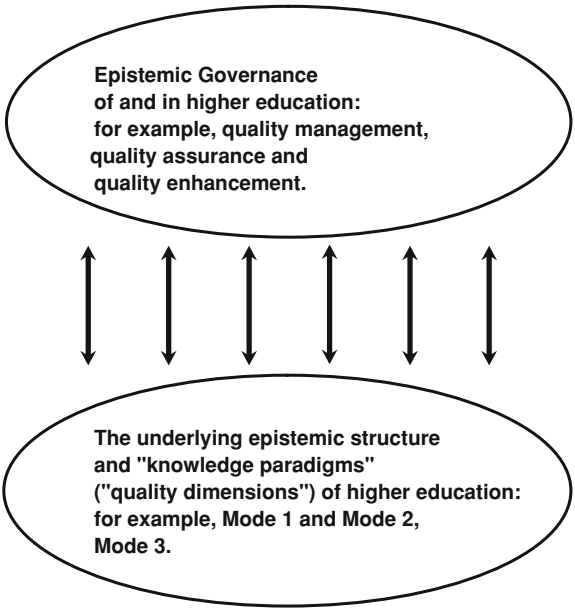


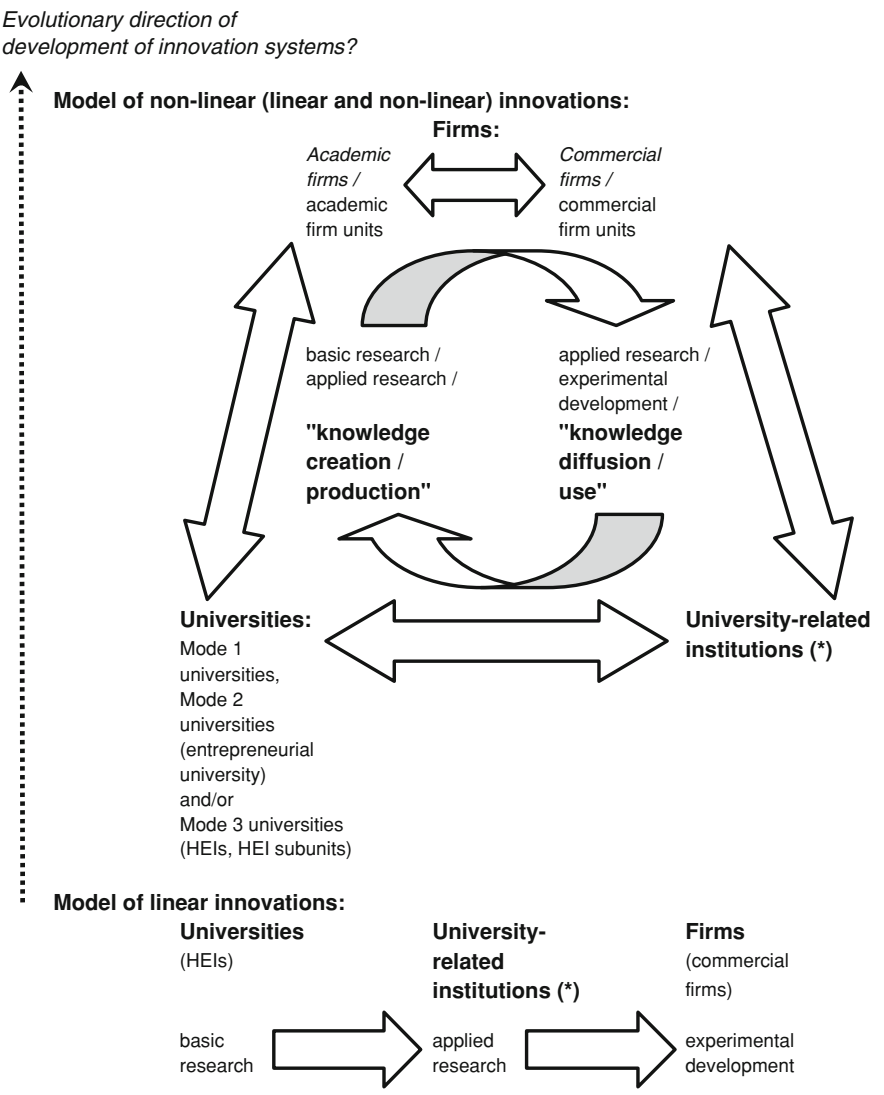

**Fig. 3.2** "Epistemic governance" of and in higher education

Source: Authors' own conceptualization and visualization.

In the following, we want to review some of the dominant paradigms of knowledge and knowledge production in the higher education sector that currently exist or co-exist (see Fig. 3.3 for a conceptual summary in visualization):

1. *Linear and non-linear models of innovation, the Triple Helix, Quadruple Helix and Quintuple Helix model of innovation, and the Creative Knowledge Environments (CKEs):* The linear model of innovation is being conventionally ascribed to Vannevar Bush, as for example is being asserted by Narin et al. (1997, p 318), even though Bush himself, in his famous report *Science: The Endless Frontier*, even never mentioned the word "innovation"[22] (Bush 1945). It could be argued, however, that Bush (1945) referred to innovation implicitly. What does the concept of linear innovation mean and imply? Referring to research, the implications are: universities and the higher education sector, in general, focus on basic research that is mostly publicly financed. Gradually, from the higher education sector outward and in some "laissez-faire" fashion, university basic research diffuses out into society and the economy. Finally, the economy and different business firms pick up some of these basic research lines

[22] This observation can be verified easily by a word retrieval command of the indicated (electronic) document. In a modern policy context, it probably would be unthinkable that such a comprehensive and important macro-level strategy paper has no explicit references to innovation. We see here, to which extent the word and term of "innovation" already has diffused out into our every-day professional language during the course of the last half century. But this certainly was not the case before or earlier in the twentieth century.




Source: Authors' own conceptualization based on Carayannis and Campbell (2009, p. 211; 2012, p. 25). (*) University-related may be translated into the German language as "außeruniversitär" (Campbell, 2003, p. 99).

**Fig. 3.3** The evolution of linear innovation systems only to a combination of linear and non-linear innovation systems

and convert them into applied research and experimental development, out of an interest to create commercial products and services that can be marketed and sold with profit. Applied research and even more so experimental development,

therefore, are being carried out in the business enterprise sector and are being mostly privately financed (in less mature industries and less advanced economies, the public financing may be more important). There operates a *first-then sequential order* from basic research to applied research and then to experimental development. Non-linear models of innovation, on the contrary, are also inclined to focus on *"parallel" effects or the simultaneous engagement of universities and firms* in basic research as well as applied research and experimental development: "In contrast to the linear model, the paralleling of basic research, applied research and experimental development demands that the different R&D activities should be considered, to phrase it in a challenging language, as 'parallel processes'" (Campbell and Güttel 2005, p 167; see also Campbell 2000). At the organizational or institutional micro-level (meso-level) distinct linear-innovation-lines still may operate. However, at the meso-level or macro-level, the organization or institution has opportunities of participating in different linear-innovation-lines at different stages.

What results is that universities and firms carry out and perform basic research, applied research and experimental development at the same time, R&D is being and becoming paralleled. The sequential first-then relationship is transformed into a "first-first" relationship.

One key challenge focuses now on setting up research designs, where there is a cross-learning and cross-fertilization between different linear-innovation-lines or research-lines. *We may experience here an overlapping of liner and non-liner innovation, generating, all together, a system of non-linear innovation* (see again Fig. 3.3; compare also with Carayannis and Campbell 2012, p 25). When universities engage in applied research and firms in basic research, this creates opportunities (but also needs) for more hybrid and network-based linkages between universities and firms but perhaps also between universities and other organizations: university-related institutions, but also the "media-based and culture-based public" and "civil society" in Quadruple Helix innovation arrangements (Carayannis and Campbell 2009, p 207; 2011, pp 13–14; 2012, pp 13–14).[23] The Quintuple Helix, ultimately, integrates the "environment or the natural environments" into the overall architecture of innovation systems (Carayannis and Campbell 2010, pp 61–62). "The Quintuple Helix finally embeds the Quadruple Helix (and the Triple Helix) in context of the environment or the natural environments" (Carayannis and Campbell 2010, pp 61–62).[24] The university-industry-government relations of the Triple Helix model of knowledge production and

[23] See also: Danilda et al. 2009.

[24] "The Quintuple Helix model is interdisciplinary and transdisciplinary at the same time: the complexity of the five-helix structure implies that a full analytical understanding of all helices requires the continuous involvement of the whole disciplinary spectrum, ranging from the natural sciences (because of the natural environment) to the social sciences and humanities (because of society, democracy and the economy). The Quintuple Helix also is transdisciplinary, since it can be used as a frame of reference for decision-making in connection to knowledge, innovation and

innovation addresses such interactions and interferences, by speaking in this context of "tri-lateral networks and hybrid organizations" (Etzkowitz and Leydesdorff 2000, p 111). Universities increasingly could (should) learn business management skills and competences, but also firms could (should) open themselves for the academic world. This creates niches and opportunities for the "Entrepreneurial University" (Etzkowitz 2003) and the "Academic Firm" (Campbell and Güttel 2005, pp 170–172). Academic firms and commercial firms may co-exist and co-evolve. While the concept of the commercial firm focuses on profit and profit maximization, *the concept of the academic firm is interested in developing social environments that foster academic* (*academic-style*) *knowledge creation and creative knowledge production* that are not dissimilar to university contexts, for example, also engaging some of their knowledge work efforts in publishing activities and academic publications (Carayannis and Campbell. 2009, pp 211–212). An academic firm may be a whole firm; a subunit, subdivision or branch of a "commercial" firm; or represent certain "characteristics" of a whole (commercial) firm such as supporting continuing education, life-long learning and partial absence (leave, sabbaticals) of employees or allowing split "cross-employment" (Campbell 2011) of their employees with other organizations, most notably academic institutions (HEIs) (Carayannis and Campbell 2012, pp 24–28). Universities (entrepreneurial universities) and firms (academic firms), of course, can not and should not coincide completely, there still must operate some distinct differences. These manifold mutual hybrid overlappings and networks of knowledge and innovation, in which universities, entrepreneurial universities, commercial and academic firms interplay should also foster developing and creating "CKEs" that are defined as (Hemlin et al. 2004, p 1): "CKEs are those environments, contexts and surroundings the characteristics of which are such that they exert a positive influence on human beings engaged in creative work aiming to produce new knowledge or innovations, whether they work individually or in teams, within a single organization or in collaboration with others".

2. *Mode 1 and Mode 2 of knowledge production:* Gibbons et al. (1994) focus on analyzing key principles of knowledge, of knowledge that roots in knowledge production[25] in higher education (universities) and then diffuses out into society and the economy. Their conceptual starting point is the "Mode 1" production of knowledge, referring to (mid-term or long-term) basic university research that expresses no major interests in innovation and knowledge application and

(Footnote 24 continued)
the (natural) environment" (Carayannis and Campbell 2011, p 62). See, furthermore, Campbell and Campbell (2011, pp 15–16, 23–27).

[25] One may formulate the proposition that the term "knowledge production" in Gibbons et al. (1994) already incorporates the whole spectrum of "knowledge production" and "knowledge creation". An attempted distinction could emphasize that in context of higher education, knowledge creation is more basic or fundamental than knowledge production. However, throughout the whole text here, the terms of knowledge creation and knowledge production are being used in an interchangeable way and manner.

which is structured and organized according to a disciplinary logic (see Gibbons et al. 1994, pp 1, 3, 8, 24, 33–34, 43–44, 167). Mode 1 is being challenged by the new "Mode 2" of knowledge production that is being driven by the following principles: (1) "knowledge produced in the context of application"; (2) "transdisciplinarity"; (3) "heterogeneity and organizational diversity"; (4) "social accountability and reflexivity"; and (5) "quality control" (Gibbons et al. 1994, pp 3–8, 167). Mode 2 grew out of Mode 1, and Mode 2 co-evolves with Mode 1 (Gibbons et al. 1994, pp 14, 17). Mode 1 coincides with a traditional understanding or picture of universities and of university research, whereas Mode 2 focuses more on the integration of knowledge production of the universities into and with the knowledge production of society and of the economy. Mode 2 university research is directed toward problem-solving, thus emphasizing the applicability and usability of university-created knowledge for the needs of society and of the economy. Implications of Mode 2 are that the whole spectrum of basic research, applied research and experimental development are being reframed into a context of application.[26] There occurs to be an increasing overlapping of "discovery", on the one hand, and the "application" and "fabrication" of knowledge on the other (also experimentation and simulation). By applying knowledge, also new knowledge is being discovered. Epistemic implications may be that (at least partially) knowledge-application is necessary for further enhancing basic research, in the sense of some overlapping of linear and non-linear innovation modes. Application feeds back, also into basic research, thus supporting the further development and creation of theories. Application is also important for "continuous innovation" (on Mode 1 and Mode 2, see furthermore: Nowotny et al. 2001, 2003 and 2006; Scott 2009; Campbell 2006b, pp 71–73, 91–92; Carayannis and Campbell 2010, pp 48–52). For Mode 1 knowledge as well as Mode 2 knowledge the quality, of course, is key. However, quality is being differently defined in these two domains. Quality according to "Mode 1" is: *academic excellence, which is a comprehensive explanation of the world* (*and of society*) *on the basis of "basic principles" or "first principles", as is being judged by knowledge producer communities* (*academic communities structured according to a disciplinary framed peer review system*). Quality according to "Mode 2" is: *problem-solving, which is a useful* (*efficient, effective*) *problem-solving for the world* (*and for society*)*, as is being judged by knowledge producer and knowledge user communities.* Mode 1 and Mode 2 certainly qualify to be interpreted as "knowledge paradigms" that underlie higher education (on paradigms, see also Kuhn 1962).[27]

[26] This emphasis on application, however, certainly does not imply that basic research becomes replaced by applied research. This would be a misperception or wrong interpretation (Gibbons et al. 1994, pp 4, 33–34).

[27] In Sect. 3.2.4 we again iterate our quality definitions of Mode 1 and Mode 2 (presented here) by linking Mode 1 and Mode 2 to possible "quality dimensions" of quality assurance, quality enhancement and quality management in and of higher education.

3. *Mode 3 knowledge and Mode 3 universities* (*higher education systems*)*:* Mode 3, as a concept (and as a metaphor), emphasizes that there can exist and co-exist very different types of knowledge and also very different paradigms of knowledge. Innovation represents applied knowledge. Mode 3 stresses also the importance of this co-existence and co-evolution of different knowledge and innovation modes and paradigms. "'Mode 3' allows and emphasizes the co-existence and co-evolution of different knowledge and innovation paradigms. In fact, a key hypothesis is: *The competitiveness and superiority of a knowledge system is highly determined by its adaptive capacity to combine and integrate different knowledge and innovation modes* via *co-evolution, co-specialization and co-opetition knowledge stock and flow dynamics* (for example, Mode 1, Mode 2, Triple Helix, linear and non-linear innovation)" (Carayannis and Campbell 2009, p 223). This pluralistic structure and design of Mode 3 indicates potentials of congruence between Mode 3 and democracy. "Pluralism of knowledge modes" and "Democracy of Knowledge" interrelate (Carayannis and Campbell 2009, pp 208, 224). This makes plausible why also advanced Mode 3 knowledge and knowledge-based democracies and knowledge democracies interrelate. Therefore, one can assert and claim a co-evolution of knowledge societies, knowledge economies and knowledge democracies (Carayanis and Campbell 2010, pp 52–58). "Mode 3 claims a certain congruence of structures and processes of advanced knowledge and advanced democracy" (Carayannis and Campbell 2010, p 52).

> As a Mode 3 higher education system (higher education sector) qualifies a higher education system that operates simultaneously according to different paradigms (and types) of knowledge and innovation. A Mode 3 higher education system perceives and assesses such a pluralism, co-existence and co-evolution of different paradigms (and types) of knowledge and of innovation also as positive and as necessary for advancing higher education, the society and economy (and democracy) in the "age of knowledge".

Epistemic governance, externally and internally, is directed toward the different knowledge paradigms that underlie higher education. One implication is that in Mode 3 higher education the Mode 1 and Mode 2 (Mode 1 and Mode 2 knowledge production) co-exist and may be coupled in creative organizational designs, perhaps based on networks or network-style arrangements. Such a coupling of and in Mode 1 and Mode 2 may also create a sustainable surplus and other synergies in knowledge creation and knowledge production of the higher education sector, so necessary for knowledge societies and knowledge economies, also featuring the "creativity economy" (Dubina et al. 2012). One may even set up the proposition for discussion that de facto all higher education systems in advanced societies are Mode 3. However, an "advanced Mode 3 higher education system" would make this also explicit, emphasizing that this pluralism, co-existence and co-evolution of knowledge paradigms is being acknowledged and is being valued positively. A Mode 3 higher education system enables and favors very different combinations of different types and paradigms of knowledge and knowledge production.

> Higher educations institutions can be organized according to Mode 1, Mode 2 (the "entrepreneurial university") or Mode 3, then implying that HEIs are interested in covering Mode 1 and Mode 2, allowing both to exist explicitly but also setting up creative Mode 3 designs of a cross-referencing that should create a surplus in high-quality knowledge production.

For example, Mode 1, Mode 2 and Mode 3 can exist at the level of the whole university or at specific sub-levels, such as faculties (schools) or university departments. From an organizational developmental perspective, a whole spectrum of various strategies, options or profiles opens up for universities and the university sub-units. Nothing should be precluded, *in fact we could imagine a co-existence and co-evolution of Mode 1 universities, Mode 2 universities (entrepreneurial universities) and Mode 3 universities and of Mode 1, Mode 2 and Mode 3 university sub-units*. This hybrid and creative overlapping of Mode 1 (linear innovation), Mode 2 (entrepreneurial university) and Mode 3 (non-linear innovation) universities and university sub-units additionally offers opportunities for implementing and promoting "CKEs" (Hemlin et al. 2004). Creativity is essential for producing new knowledge in higher education: "That line of thinking emphasizes to interpret new knowledge as a creative knowledge. Or to rephrase: new knowledge qualifies as a potential candidate for a creative knowledge. …*Without creativity, the knowledge input for the innovation process might face serious constraints*" (Carayannis and Campbell 2010, pp 47–48). In several contexts, networks can offer representing the dominant organizational approach of linking together and combining Mode 1, Mode 2 and Mode 3 knowledge production.

> At the aggregated level of the whole national innovation system, a hybrid dynamics of a knowledge co-evolution of Mode 1, Mode 2 and Mode 3 universities and university sub-units, on the one hand, and of commercial and academic firms and firm sub-units, on the other, may unfold and drive further the next-step advancements of knowledge societies, knowledge economies and knowledge democracies. This may also refer to other levels (sub-national, supranational, transnational) of the architecture of multi-level innovation systems

(Carayannis and Campbell 2012, pp 32–35). To a certain extent, this "Mode 3 University" can be understood as the epistemic concept as well as the organizational developmental concept, how to make possible and to foster a combination and co-evolution of Mode 1 and Mode 2 knowledge production in university context. If true, this co-evolution would generate and create a crucial knowledge production surplus. Mode 1 knowledge production distinguishes between basic research and applied research. The Mode 3 emphasis (*shift of emphasis*) in knowledge production may be to focus, instead, more on *"basic research in the context of application"*. Mode 3 also encourages interdisciplinarity[28] and transdisciplinarity. In a short-cut, *transdisciplinarity may be defined as the application of interdisciplinarity* (transdisciplinarity = application of interdisciplinarity?). The Mode 3 inclination

[28] On a further discussion of interdisciplinarity ("*Interdisziplinarität*"), see also Arnold (2009, pp 65–97).

for a basic research in context of application highlights a possible route of further development for transdisciplinarity (and interdisciplinarity).[29]

4. *Academic faculty (academic profession), academic "cross-employment" and academic "cross-careers" inside and outside of higher education:* In the world of Mode 1 universities or Mode 1 university sub-units, at least in conceptual terms, status and the career schemes of the academic faculty (or of the academic profession) at HEIs appear to be clearer and more evident. There is a "core faculty", interested in achieving tenure, and dominating the top-hierarchy positions at the university. Anyone who is not core faculty and wants to stay within the university, tries to become a member of the core faculty. Knowledge production (university research, basic university research) of Mode 1 is directed toward "academic excellence", as is being verified (or falsified) by peers in peer review against the background and logic of the academic disciplines. Academic excellence, in Mode 1, coincides to a large extent with assessment results of a disciplinary-based peer review. The linear-innovation-tendency of Mode 1 also implies that either you work within the university or you work outside of the university, then for a firm or a different organization in society. Research (R&D) or other forms of knowledge production, which are university-based and firm-based, are linked together more in a first-then relationship. One career pattern in Mode 1, therefore, may be: an academic researcher starts working at a university, leaves for a firm, and later may be interested in re-entering the university. The world of Mode 2 universities is already more complicated. In Mode 2, quality is directed toward an efficient and/or effective problem-solving. The problem-solving is being evaluated by communities of knowledge producers as well as knowledge users. Thus the spectrum of potential peers in Mode 2 enlarges itself dramatically. Disciplinary-based peer review loses in Mode 2 its primary gate-keeping function. However, at the same time, defining criteria for quality or a quality-based selection of peers (coming from the knowledge producer and/or knowledge user side) may turn into an equally tricky proposition for Mode 2. *While Mode 2 knowledge is just as important as Mode 1 knowledge,* we might experience in higher education that the core faculty is being dominated by the Mode 1 knowledge paradigm, and that Mode 2 knowledge paradigms are being pushed outward to the context of the non-core faculty. In higher education operates a potential mismatch between Mode 1 and Mode 2, to the disadvantage of Mode 2, even though for innovation it is so crucially important that higher education covers and integrates the comprehensive spectrum of knowledge production of Mode 1 and Mode 2. The Mode 3 knowledge paradigm, on the contrary, emphasizes that HEIs should reflect consciously on whether developing a Mode 1 or Mode 2 profile (portfolio), or Mode 1 *and* Mode 2, and what opportunities

[29] For interesting, creative and innovative examples of integrating and analytically combining research in fields and disciplines of the social sciences and natural sciences, see furthermore: Gottweis 1998; Hindmarsh and Prainsack 2010; and Prainsack and Wolinsky 2010.

there exist for creatively combining Mode 1 and Mode 2. Mode 3 challenges universities, but also liberates universities from a possible Mode 1 and Mode 2 deadlock, *encouraging and highlighting novel routes of QE for further development*. Implications may be manifold: (a) the same academic (core) faculty could be partially Mode 1 and Mode 2-based; (b) the non-linear innovation momentum of Mode 3 suggests that academic workers should not necessarily engage first in basic university research and later in applied firm research, but may do both at the same time. For this second option we propose the term and concept of "cross-employment" or multi-employment (Campbell 2011). *Implications of this are that knowledge producers and R&D workers are being simultaneously employed by more than one organization or institution*. Several forms and variations of cross-employment are thinkable and reasonable. Cross-employment can stretch (in network-style arrangements) across different HEIs or can link universities with non-universities, i.e. organizations outside of higher education (for example, firms or organizations of the civil society).[30] Cross-employment should foster the creativity of and in knowledge production and knowledge creation. The cross-employed academic profession or cross-employed academic faculty involves itself and engages in a much broader spectrum of knowledge production, possibly integrating Mode 1 and Mode 2 knowledge and knowledge skills. *In a university, operating under Mode 3, the same academic faculty member could be based in parallel on different academic employment contracts that interplay*. This overlapping of employment contracts could help making the boundaries between core and non-core faculty more flexible, more open and fairer. *Cross-employment enables the academic faculty and academic profession to engage in in-parallel "cross-careers" inside and outside of higher education at one and the same time*. The same knowledge-producing person can follow career tracks at two different universities or at a university and a non-university organization. Cross-careers and cross-employment support the formation of (hybrid) networks between organizations and contribute to the networking capabilities and capacities of organizations. *Cross-employment facilitates and sustains non-linear innovation.* This should add crucially to the dynamics of "self-organizing, cross-overlapping networks" (see again Fig. 3.1). *Cross-employment and cross-careers, in cross-connection to Mode 1, Mode 2 and Mode 3, certainly identify potential objectives for epistemic governance*.[31] In final implication, cross-employment represents a role model of equal importance for academic (university) careers, when compared with the academic career model of tenure-track. *Therefore, cross-employment is a role model for academic careers*

[30] Civil society represents explicitly one reference for the Quadruple Helix innovation system, by this also co-constituting the Quadruple Helix (Carayannis and Campbell 2009, p 207; 2011; 2012, pp 13–14).

[31] See also the concluding analytical wrap-up in the Conclusion (Chap. 4).

*(inside and outside of higher education), on par with tenure-track*. This we want to recognize as a proposition for further discussion.[32]

> Epistemic governance, as is being developed here for the governance of and in higher education, emphasizes that a good and sustainable governance of the higher education sector in general and of individual HEIs in more particular is only possible, if (and when) the underlying epistemic structures, including the knowledge paradigms of higher education, are being addressed.

We even would go so far to say and to assert that higher education governance or higher education policies, with no elements of epistemic governance, are already by definition sub-optimal or non-optimal. Mode 1, Mode 2 and Mode 3 qualify as "knowledge paradigms" for higher education, but we do not attempt presuming these as the only knowledge paradigms that currently exist. *Therefore, one understanding of epistemic governance of and in higher education can be, to align or to orient governance, policies and strategies explicitly toward Mode 1 and/or Mode 2 and/or Mode 3*. This already would fulfill a crucial criterion for epistemic governance and of epistemic governance. Drawing a conceptual link to systems and systems theory, one may assert that the underlying knowledge paradigms of higher education also heavily influence the "self-rationale" of the higher education system as well as the self-rationales of organizations and institutions within higher education. As is the case with knowledge, there can also be a "pluralism of self-rationales" of higher education, resulting in a diversity of self-rationales, partially competing, partially cooperating, hopefully cross-learning in co-evolution in some "co-opetitive" design (Brandenburger and Nalebuff 1997). In Box A we display, how a governance (public governance) of higher education could be formulated and conceptualized that refers to some systems theory notions, but also underscoring the "self-rationale" of the political system and of the *sciences system* that is part of the higher education sector (higher education system) (Campbell 2001, p 425). As already portrayed above, the underlying knowledge paradigms of higher education express themselves in the self-rationale of higher education. In that respect, Box A even indicates (depicts) an epistemic governance relationship, but refers to systems-theoretical-notions such as the self-rationale and elements (parts) of systems. Box A formulates and develops how a political-system-based governance or how a political steering may interplay with the sciences system (in the German language called *"Wissenschaftssystem"*) of higher education (Campbell 2001, p 435), but also acknowledging the independence ("autonomy") of the self-rationale(s) of the sciences system. Being sensitive for the self-rationales and self-organization of the to-be-governed represents a characteristic of advanced "knowledge states" (Campbell 2006, pp 25–27). Box A addresses the following research question: *What are characteristics of a political*

[32] In pragmatic terms, of course, the empirical trend still would have to be verified: "It remains to be seen, whether cross-employment has the capability to establish itself as an additional and positively-defined role model for academic careers in higher education, in parallel to the already existing role mode of tenure-track (tenure)" (Carayannis and Campbell 2012, p 26).

| Box A: | Schematic presentation and summary of the (research) question: Political steering (political governance) through the public promotion of university research? |
|---|---|
| Analyzed systems: | Political system and the sciences system in higher education. |
| Sciences system (in the higher education sector): | |
| "Elements"/parts: | E.g., university R&D (including basic university research). |
| "Self-rationale" of the self-organization of the sciences system: | In general: e.g., increase of the effectiveness of R&D. |
| | In particular: e.g., increase of the effectiveness of university research across the following "dimensions": quality, efficiency, relevance, and viability (sustainability). |
| Political system: | |
| "Elements"/parts: | E.g., government or the "state" (the "knowledge state"). |
| "Self-rationale" of the self-organization of the political system: | In general: e.g., political steering (governance) of society or the subsystems of society, such as the sciences system in higher education. |
| | In particular (a): e.g., support of the development of advanced knowledge societies by applying R&D, educational technology, and innovation policies (also promoting research). |
| | In particular (b): e.g., public promotion of university research (university research = the "primary location within society" for basic research). |
| Systems theoretical implications: | Translating the "self-rationale(s)" of the political system into the "self-rationale(s)" of the sciences system, whithout malfunctioning the "autonomy" and "self-rationale(s)" of the sciences system. |
| Steering (governance) options for politics: | E.g., allocation and re-allocation of (public) resources. |
| | E.g., persuasion through (mutual) communication and the designing and development of incentives (for example, the allocation of resources, the alteration of contexts and context conditions, and law-making and legislation). |
| Criteria of success for political steering (political governance): | In general: e.g., the political steering (governance) supports the "self-rationale(s)" of the sciences system in higher education. |
| | In particular: e.g., the political steering ("public promotion") supports the sciences system in increasing the effectiveness (for example, quality) of university research. |

*Source* Authors' own conceptualization and visualization (based on Campbell 2001, p 435)

*steering (political governance) through the public promotion and support of university research?*

### 3.2.3 Governance of and in Higher Education: Science-as-a-Public-Good and/or Science-as-a-Network, the "NPM" Narrative and "Network Governance" Narrative

*Governance of higher education refers more to the external governance of higher education, and governance in higher education focuses on the internal governance*. The internal governance may also be addressed as "institutional governance" (institutional self-governance) (EURYDICE 2008, pp 33–42). QM (quality management), its principles, methods and tools, applied within the institutional context of a university, serves as a good example for internal governance within higher education. Originally, governance was closer associated with governments, thus higher education governance could be seen more as a governance "of" higher education. *However, good external governance should always interplay with good internal governance*. For higher education, therefore, it is key to consider how to design the cross-linkages between processes of external governance, mainly the interaction with governments (the "knowledge state") and other public funding institutions of higher education and with higher education, and of internal governance. External as well as internal governance can refer to "academic markets" ("quasi-markets"). From a systems theoretical perspective, a market may be understood as a "specific type of a system", for which feedback is crucial (see our definition in Sect. 3.1). For purposes of internal governance, universities can operate, for example, QM (QA and QE). But QM is not only valid for internal institutional or organizational governance. QM (QA and QE) can also be applied to the external governance of higher education. Governments may consider also implementing external systems of QA and QE for improving their governance approaches in higher education.

Biegelbauer (2010, p 11) associates governance with processes of self-organization and inter-organizational networks.[33] In the literature, there are many examples of governance of and in higher education. A freely and directly accessible definition on the internet asserts:

> Governance in higher education refers to the means by which higher educational (also tertiary or postsecondary) institutions are formally organized and managed, though often there is a distinction between definitions of management and governance. Simply, university governance is the way in which universities are operated. Governing structures

[33] "Governance erscheint dabei oft als eine flexible und zu begrüßende Alternative zu den alternativen Ordnungsmechanismen Hierarchie und Markt. Sie wird als selbstorganisierter Prozess dargestellt, der in interorganisationalen Netzwerken autonomer AkteurInnen aus Staat, Wirtschaft und Zivilgesellschaft stattfindet, die in der politikwissenschaftlichen und soziologischen Literatur implizit oft auch als gleichrangig beschrieben werden" (Biegelbauer 2010, p 11). See also and compare with Krücken 2003a and 2003b, and Krücken et al. 2007.

> for higher education are highly differentiated throughout the world. … Internationally, tertiary education includes private not-for-profit, private for-profit, and public institutions governed by differentiated structures of management. Governance and management of postsecondary institutions become even more diverse with the differences in defining the relationships between higher and tertiary education (university education), postsecondary education, technical and vocational education, and community college models of education.[34]

As a key sentence in the above definition we may identify: *Simply, university governance is the way in which universities are operated*. EURYDICE (2008, p 12), citing also Hirsch and Weber (2001), brings in the following definition for higher education governance, distinguishing also governance from management:

> As far as higher education is concerned, governance focuses on the rules and mechanisms by which various stakeholders influence decisions, how they are held accountable, and to whom. In the context of higher education, **governance** refers to 'the formal and informal exercise of authority under laws, policies and rules that articulate the rights and responsibilities of various actors, including the rules by which they interact'. In other words, governance encompasses 'the framework in which an institution pursues its goals, objectives and policies in a coherent and co-ordinated manner' to answer the questions: 'Who is in charge, and what are the sources of legitimacy for executive decision-making by different actors?' **Management**, on the other hand, refers to the implementation of a set of objectives pursued by a higher education institution on the basis of established rules.

Connotations of management are (in comparison with governance) that management is already more concrete (than governance) and addresses processes of a daily routine. As Enders and File (2010, p 15) emphasize:

> Governance concerns the interplay of actors, rules and regulations. … It raises core questions about who decides when on what: it is about the rules of the game. These questions can be asked at various levels: for example, within universities (in higher education research usually referred to as internal governance) as well as on the macro- or system-level (referred to as external governance).

Geuna et al. (2003, p 393) see governance as a "source of external influence" for higher education: "The system of governance for science, the web of institutions both inside and outside the state that shape the incentives, social norms and priorities of scientific research, is a principal source of external influence on scientific research activities and the organization of scientific institutions". Carrying this approach of Geuna et al. (2003) conceptually further,

> the external governance of higher education and HEIs may be interpreted as an "external environment", representing a context, in relation to which higher education behaves. Internal governance may also be portrayed as an "internal environment" within the higher education institution,

which is, for example, also crucial for academic faculty (academic profession) and their behavior.

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[34] See: http://en.wikipedia.org/wiki/Governance_in_higher_education (retrieved on Feb 7, 2011).

Magalhães and Amaral (2009, p 193) emphasize that reconfigurations of the relationships between the knowledge society and knowledge economy also influence higher education as an "exemplary case" for this transformation:

> The role assigned to knowledge has enhanced the economic role assigned to education, particularly to higher education. The new approaches to higher education governing and governance, articulate both this change in the education and economic roles and the reconfiguration of the relations between state, society and individuals in Western societies (Magalhães and Amaral 2009, p 193).

Magalhães and Amaral assert that there is a trend that "shifted the emphasis on theoretical knowledge to applied research": "The fact that (applicable) knowledge became a pivotal factor in the production, distribution and consumption processes has impacted on the occupations of academics and scientists as well as the autonomy of HEIs"(Magalhães and Amaral 2009, p 194). Magalhães and Amaral (2009, p 194) assume that for those changes also so-called neo-liberal theories played a crucial role: "We have argued throughout the chapter that in this reconfiguration of European higher education, at governance level and at educational level, there was a strong influence of the neo-liberal discourse and neo-liberal theories, even though we recognize that other discourses are also present". Governance reforms of higher education (at least in Western Europe) often introduced and combined two elements. On the one hand, the "institutional autonomy" of the HEIs has been strengthened, redefining universities from "public institutions to self-administered bodies" that are still primarily publicly funded. On the other hand, the (external) governance linkages between the governments (the state) and the higher education sector are increasingly "configured as a contractual linkage" and "based on performance indicators". External governance of higher education becomes less input-driven, and steers toward more output-orientation. According to Magalhães and Amaral (2009, p 189), "Neave argues that this augmented instrumentality in higher education was the vehicle for reforms ranging from the rise of 'remote steering' to the replacement of *a priori* input-based financing with *a posteriori* allocation related to institutional outputs".[35] The "collegial forms of governance" were sometimes not being regarded as sufficiently effective. "Managerialism" is spreading, also being captured by the phrase and concept of NPM. "These winds of change started in the United Kingdom under the aegis of NPM discourses and are evolving throughout Europe" (Magalhães and Amaral 2009, p 188). Strengthening the institutional autonomy of the HEIs obviously supports opportunities of and for self-governance in higher education. This also reinforces this one idea of systems theory that the higher education sector appears then to be better prepared to unfold the "self-rationale" (self-rationales) of higher education.

Kehm and Ute Lanzendorf (2006a, pp 12–13) presented a four-country study that focused more closely on the effects of government policy and decision-making on university research and the university researchers (see also Kehm and

[35] Reference is made here to Neave (2007).

Lanzendorf 2006b, in general). The project applied a "multi-level approach" with three distinct "analytical levels": (1) government policy in higher education at the "macro level"; (2) "decision-making in universities" at the "meso level"; (3) and the impact of these on the research and research-related activities of researchers (such as third party funding) at the "micro level" of the sub-units of HEIs. The four countries addressed were Germany, Austria, the Netherlands, and the United Kingdom (UK). In more particular, Kehm and Lanzendorf (2006c, p 188) looked at five "governance dimensions", which are: "state regulation"; "external guidance"; "competitive pressure"; "academic self-governance"; and "managerial governance". They assert that reform processes in those higher education systems often were launched by similar triggers, but timing and reform emphases, however, may vary and varied. The main proposition of the study is that particularly the governance dimension of managerial governance was reinforced, whereas state regulation and academic-self governance were weakened:

> The research documented in this book has studied developments toward managerial governance regimes in four university systems. … Here, reform results will be compared first with respect to the strengthening of managerial governance dimensions and then with respect to the weakening of the remaining two dimensions, i.e. academic self-governance and state regulation (Kehm and Lanzendorf 2006c, p 194).

Specific conclusions for the four covered countries are (Kehm and Lanzendorf 2006c, p 205): In Germany, the diversity of policies at the sub-national state (provincial) level somehow fragmented a cohesive general governance shift to managerialism, which is the case in so many of the other countries.[36] In Austria, the law implemented a new "managerial governance regime" that gives more influence to "stakeholder representatives" and emphasizes "strategic target setting".[37] In the Netherlands, the governance regime is oriented toward consensus-seeking and a dialogue with the involved higher education actors. For the UK, the main proposition is that institutional autonomy decreased, whereas competitive pressures increased and stakeholder participation gained in importance: "In England, we observe a piecemeal loss of institutional autonomy in favour of competitive pressure and stakeholder participation" (Kehm and Lanzendorf 2006c, p 205).

In a major project, funded by the European Commission and which focused on progress in higher education reform in 32 European countries and in Turkey, covering the years 1995–2008, the conclusion was drawn that there "have been significant changes in governance since 1995 in almost all countries" (Enders and File 2010, p 3). QA plays now a greater role: "QA and accreditation systems have

[36] In the federal and de-centralized German higher education system, not the national government, but the *Länder* (the German provinces at the sub-national level that could be categorized as sub-national "states") carry the primary responsibility for higher education and the higher education institutions.

[37] On Austria, Kehm and Lanzendorf (2006c, p 205) comment in the following way: "In less than five years, Austria has gone almost as far as the forerunners of reform in more than 20 years of implementing and refining reforms".

been one of the major reform themes". As a general trend, the "institutional autonomy" of universities and other HEIs has been increased and increases: "One of the overarching trends in European higher education governance concerns the enhancement of institutional autonomy" (Enders and File 2010, p 3). This trend often is being accompanied or reinforced by the following measures: (1) a changing legal status of HEIs; (2) the development of "new policy instruments to steer higher education systems"; (3) the more frequent use of "contracts and multi-year agreements" between HEIs and the state (governments); (4) a greater role for QA for the governance and steering of higher education; (5) and a shift in the public funding schemes of higher education, gradually moving from an input-orientation to an output-orientation: "historically-based allocation schemes are loosing ground to funding mechanisms with more of an emphasis on output" (Enders and File 2010, p 3). The study distinguishes between four different dimensions of institutional autonomy: organizational, policy, interventional, and financial (Enders and File 2010, pp 3–4). Organizational autonomy refers to the "internal governance structures" and is still restricted for public universities in most of the European countries. Policy autonomy refers to the opportunity that universities can decide on their own teaching and research programs as well as on their own (academic and non-academic) staff and students: policy autonomy for the public universities is "medium–high to high" in a majority of the covered European countries. Financial autonomy grants HEIs the freedoms of internal resource allocation and reallocation, of diversification of different sources of income, of reserves build-up, and of externally borrowing funds: public universities, in a majority of the European countries, appreciate "medium to high levels" of financial autonomy. Interventional autonomy refers to the freedoms of HEIs, not being responsible to "accountability requirements". In a majority of the addressed European countries, the public universities appreciate only "medium levels" of interventional autonomy: "Reforms have increasingly obliged public universities to demonstrate their performance and to account for their activities and spending" (Enders and File 2010, p 4). The study proposes the following "policy recommendations" for further discussion (Enders and File 2010, pp 6–7): (1) The "institutional autonomy" of the European universities should be increased and should also include the "internal governance structures". (2) A fair "balance between autonomy and accountability needs" should be "re-visited". (3) There appears to be a need to increase "investment into higher education and research", otherwise, the higher education sector might not be capable of further contributing in a sustainable format to the "European knowledge society" and the competitiveness of Europe. "Governance reforms in combination with sufficient levels of funding are likely to contribute to enhanced system performance" (Enders and File 2010, p 6). The balancing of public and private funding for higher education certainly represents a tricky issue. (4) There is also a need for more pragmatic realism concerning the outcome of governance and policy reforms: "We urge more realism when it comes to expectations that governance reforms will result in multiple and rapid effects" (Enders and File 2010, p 6). (5) The implementation of a "European monitoring system" (a "European scoreboard for higher education")

would create a diversity of opportunities. This monitoring system should focus on performance, characteristics and important reform aspects of the higher education systems in Europe. This would encourage the designing and application of next step performance indicators in higher education. Furthermore, every analysis of the different (national) higher education sectors and the development of specific "tailor-made recommendations for further reform" would be crucially supported by such a European monitoring system (Enders and File 2010, p 7).

Summarizing their findings, Enders and File (2010, pp 3–4), in general, set up the proposition that the policy autonomy and financial autonomy of public universities is medium to high in a majority of the European countries. Interventional autonomy is medium, while the organizational autonomy is only restricted. This has implications, when the overall "institutional autonomy" of the public European universities is being assessed, also with regard to specific profiles that may result. Kehm and Lanzendorf (2006a, 2006b and 2006c) conclude for their four-country analysis (Germany, Austria, the Netherlands and the UK) that in higher education the influence of the managerial governance dimension increased, whereas the influence of academic self-governance and state regulation decreased. Contrasting the findings of Enders and File on the one hand, and of Kehm and Lanzendorf on the other, leads to some interesting research questions:

> Does managerialism (managerial governance) require certain institutional forms of institutional autonomy, so that managerialism can function? Can there be in higher education a (non-trivial) co-development (co-evolution) of managerial governance and of increased institutional autonomy?

This may support arguments in favor of looking at combinations of external governance and internal self-governance.

In *"Science and Innovation: Rethinking the Rationales for Funding and Governance"*, the editors (Geuna et al. 2003, p xvii) define as goal for their analysis the "… seeking to identify what is happening and what is likely to happen as a result of the changing rationales for funding and governing science". As a conceptual starting point, the authors make reference to earlier work of R.R. Nelson and K.J. Arrow from the 1950s and 1960s. There and then, science still was framed as a "public good" that required independent public institutions and involved the belief that science, the results of science and the outcome of science should be available to all. Geuna et al. (2003) stress "the message that the science-as-a-public-good approach, in its original understanding, no longer provides a sufficiently comprehensive rationale for the funding and governance of science and innovation. But what will follow next? Here the book argues at two different levels: (1) on the one hand, by analysing changes of the science system; (2) on the other hand, by reflecting governance changes, but not by emphasizing so much a *governance of science*, but preferably speaking of *science governance*, thus also involving aspects of self-governance" (Campbell 2008, p 107).[38] The assertion is being proposed that in the late twentieth century the "state-dominated governance

[38] Systems theory is also inclined to emphasize ideas in reference to self-governance.

system" shifted to a "distributed governance system" (Geuna et al. 2003, p 393). Geuna et al. (2003) formulate as a key question for further research, whether or not it is appropriate to remodel science or the science system *based on the principles of a network:* "The drawing of scientific and technological research into closer interaction suggests an alternative model for the science system, one based upon a 'network' of distributed knowledge" (Geuna et al. 2003, p xix). Where networks also qualify as open systems, the public-good attributes of science, of course, still are valid. Other areas of networks could involve aspects of "negotiated" access, but also mechanisms of "cartelization". "A crucial advantage of the network approach rests in the flexibility of networks by complementarily tying together and partially reconciling the science-as-a-public-good and the science-as-a-market. Networks allow for fluid and hybrid configurations and reconfigurations of the public-good and of markets" (Campbell 2008, p 107). Networks could be categorized as a "key unit of analysis" for "innovation performance", with the implication that the support and formation of links between "network actors" already has *per se* a certain potential of creating a surplus in performance (Geuna et al. 2003, pp 396–397). Two ideas were taken from the Mode 1 and Mode 2 model of knowledge production (Gibbons et al. 1994): first, by referring to the "network of distributed scientific knowledge" metaphor; second, by confirming on empirical grounds that firms depend increasingly on scientific and technological knowledge and are therefore now more willing to participate actively in scientific networks. For Martin (2003), the "entrepreneurial universities" offer a good match for this growing demand of business for knowledge, bringing together and integrating implications of the Mode 1 and Mode 2 knowledge production and of the Triple Helix innovation model (Etzkowitz and Leydesdorff 2000).[39] Geuna et al. (2003) are inclined to believe in "a hybrid co-existence and co-evolution of science-as-a-public-good and of science-as-a-network" (Campbell 2008, p 108), when they conclude: "The coexistence of a traditional public good and the newer network structure of science is the context that the contributors to this volume address" (Geuna et al. 2003, p xx). Geuna et al. (2003, p 399) emphasize that their analysis "does not provide a new rationale for policy intervention", also not "a new rationale for public funding of research". Crucial, however, is here flexibility, offering to governments the opportunity of engaging effectively in "*policy management,* selecting and managing a wide range of different and sometimes competing policy instruments" (Geuna et al. 2003, p 399). The assertion is that the governance of science shifts gradually in favor of a "distributed governance system" and a "network of distributed knowledge", where policy management

[39] Consequently, we may ask whether entrepreneurial universities do not also demand and require "academic firms" as the complementary opposite for comprehensively unfolding the entrepreneurial drive (Campbell and Güttel 2005, pp 170–172)? As already elaborated in Sect. 3.2.2, *we might experience a co-evolution of Mode 1, Mode 2 (= entrepreneurial universities?) and Mode 3 universities (and of university sub-units) on the one hand, and of academic firms and commercial firms on the other.* This co-evolution potentially marks a dominant trajectory scenario for the advancement of knowledge societies and knowledge economies.

also becomes more important. One interpretation would be to propose a *hybrid co-existence and co-evolution of science-as-a-public-good and of science-as-a-network that aims at combining complementarily science-as-a-public-good and the science-as-a-market*. In more detail, Geuna et al. (2003, pp 398–399) offer the following key findings for a further discussion (see also Campbell 2008, p 108):

1. *The importance of research:* "Research still matters", and research should be considered to be crucial for innovation strategies of firms.
2. *University/business linkages matured to a higher degree in the U.S.:* In the United States, the university/industry linkages reveal a "deeper structure" than in Europe. The increasing demand of business for knowledge created a plurality of university/industry networks in the U.S. In Europe, contrarily, networks often were created by policy, culminating in the dilemma of then searching for a demand by business and connecting these networks even further to business.
3. *The importance of the "levels of funding" for research:* "Levels of funding" of research are important and crucial for shaping the structure, design and architecture of innovation systems. Comparatively lower levels of R&D financing by business caused or co-caused a "lost decade" for firm-based research in Europe during the 1990s.

Ewan Ferlie, Christine Musselin and Gianluca Andresani (Ferlie et al. 2009) are interested in interpreting the "European higher education (HE) systems" from a "public management perspective" (see also Ferlie et al. 2008).[40] One of their points of departure is that "most HE systems in Europe, but also in the US, are publicly funded" (Ferlie et al. 2009, p 1).[41] Still, higher education sometimes is being regarded as a "stand alone" sector, which is not "easily comparable" with other "public sector" organizations. Their analysis, however, stresses that there are more similarities than differences "with other professionalized public sector settings" by referring to the following characteristics (Ferlie et al. 2009, p 2): (1) a primarily public funding base; (2) the "state" is interested in regulating the

[40] The article in *Higher Education* was titled by Ferlie et al. (2008): "The Steering of Higher Education Systems: A Public Management Perspective". Whereas, the book chapter is being titled (Ferlie et al. 2009): "The Governance of Higher Education Systems: A Public Management Perspective". This could be taken as a metaphorical illustration, how conceptually ambiguous it may be in many and several cases, to decide, whether one should speak of governance or of steering in higher education. For both approaches (versions of wording) a reasonable reasoning can be provided.

[41] This asserted public management perspective certainly has plausibility for higher education in Europe. In the U.S., the situation already is more complex (see again Figs. 2.4 and 2.6 in Sect. 2.2): there, the dominance of private financing in and of tertiary education obviously challenges the proposition that higher education in the U.S. would resemble a public or semi-public sector. The American particularity has not really been addressed by Ferlie et al. (2009). Besides the U.S., there are also other OECD countries with a strong private funding component for tertiary education: for example, Canada, Japan, South Korea, and Chile (OECD 2009, p 211).

"behavior" of HEIs, because they affect "citizens' life chances significantly"; (3) this is being approached by a "mix of professional and bureaucratic elements"; (4) and the HEIs "operate within strongly structured and institutionalized fields".

As a focal point of their analysis, Ferlie et al. (2009) bundle their conceptions of governance of higher education, in combination with possible redefinitions of the role of the nation state, into "two main narratives of public services reform: the NPM and the Network governance" (Ferlie et al. 2009, p 11).[42] The term "narrative" should underscore that these are not only "pure analytical and theoretical frameworks", but tie together also "technical", "political" and "normative" elements. *NPM* is being identified to have originated as a "public sector reform wave" under the conservative Thatcher governments in the UK in the 1980s, and has diffused also to other countries since then: "The UK has exported some NPM reform instruments globally (privatization; developed executive agencies) so the NPM was more than a narrow UK trend" (Ferlie et al. 2009, p 13).[43] *Network governance* underscores that "a greater range of actors and interactions emerges", and with a central state less "directing", but more "influencing" the HEIs (Ferlie et al. 2009, p 16). Basically, no country applies a pure model of "network governance", but in most countries there are some forms of "larger networks", for example, involving and introducing "new actors in many fields" (Ferlie et al. 2009, p 17). In the following, the crucial characteristics of these two narratives are being documented and summarized:

1. *Key propositions of the "NPM" narrative* (Ferlie et al. 2009, pp 14–15)[44]:
    - 1.1 "Market based reforms" (e.g., competition for students and for competitive research funding);
    - 1.2 "A hardening of soft budgetary constraints" (e.g., such as efficiency and value for money);
    - 1.3 "Stress on performance" (e.g., sophisticated and advanced initiatives of measuring performance);
    - 1.4 "Concentration of funds in the highest performing HE institutions";
    - 1.5 "The Ministry and its agencies attempt to steer the system vertically, through setting targets and performance contracts";
    - 1.6 "Higher education institution governance" (e.g., strengthening of "strong rectorates" and a declining influence of faculty and unions);
    - 1.7 "Managerial roles" (e.g., more emphasis on explicit managerial roles within the HEIs);

[42] In their earlier article in *Higher Education,* Ferlie et al. (2008, pp 334–340) even speak of "Three main narratives of public sector reforming and how they apply to higher education". In addition to New Public Management and Network governance, they present the "Neo-Weberian narrative" as the third narrative. This structure then was reduced to two narratives in Ferlie et al. (2009, pp 12–18).

[43] Compare also again with Magalhães and Amaral (2009, p 188).

[44] New Public Management, here, incorporates many references to quality assurance, quality enhancement and quality management (see the follow-up Sect. 3.2.4 later).

1.8 "Growth of performance related pay for faculty and private style Human Resource Management".

2. *Key propositions of the "Network Governance" narrative* (Ferlie et al. 2009, pp 17)[45]:

2.1 establishment and promotion of "networks between HE institutions" and "between HE institutions and other social actors";
2.2 networks create and sustain "substantial self steering and self organizing capacity"[46];
2.3 some of the networks focus explicitly on "joint problem recognition", "joint problem-solving", forms of "organizational learning" and also the "dissemination of 'good practices'/leading-edge knowledge";
2.4 "External control systems" fall in line with "'light touch' systems" and "professional self-regulation";
2.5 also the governance of the higher education systems can be based on networks, where "governmental and non-governmental organizations" interplay at "different levels" and/or in "different functional areas";
2.6 the Ministry of Education and/or equivalent ministries and other "HE agencies" follow more a policy pattern of indirectly shaping HEIs, there is more a "'hands off' style of system management at national level";
2.7 the "senior management style" adopts more elements of "softer leadership skills", "distributed leadership" and "team based approaches" (this is being seen in contrast to the "highly individualized management typical" for NPM);
2.8 "Human resources management systems" focus more on rewarding "high performing teams" than "individuals".

In practice, of course, it is conceivable and thinkable that governance of and in higher education could try to integrate, in a hybrid format and in parallel, different elements of the NPM as well as of the Network Governance approaches simultaneously.

### *3.2.4 Governance of and in Higher Education: Quality Assurance, Quality Enhancement and Quality Management*

QA, QE and QM of higher education can be linked directly to the governance of and in higher education. QA, QE and QM may be regarded as a set of approaches,

[45] Compare also with Rhodes (1996). Some of the features of the "Network Governance" narrative (Ferlie et al. 2009) already are being explicitly addressed by Rhodes' (1996) "Governing without Government".

[46] This here allows for conceptual cross-references with and to *the self-rationale, self-organization, self-steering and self-governance in systems theory* (see Sect. 3.1).

principles, methods, procedures, and tools that can be applied and used for the governance and for the steering of higher education. To rephrase the previous: *governance of and in higher education (at least partially, and at least to a certain extent) can be based on and can work through QA, QE and QM*. Of course, it is necessary to emphasize that QA, QE and QM are not the only possible approaches for higher education governance, however, the represent valid approaches for higher education governance. QA can refer to the internal governance of HEIs (universities and other higher education organization) as well as to the external governance of the whole higher education sector by the state or government (multi-level governments). We are inclined to propose that QA and QE offer opportunities for a sophisticated and modern governance of higher education in the mid-term and long-term format of a sustainable development, because they make explicit, to what they refer, namely "quality". *In conceptual terms, QA, QE and QM are focused on and directed toward "quality"*. Quality represents one of the "self-rationales" of higher education.[47] Thus, if the internal and external governance of higher education is being based on (and modelled upon) quality, then quality can also act as a driver for the self-governance of higher education, with the following implication: *if primarily the principles of quality govern (internally and externally) the higher education, then higher education (also) self-governs itself in accordance with quality*. In empirical terms, obviously, it always would have to be tested (and evaluated), how successful QA, QE and QM are or were in promoting the quality of higher education. It cannot be taken as given or granted that the conceptual assertion and claim of quality also is being achieved and realized in practice. Here we should state the need for an ongoing critical reflection process.

What is quality of and in higher education? The "Analytical Quality Glossary" provides the following definition for "assurance" or "assurance of quality" in higher education: "Assurance of quality in higher education is the collections of policies, procedures, systems and practices internal or external to the organisation designed to achieve, maintain and enhance quality. QA, in higher education, has become a generic term used as shorthand for all forms of external quality monitoring, evaluation or review" (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/assurance.htm). The same glossary defines "quality" in the following way: "Quality is 1. (n) the embodiment of the essential nature of a person, collective, object, action, process or organisation; 2. (adj) means high grade or high status (as in a quality performance); 3. a shorthand, in higher education, for quality evaluation processes." (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/quality.htm).

*Implications of "epistemic governance" of and in higher education are that a comprehensive definition of quality of higher education would have to be based on the underlying epistemic structures of quality and of quality in higher education*. Without looking at the underlying epistemic structure, a sufficient definition of quality, in its final consequence, would not be possible. Our line of thinking for

[47] This understanding clearly cross-refers to notions of systems theory.

epistemic governance emphasizes that a good, sustainable and effective governance of and in higher education is only possible, when the underlying epistemic structure, the underlying epistemic base or the underlying epistemic paradigms of higher education are being addressed. The underlying epistemic structure is being structured by "knowledge paradigms", for example Mode 1, Mode 2 or Mode 3 of knowledge production (see again Sect. 3.2.2 and Fig. 3.2). In higher education, of course, there can be competing knowledge paradigms and there can be disagreement, what the dominant (or even domineering) knowledge paradigms are or should be. What epistemic governance does, however, is to make this underlying epistemic structure explicit, thus also visible.

The conceptual link of epistemic governance to QA, QE and QM is the following: (1) The "knowledge paradigms" structure the underlying epistemic structure of higher education. (2) The "knowledge paradigms" also structure specifically what is or what could be meant with and by "quality" for those different types of knowledge in higher education. *Quality of and in higher education, therefore, can often mean (but not necessarily always) the "quality of knowledge" that is being created, produced and applied and diffused by higher education*. (3) Quality could be taken and understood as one concept or quality could be structured in different "quality dimensions", speaking either of quality or speaking preferably of the different "quality dimensions". So there is a direct conceptual link between knowledge paradigms and quality dimensions: *quality dimensions are based on the underlying knowledge paradigms of higher education*. (4) Reviewing empirically different approaches and systems of QA, QE and QM, often the following "quality dimensions" are being addressed: quality, efficiency, relevance, and viability (sustainability) (Campbell 1999, p 375; Campbell 2003, p 111). These quality dimensions combined and put together generate perhaps the additional quality dimension of effectiveness (effectivity). (5) The underlying epistemic "knowledge paradigms" and the "quality dimensions" of higher education also must be brought in balance with the "functional profile" of higher education, which refers to the following functions (see again Sect. 2.1 and Fig. 2.2): education (teaching), research (R&D, basic research) and "third mission" activities (innovation and others). (6) *QA, QE and QM, from the perspective of epistemic governance, should orient themselves to quality and quality dimensions that also cross-refer to the underlying epistemic structure, the knowledge paradigms, of higher education.* The link goes from knowledge paradigms to quality dimensions and further to QA, QE and QM. Without such a cross-reference to the underlying epistemic structure of higher education, so the proposition here, it is not possible to define and to design QA, QE and QM comprehensively and in a sustainable format. (7) Paraphrasing the here said, we also could add that *QE represents and defines a crucial goal for QA*. Does QE benchmark QA?

Based on our presented propositions in context of epistemic governance of and in higher education (see above), we suggest now the following definitions for QA, QE and QM:

QA and QE focus on the *assurance* and *enhancement* of "quality" or the "quality of knowledge" (education, research, and "third mission" activities, for example

innovation) of universities, of other HEIs and of the whole higher education sector along different "quality dimensions" that can be addressed as: quality, efficiency, relevance, viability (sustainability), and effectiveness (effectivity). The quality dimensions refer to and are based (are being based) on the "knowledge paradigms" of the underlying epistemic structure of higher education. Mode 1 and Mode 2 of knowledge production represent possible examples for such knowledge paradigms. Quality according to "Mode 1" is: *academic excellence, which is a comprehensive explanation of the world (and of society) on the basis of "basic principles" or "first principles", as is being judged by knowledge-producer communities (academic communities structured in agreement with a disciplinary framed peer review system).* Quality according to "Mode 2" is: *problem-solving, which is a useful (efficient, effective) problem-solving for the world (and for society), as is being judged by knowledge-producer and knowledge-user communities.*[48] It can be asserted that there is a certain tendency that the "enhancement" component of quality gains gradually in importance over the "assurance" component of QA (alternatively, QE could be understood as a key feature and a key principle of and for QA). Interpreted from a long-term perspective, *QE defines and sets a crucial goal for all QA*. QM represents the practical approach and way of implementing, processing and advancing QA and QE. Universities, other HEIs and the whole higher education sector are in a position of possibly implementing, developing and promoting comprehensive QM systems (so-called QM systems).

For defining the *quality or "quality dimension"* of QA, QE and QM, we already provided the example of linking quality to quality definitions based on the knowledge paradigms of Mode 1 and Mode 2. The other "quality dimensions" could be described as follows (Campbell 2003, pp 109–110): (1) "Efficiency" indicates input–output ratios, by maximizing (optimizing) output and minimizing (optimizing) input. (2) "Relevance" can go in at least two directions. One is relevance for higher education itself (for example, the academic research communities). The other is relevance for practical application purposes in society and the economy. (3) "Viability" ("sustainability") refers to and assesses furthermore the organizational or institutional context. What are the organizational and institutional structures and processes in place that support the long-term viability and/or sustainability of higher education and of HEIs, so that knowledge production of and in higher education can engage in education (teaching), research and "third mission" activities? Viability and sustainability bring the "social dimension" and "institutional dimension" of higher education into mutual play. (4) "Effectiveness" ("effectivity") refers to the extent that objectives or goals were met and realized. Effectiveness, as a concept, is more difficult to model than efficiency. Effectiveness also could be modeled based upon quality, efficiency, relevance, and viability (sustainability): therefore, different profiles of effectiveness are possible. National higher education systems or individual HEIs may develop and promote

[48] See again our definition of knowledge paradigms for epistemic governance of and in higher education in Sect. 3.2.2).

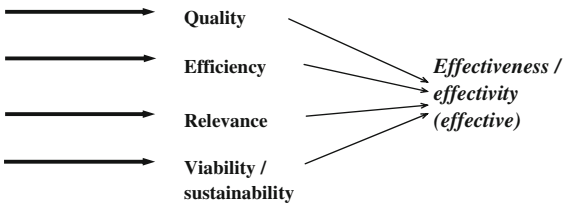



**Fig. 3.4** Different "quality dimensions" of and in higher education

Source: Authors' own conceptualization and visualization (based on Campbell 1999 and 2003).

distinct effectiveness profiles. It does not resemble an easy task, trying to evaluate, which HEI (higher education institution) or which higher education system is more effective. "*Effectiveness* may serve as an example for a 'higher' or 'advanced' dimension, focusing on the question: how effective is university research? Effectiveness often is used as a policy term, and should express the degree of achievement of certain (research) objectives. Still, in practice, a consistent operationalization (application) of that concept often proves difficult. Within our line of argument the 'effectiveness' may be modeled as a combined derivation of 'first-level' dimensions, allowing the statement of specific and distinct effectiveness profiles for various institutions (or disciplines). Consequently, different 'effectivenesses' arise: some institutions might do better concerning efficiency, others perhaps demonstrate saliency with regard to relevance" (Campbell 2003, p 130). See Fig. 3.4 for a visual portraying of different quality dimensions of higher education and in higher education.

The "European Standards and Guidelines" (ESG), which are published by ENQA[49] and are being called under their full title "Standards and Guidelines for QA in the European Higher Education Area" (ENQA 2009), represent a state-of-the-art policy consensus and benchmark document on internal and external QA in higher education (at least within European context). Furthermore, the external QA agencies and their peer review approach to higher education are being addressed here. This document emphasizes and reveals what can be regarded as a certain QA consensus in the relevant communities. The expressed standards and guidelines should be interpreted as necessary *minimum requirements*. The document refers also explicitly to the "European Ministers of Education" (ENQA 2009, p 5). The foreword to the ESG report states:

> It must be emphasized that the report is no more than a first step in what is likely to be a long and possibly arduous route to the establishment of a widely shared set of underpinning values, expectations and good practice in relation to quality and its assurance, by institutions and agencies across the European Higher Education Area (ENQA 2009, 5).

In a classification by the OECD (2008, pp 265–277), a three-fold "typology of QA approaches" is being introduced, addressing the following QA activities:

[49] ENQA is the acronym for: the European Association for Quality Assurance in Higher Education.

"accreditation"; "assessment (evaluation)"; and "audit (review)" (compare also with Teichler 2006).[50] In this context we would like to add as a fourth approach "certification (certificate)". In the following, we discuss these four approaches or procedures of QA in and of higher education in more detail:

1. *Accreditation:* "Accreditation is the establishment of the status, legitimacy or appropriateness of an institution, programme (i.e. composite of modules) or module of study" (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/accreditation.htm). A question typically to be asked may be "Are you good enough to be approved?". The result of an accreditation may be a "Yes/No or Pass/Fail decision" (OECD 2008, p 266; for a comparative overview on the status of accreditation in Europe, see Schwarz and Westerheijeden 2004).
2. *Assessment or evaluation:* Assessment is "A general term that embraces all methods used to judge the performance of an individual, group or organisation" (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/assessment.htm). "Evaluation (of quality or standards) is the process of examining and passing a judgment on the appropriateness or level of quality or standards" (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/evaluation.htm). A standard question to be asked could be "How good are your outputs?" (OECD 2008, p 266), thus output and outcome represent core considerations for assessment or evaluation.[51] *Evaluation implies to "evalue" (value, validate, estimate, judge) and/or to frame (analyze), for example, the "quality" of one or several HEIs.* Evaluations address the following "functions" (Campbell 2003, p 109): (a) Implementing "complex and sophisticated feedback mechanisms into the university system", transforming universities form "black boxes" into "white boxes". What democracy does for the political system or the market for the economy (i.e. providing feedback), may be a role of evaluation for higher education. (b) Helping to set up and to develop "an 'academic market', by emphasizing market or market-similar principles" that, however, are tailored to the specifics and needs of academia. An academic market could also be seen as a "quasi-market" (Denters et al. 2003; LeGrand and Bartlett 1993). When, based on an understanding of systems theory, the "market" is being interpreted as a "specific type of a system", then academic markets, in combination with evaluation, offer opportunities for academic self-governance

[50] Teichler (2006) names and lists the following quality assurance approaches in higher education: assessment, reviews, evaluation, accreditation (licensing), and audit.

[51] In terminological terms, when one is interested in distinguishing *between* assessment and evaluation, the assertion may be that an evaluation represents a comprehensive and deeper-going form of assessment, while the assessment falls more in line with an "evaluation light". However, in practical policy terms, the distinctions can be blurred, if not even sometimes misleading. The UK Research Assessment Exercise (now REF, the Research Excellence Framework) is an international example for one of the most comprehensive ex-post evaluation systems of university research that ever was implemented and existed empirically, however, it is being called an "assessment", and not an "evaluation" (even though evaluation might have been the better wording here).

and academic self-steering.[52] (c) Supporting the "improvement of the 'rationality' and decision-making of university systems". Results and outcomes of evaluation can be used as explicit references and criteria for supporting decision-making within higher education, in connection, for example, with resource allocation and reallocation, the promotion of individual academic careers or organizational and institutional reform ("institutional learning"). There is a permanent necessity for decision-making within and about higher education. Without evaluation (or other procedures of QA and QE), decision-making is being confronted and challenged by "black box" phenomena. (d) Legitimizing the use of public resources, "particularly of public basic funding (GUF)", for HEIs. Evaluations can be seen as approaches and means for emphasizing and creating "transparency and accountability". Thus, evaluations help to legitimate the public financing and funding of the higher education sector vis-à-vis the public funders and decision-makers, the states and governments, and the public and society in more general. The public in a democracy (knowledge democracy) has here even higher expectations, at least potentially.[53]

3. *Audit or review:* "Audit, in the context of quality in higher education, is a process for checking that procedures are in place to assure quality, integrity or standards of provision and outcomes" (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/audit.htm). "1. Review is a generic term for any process that explores the quality of higher education. 2. Review refers to explorations of quality that do not result in judgements or decisions" (Harvey 2004–2009, http://www.qualityresearchinternational.com/glossary/review.htm). Typical questions for an audit or review may be "Are you achieving your own objectives? Are your processes effective?" (OECD 2008, p 266). While assessments and evaluations emphasize and focus on outputs and outcome, audits and reviews look in greater detail on processes.
4. *Certification or certificate:* Certification is a procedure (process) that leads finally to a "certificate" or "non-certificate". A certificate is a formal ("formalized") statement, in principle visible or publishable, for example on the "quality" of one or several HEIs. Therefore, a certificate represents the output or outcome of a quality-assurance procedure (process) that may be based on accreditation, evaluation or audit (or a combination of these).

*In practice, there can be a manifold overlapping between these different approaches and procedures of QA and QE in higher education*. Also conceptually, it is not always easy or clear, how to draw here the boundaries. In case of a

[52] See also again the "New Public Management narrative" of Ferlie et al. (2009) in Sect. 3.2.3, with the specific references to markets.

[53] In practice, very different designs of evaluation are possible. For example, the University of Applied Arts in Vienna implemented and still is in the process of implementing an evaluation system of teaching, which encourages the autonomy but also self-responsibility of the lecturers (Blimlinger et al. 2010). Evaluation also can be challenged by new trends, such as globalization or also the diffusion and arrival of new media, such as the digital media (Pfeffer 2012).

conceptual overlapping, what would be the conceptual conclusion? For example, an institutional audit of a university or a different higher education institution may want to review, whether institutional procedures of *evaluation of self-evaluation* (of teaching and/or research) are in place.

> This may even lead to the understanding of a "two-tier" or "two-level" system of QA (QE), where an audit has the role or function of systematically reviewing from a broader or different perspective the evaluations or self-evaluations. Metaphorically speaking, an audit could qualify as a form of "meta-evaluation"

(for a graphical visualization see Fig. 3.5). Ernst (2008, p 27) suggests the following distinction between "evaluation" and "QM": evaluation focuses more on "improving" processes, while QM is more in favor of "stabilizing processes". We can iterate our definition of QM, provided earlier, by looking more closely at the approaches of QA that we discussed before:

> QM, or a QM system (QM system), represents an integrated system of QA and QE, which, in context of higher education or HEIs, is in a position of using and combining elements of the approaches and procedures of accreditation, evaluation, audit, and certification.

QM refers to the internal governance (seen wider) or steering (seen more narrow) of higher education. QM may also refer to the external governance (or steering) of higher education by other actors (for example, the state).

The application of QA and QE in higher education appears to be compatible with propositions of Guy Neave on the "Rise of the Evaluative State" (Neave 1988a, b). A more frequent application of QA appears also as being compatible with propositions about a spreading of "managerial governance" (Kehm and Lanzendorf 2006a, b and c), NPM in general (Magalhães and Amaral 2009) or the "NPM" governance narrative in higher education (Ferlie et al. 2009). *The evaluation of university research (that is R&D, which is being carried out in the higher education sector) is one primary area of QA and QE in higher education.* Concerning the extent and systematic comprehensiveness, with which university research is being evaluated, there is still a degree of considerable variation between and among the different national higher education systems in and within Europe and outside of Europe (for an overview, see: Campbell 1997 and 2003; Coryn et al. 2007; Geuna and Martin 2003; Whitley and Gläser 2007). The Research Assessment Exercise (or RAEs) in the UK represents a crucial example of a system-of-university-research-evaluation that attracted considerable attention and has been analyzed and discussed outside of the UK as well. As Barker (2007, p 3) puts it: "The RAE represents one of the most institutionalized forms of research evaluation in the OECD economies. It has become a primary means of concentrating resources for research in a relatively small number of universities. Its main purpose is to inform funding decisions, and the indirect effects come from the public signaling of quality". Whitley (2007, p 9) distinguishes between "weak" and "strong" research evaluation systems (RES). He defines RES in the following way: "Research evaluation systems (henceforth RES) are organized sets of procedures for assessing the merits of research undertaken in publicly-funded

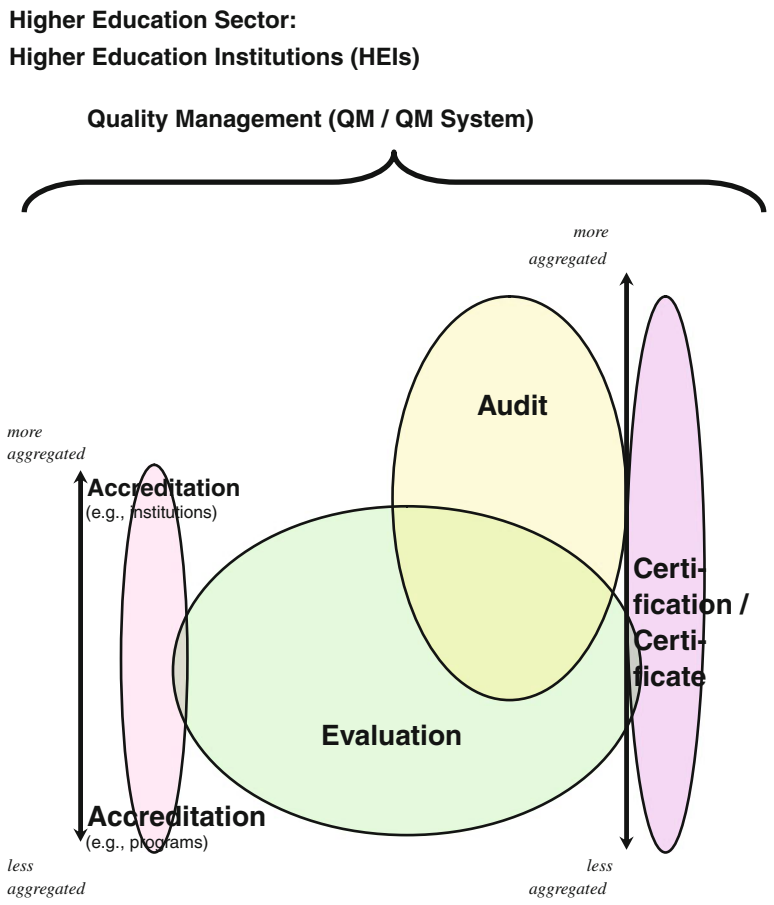



**Fig. 3.5** How different elements and procedures of QA and quality management possibly interplay in quality management in higher education

organizations that are implemented on a regular basis, usually by state or state-delegated agencies" (Whitley 2007, p 6). The UK RAE clearly is an example for a strong research evaluation system. As Geuna and Martin (2003, p 280) assert: "Over the past decade, the UK has developed one of the most advanced evaluation systems in Europe." In the following, some of key characteristics of the UK's RAE are being summarized (Campbell 2003 and 2006c; see also Pechar 2006):

1. *RAEs/type of evaluation and frequency:* The UK RAE[54] represents a "systematic, comprehensive and disciplinary-based institutional ex-post research

[54] Concerning the RAE 2008, see: http://www.rae.ac.uk/.

evaluation" (Campbell 2003, pp 110, 112). Geuna and Martin (2003, p 281) portray the RAE in the following way: "The RAE can be described as an '*ex post* evaluation' based on 'informed peer review'". There were six RAE cycles: 1986, 1989, 1992, 1996, 2001, and 2008. The RAEs are being currently succeeded by REF, the research excellence framework, and the first REF cycle is scheduled for completion in 2014.[55]

2. *RAEs/conceptual and methodic procedure:* Every UK university (higher education institution), interested in continuously receiving public basic (institutional) funding, was obliged to participate in the RAEs. For the RAE purpose all departments at UK universities were assigned to specific "units of assessments" (UOAs), reflecting "subject areas", by this indicating different disciplines. Per discipline an expert panel, a so-called "assessment panel", was set up. Those expert panels conducted the actual peer review of the university research of the university departments. Therefore, the RAE qualifies as a "disciplinary-based peer review". Quality of university research was mapped only on "one dimension". The peers evaluated the university research in reference to the following information: staff information (overview of the different categories of the "research active academic staff", also expressed in full-time equivalents), research output and additional information (for example, external research income). Key to here was research output: For every university staff member, who has been declared as research-active, "up to four items … of research output" should have been documented that were "brought into the public domain during the publication period". (HEFCs 2005a, pp 13, 19–21).[56] Put simply, the best four (up to the best four) publications should have been identified and named per university researcher, however, publicly accessible research output other than publications also would have been eligible. In context of the RAE 2008, and based on the supplied information, the expert peers of the assessment panels (grouped in disciplinary panels) graded on a 5-point rating scale (expressing different "quality levels", ranging from "unclassified" and 1* to 4*) the research quality of the individual university department. The rating finally displayed, to which percentage extent the research-active academic staff was falling into which specific category of research quality. This evaluation outcome was published online, and by this was made *de facto* publicly available worldwide (HEFCs 2011).
3. *RAEs/impact of the evaluation results of university research on the public basic funding:* In the UK, the evaluation outcome has a direct impact on the public basic funding (for research) that UK universities (HEIs) receive. For example: in the funding year of 2010–2011, approximately 70 % of the higher education R&D financing in England (one of the regions in the UK) was allocated through the "mainstream quality-related research funding". This mainstream QR takes into account the volume (of the research-active staff), the relative costs of

[55] On REF, see: http://www.hefce.ac.uk/research/ref/.

[56] The acronym HEFCs stands for: Higher Education Funding Councils (in the UK).

research in the different disciplines and the quality of research as is being documented (and asserted) by the RAE. The Higher Education Funding Council for England states with regard to its funding decisions (HEFCE 2010, pp 10, 42): "These decisions take account of the volume of research (using research-active staff numbers), the relative costs (reflecting, for example, that laboratory-based research is more expensive than library-based research), any government policy priorities for particular subjects and the quality of research as measured in the RAE."

4. *RAEs/the evolution of the RAEs to the Research Excellence Framework (REF):* The RAE 2008 was the last RAE. The RAEs are being replaced and succeeded by the Research Excellence Framework (REF). The first REF cycle is dated to complete by the end of 2014. Functions of REF are: (a) supporting a "selective allocation of research funding" to HEIs; (b) creating important "benchmarking information"; (c) emphasizing "accountability for public investment" into research that is being carried out at HEIs (all quotes in this paragraph are taken from HEFCE 2011). REF is designed to continue several key elements of the previous RAEs. "The REF will be a process of expert review, informed by indicators where appropriate." For that purpose the UK university departments again are being assigned to different "UOAs". The research-oriented submissions by individual institutions will be evaluated on the basis of the following considerations: (a) quality of the research output, which once again defines the primary focus of the research evaluation, perhaps in connection with citation information and citation analysis ("This will continue to be the primary factor in the assessment. The quality of research outputs will be assessed by the expert panels against international standards of excellence"); (b) coverage of the "wider impact of research"; (c) and an assessment of the "vitality of the research environment". REF will also apply a 5-point rating scale ("unclassified", 1* to 4*) (see HEFCE 2011; see also Benneworth et al. 2011).

What were or are the effects of the RAE-research evaluations on UK university research and higher education in the UK? This represents a key question for UK's higher education governance and policy, whether or not systematic ex-post evaluation of university research, with a structural formula linkage of evaluation results to public basic funding, created a positive and sustainable drive for higher education. There exist diverging opinions about this. Geuna and Martin (2003, pp 300–303) raise the question about possible benefits and costs of evaluation or of "performance-based" ("research-funding") systems more generally. At the beginning, so their assumption, benefits will increase. However, after a while, benefits may saturate, and then the costs might start outweighing the benefits. In their own words, Geuna and Martin (2003, pp 300–303) state:

> Over time, however, the benefits of a performance-based system will grow. … Later, however, increases in benefits will begin to level off. Although it is difficult to produce evidence, our impression, based on the UK's experience, is that after a number of exercises, the level of benefits reaches a peak, and then encounters diminishing returns. … If these assumptions are valid, the benefit curve will at some point fall below the cost curve.

The Higher Education Funding for England (HEFCE), which, of course, represents an institution that plays an active and advocating role for the RAE (or now REF) system in the UK, contracted to EVIDENCE (Evidence Ltd) a study on possible effects of selective research funding in the UK in context of the RAEs. In September 2005, the HEFCE released the report. Main findings of the report are (HEFCE 2005, pp 35–42; see also Campbell 2006c, pp 44–45): (1) "System performance in relation to funding selectivity": Academic research performance of the UK universities, for example when measured in citations of scholarly work, increased since the mid-1980s (the first RAE was in 1986). (2) "Institutional performance in relation to selectivity": UK's university departments (but also faculties and schools) are now in a better position and also more inclined to expand their research-grants-based research portfolio. (3) "Institutional behavior in reaction to selectivity": There is a certain potential for a growing gap between HEIs that perform better or perform weaker. The domestic university base in the UK may change in the future, in the sense that the better performing HEIs attract increasingly more of the public resources. There are expectations that university management will react more sensitively to evaluation outcomes.[57] (4) "Individual research performance and behavior": Pressures on the academic individual to extend and expand his or her research output have increased. Another effect could be a favoring of staying within established mainstream work, because interdisciplinary research would be too risky, including an exposure to higher risks of being rejected (in peer review), thus producing uncertain outcomes. Here the report states explicitly (HEFCE 2005, p 40): "Avoiding an uncertain outcome may mean staying within a narrow field once expertise has been established. The likelihood of getting research funds and of publishing in prestigious journals can then be maintained whereas moving to an interdisciplinary or innovative area would create uncertainties". Chiara Franzoni addresses the question, to which extent QA in higher education in Europe created incentives for increasing academic publication efficiency. In the conclusion to her analysis, she cautiously offers the following interpretation (Franzoni 2009, p 15):

> Our work is preliminary but suggests that the U.S. is on a different growth trajectory as measured by submissions than that of many other countries, despite having an R&D budget that has been growing at a faster rate than that of most other countries. The increased competition has not come from 'new entrants' but from countries in Europe as well as Australia. … We do not know why but our analysis suggests that countries that adopted incentives saw these incentives pay off in terms of increased submissions and publications.

Approaches and procedures of a continuous *evaluation of evaluation* or of a critical reflection of QA and QE systems are equally necessary (Who evaluates the evaluators?). The already mentioned structural "two-tier" or "two-level" architecture of QA (QE), where a second-level audit reviews first-level evaluations (QA

[57] Such a possible shift in sensitivities of university management would be compatible with propositions of New Public Management, NPM (see our discussion back in Sect. 3.2.3).

measures), represents a procedural design for a continued analysis at the "meta-level". There are also many other examples of assessment of QA (QE). *One implication of epistemic governance in this context is, to validate, to which extent approaches and procedures are really well-suited to refer to the underlying epistemic structure and "knowledge paradigms" of higher education*. This should support a sustainable development in QE. Furthermore: How does epistemic governance-based QA and QE capture possible shifts and changes in the underlying epistemic structures and knowledge paradigms? Referring to the earlier cited trade-off consideration of Geuna and Martin (2003) on the benefits and costs of "performance-based systems" in higher education, the following phenomenon also cannot be completely ruled out: After a while, does higher education learn how to play the game of evaluation, QA and QE? Does this imply the need that systems of evaluation and other forms of QA must be kept in a mode of permanent change, so that there are adaptations, so that learning processes in evaluation, QA and QE are possible? It represents always a tricky challenge, to decide, which elements or components of a QA and QE system should be kept constant, and which elements or components should be changed. There is no simple balance in QM between continuity and flexibility. Therefore, it always must be kept in mind that evaluations and QA can impose negative effects on higher education. Though their arguments are not directly linked to higher education, Pülzl and Wydra (2011) raise and discuss several interesting questions in context of sustainability and policy. *Sustainable governance or sustainable epistemic governance represents also an interesting and relevant issue for higher education.* However, as the arguments in this chapter have demonstrated (so our proposition), QA, QE and QM offer opportunities for developing and supporting an advanced governance of and in higher education. QA, QE and QM are also convincingly compatible with the demands and requirement of epistemic governance in higher education.

Wilhelm Krull coined the phrase of "evolution by evaluation" or "evolution through evaluation" ("*Evolution durch Evaluation*") (see Campbell 2003, pp 125–126; furthermore, see Krull 2000). Governance, also epistemic governance, of and in higher education always should address the following key questions about QA, QE and QM (Campbell 2003, p 111): What is the effectiveness, how effective are QA and QE? Do they lead to organizational or institutional improvements in HEIs? How can QA and QE be balanced with diversity or, even more so, promote diversity in higher education, which often is being considered as being necessary for creativity and a creative knowledge production?[58] Is there a mid-term or long-term (evolutionary) increase of the quality of higher education? Finally: *Is there a co-evolution of the quality of higher education and the evaluation in higher education, namely approaches and procedures of QA, QE and QM?*[59]

[58] See here some of the relating ideas and arguments in Dubina et al. (2012).

[59] Depicted more narrowly, one may ask (Campbell 2003, p 111: Is there a "co-evolution of research quality and research evaluation"?

# Chapter 4
# Conclusion: Possible Implications of Governance and "Epistemic Governance" for the Academic Profession (Academic Faculty) and Their Academic Careers

Cavalli and Teichler (2010, p S1; Teichler 2010) introduce the following definition for "academic profession": "The academic profession is the 'productive workforce' of higher education institutions and research institutes, the key organizations in society serving the generation, preservation and dissemination of systematic knowledge. There is a general consensus that the academic profession is highly important in a society often characterized as a 'knowledge society'. They raise the question, whether the academic profession has changed in recent years? Change could refer to and be benchmarked with the following indicators and characteristics: (1) "identities of the academic profession"; (2) the spectrum of "employment and remuneration conditions"; (3) "varied resources" and differences in academic performance; (4) the impact of different "managerial and evaluative practices" on the academic profession; (5) either increasing differences or more of a convergence (decreasing differences) between the various higher education systems. Of course one could also ask, whether there is a distinction between the concepts of the "academic profession" and of the "academic faculty"? In context of our analysis here we want to leave this undecided and will treat both terms as interchangeable, even though there appear to be some convincing arguments that the academic faculty could be conceptually incorporated into the academic profession. Then the "academic profession" would be broader than "academic faculty".

Because of its sheer size, degree of "advancedness" and progress, the US higher education system often (but of course not always) plays an important trendsetter role for other national higher education systems, for example in Europe. Furthermore, the US higher education sector also can serve as an empirical reference (case) for identifying or proposing macro-trends or major transformations. As Finkelstein (2010, p S143) underscores:

D. F. J. Campbell and E. G. Carayannis, *Epistemic Governance in Higher Education,* SpringerBriefs in Business, DOI: 10.1007/978-1-4614-4418-3_4,

> In 1969, virtually all faculty positions were full-time, tenure eligible career tracks.

In a typography of hiring of new faculty, Finkelstein (2010, p S145) distinguishes between "full-time tenured/tenurable" in the center, "full-time contract" as first context ring, and "part-time" as a second context ring. Finkelstein asserts that this tenured (tenurable) core faculty faces a process of at least of a relative decline in the American academic workforce, where now faculty expansion takes place primarily outside the tenured (tenurable) core. The full drive of this academic workforce transformation in higher education occurred within the last 15 years, and expectations are that these trends will continue to operate (Finkelstein 2010, pp S143–S144):

> Indeed, for at least the last 15 years, the majority of all new full-time hires has been to fixed contract, temporary appointments. These appointments reflect not merely differences in the duration and permanence prospects of contracts, but a re-definition of the work role itself. … An increasing consensus, however, is emerging that while tenure and traditional academic appointments are not yet 'dead' we are witnessing a structural realignment that has little that is temporary about it. … If, then, these 'new' developments are not going away and are (and will be) reshaping the faculty, what shape is it taking?

Finkelstein (2010, p S145) even goes so far as saying that the traditional US higher education model of the (tenured, tenurable) core faculty as such has come under pressure:

> Most fundamentally, these developments undermine the basic underlying assumption that there is, in some meaningful sense, a corporate faculty that has a fundamental unity of mission, background, motivation, and talent level. In that sense, the 'old-line' faculty no longer exists. We have rather a highly differentiated academic workforce.

Finkelstein (2010, p S148) concludes that the tenured (tenurable) academic faculty is shrinking:

> The traditional tenured/tenurable faculty is shrinking and is likely to continue to do so.

This transformation, however, may be uneven across the different disciplines (Finkelstein 2010, p S148). Foreign-born scholars play a greater role now in the American academic workforce a greater role (Finkelstein 2010, p S148):

> Foreign-born scholars have, over the past 20 years, played an important role in American graduate education in the natural sciences and engineering and have allowed the national scientific research enterprise to be adequately staffed.

Finkelstein (2010, pp S151–S153) perhaps does not predict, but certainly expects similar trends to develop also in the academic profession in the European higher education systems:

> As higher education globalizes and increases competitive pressures across as well as within national boundaries, these winds will only intensify and particularly as economic imperatives gain in ascendance, they are likely to prevail.

Finkelstein speaks here also of an "appointments revolution": nontenure-eligible full-time faculty appointments in the US higher education increased from 51.3

(1993) to 58.6 % (2003) (Finkelstein 2007, pp 148–149). Nontenure-eligible full-time faculty, in total, increased from 3.4 (1969) to 16.4 % (1998) (Schuster and Finkelstein 2006, p 177). Faculty in the US higher education, in total, increased from 474000 (1970) to 1173000 (2003), however, the percentage share of full-time faculty dropped from 77.8 (1970) to 53.7 % (2003) (Schuster and Finkelstein 2006, pp 41–42). These data, of course, do not imply that there is no more or will be no more full-time tenured (tenurable) faculty hiring and recruiting in the US higher education. However, there is a macro-trend that drives academic faculty (the academic profession) in the US, transforming faculty increasingly into the directions of part-time and nontenured.[1] Nontenured academic employment status can take the forms of either fixed-term, temporary appointments or of being continuously employed without tenure. The degree of tenure can also vary across the disciplines and across different types of higher education institutions (for example, higher ranking research universities, with an international reputation, are often in a position of selecting and appointing new faculty, with the option and promise of a possible tenure later). Finkelstein et al. (2009, p 243) assert that trends in Canadian higher education are also moving in a direction similar to the current transformation of American higher education:

> While the 'tipping point' in the United States has been reached already, developments in Canada are clearly moving in the same direction (not yet, however, having reached the 'tipping point') of a more functionally specialized and limited faculty role.

Academic employment relations are also being analyzed in context of European higher education (Farnham 2009). Cavalli and Moscati (2010) compared academic systems and professional conditions specifically in five European countries, which were: Finland, Germany, Italy, Norway, and the UK.

> Looking back a few decades, one can detect the changing of a profession that used to be characterized by little evaluation, wide autonomy and freedom: now, it is affected by competition, evaluation and accountability (Cavalli and Moscati 2010, p S51).

Full-time positions are decreasing, fixed-term employment is increasing. The academic duties accumulated over time. There is more of a competition, more managerial control and more impact by quality assurance and quality enhancement measures, such as research evaluation (Cavalli and Moscati 2010, pp S50–S51):

> Many kinds of fixed-term employment are spreading out. … In addition, the amount of academic duties has been growing in all systems (especially due to the increasing number of students and the growing administrative duties)…. The decline of full-time job opportunities (due to the rise of the university private sector, inter alia) has increased competition. Research evaluation and the new pattern of managerial control, both trends spreading out at different pace in various higher education systems, point in the same direction.

[1] See also and compare with Modern Language Association (2008, pp 21–24).

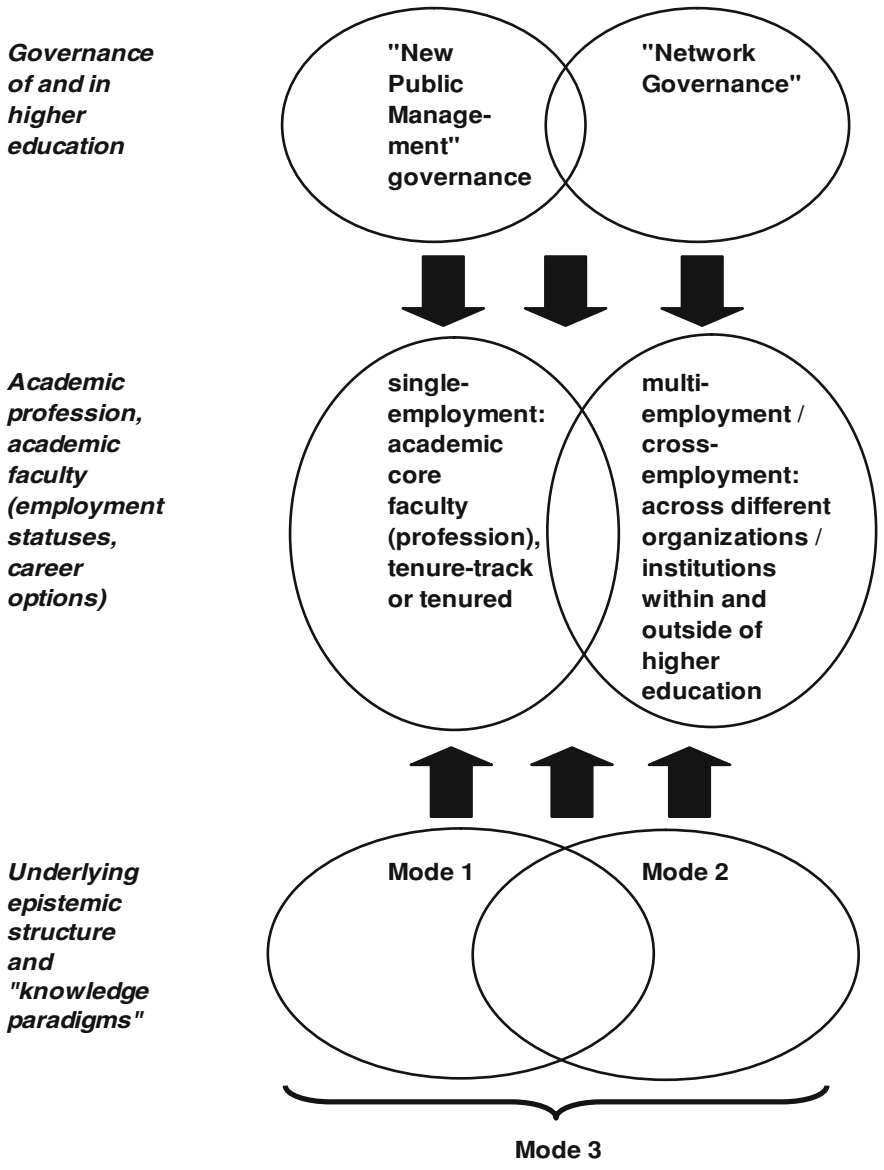
Bennion and Locke (2010, p S28) emphasize that the increase of fixed-term contracts may also add (at least potentially) to a flexibility, even international flexibility, of the academic profession:

> … it also seems likely that the introduction of greater flexibility in academic employment conditions and the reform of traditional career paths will expand the potential for the international circulation of academic labor. Increasing fixed-term employment, including postdoctoral places and short-term academic visits, may open up opportunities for mobile researchers.

For example, when we focus on one national higher education system in Europe more specifically, then studies and analyses for Austria indicate that at Austrian universities the number of professors stayed quite constant during recent years (2005–2009), while increases in academic staff occurred primarily at the sub-professorial level. There, however, the increases were more in "heads", and less so in full-time equivalents. This leads to the proposition that academic work at sub-professorial level transforms gradually to a part-time employment (Schibany and Gassler 2010, pp 51–52). A majority of doctoral students at Austrian universities still is interested in an academic career in the sciences, which could be within or outside of the higher education sector (Pechar et al. 2008, pp 219–235). Hans Pechar (2004) emphasizes that all academic staff (faculty) appointments to Austrian universities, since the new University Law of 2002 ("UG 2002"), are on the basis of private employment contracts, while the civil servant status of the academic profession is phasing out (see also Pechar 2005).

The above cited literature and sources suggest that currently in higher education in Western Europe, Europe, and North America the non-core (peripheral) academic faculty is increasing, while the relative share of the core faculty (tenured or tenurable) actually decreases. This manifestation of a macro-trend indicates a transformation and shift for the academic profession in higher education and at higher education institutions. We should expect a continuation of these trends. So, what are further implications for the academic profession and their academic careers? *Also, what are possible implications of governance and "epistemic governance" for the academic profession* (*academic faculty*) *and their careers*? In the following, we summarize some of the involved features of our suggested analytical framework of epistemic governance in higher education, and discuss possible implications and ramifications for the academic profession (see Fig. 4.1):

1. *Epistemic governance/the underlying epistemic structure* (*knowledge paradigms*) *of higher education*: The underlying epistemic structure or "knowledge paradigms" are crucial for the type of knowledge that is being produced by higher education. There are certainly different knowledge paradigms, partially competing, partially developing in a coevolution (some knowledge paradigms might also phase out). Mode 1 refers to a traditional university knowledge production in a disciplinary setting and emphasizing basic research, while Mode 2 focuses on a "knowledge produced in the context of application" that is oriented toward problem solving (Gibbons et al. 1994). Mode 3 searches and invents (reinvents) for ways of combining in a creative and sustainable format



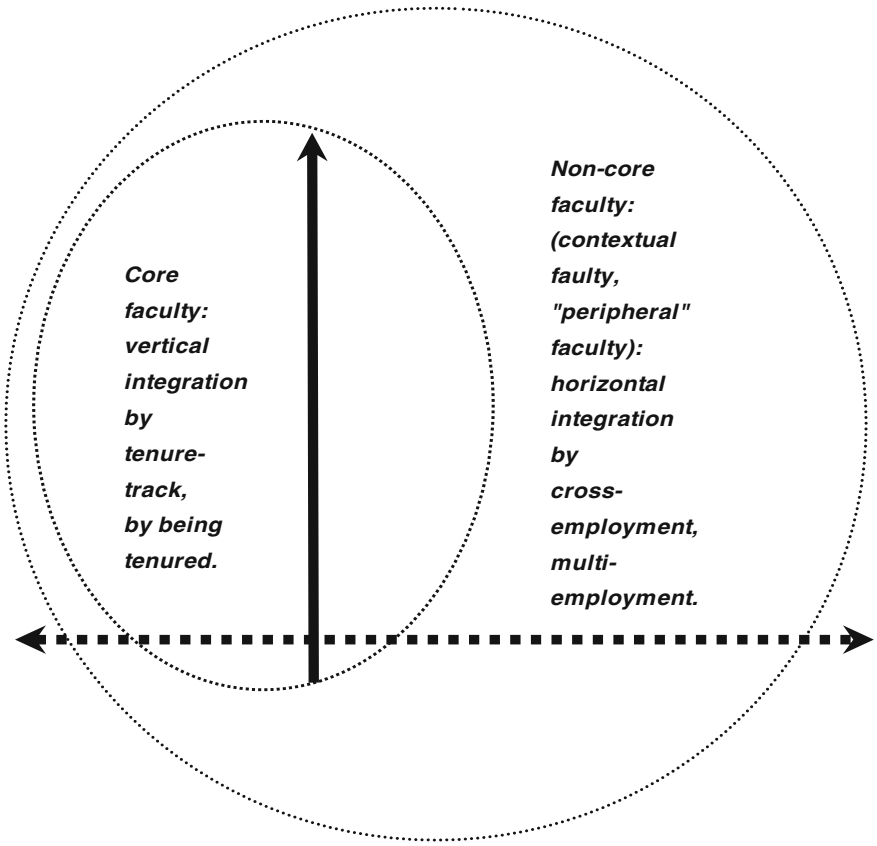

Source: Authors' own conceptualization (also referring to Ferlie et al., 2009).

**Fig. 4.1** Governance context (input) and underlying epistemic structure of the academic profession (academic faculty)

the different knowledge productions of Mode 1 and Mode 2 (Carayannis and Campbell 2006, 2009–2012). For processes of external and internal governance, knowledge paradigms can be translated into specific "quality dimensions" for the purpose of quality assurance, quality enhancement and quality management in higher education.

2. *Epistemic governance/the governance context* (*governance input*) *of higher education*: There are, of course, very different governance approaches of higher education and in higher education. Ferlie et al. (2008, 2009) summarized these into two main narratives, the "New Public Management" and the "Network Governance". Higher education governance by New Public Management emphasizes the following: academic performance and performance increase, stronger managerialism, a greater focus on quality assurance and quality enhancement, internal higher education governance on the basis of quality assurance (Neave 1988), and an introduction of market principles (on "academic markets" see Campbell 2003, and on "quasi markets" see Denters et al. 2003; LeGrand and Bartlett 1993). New Public Management typically addresses either internal governance within higher education institutions or the external governance of higher education by the state (the governments). Higher education governance by Network Governance focuses also on interactions and relationships that transcend organizational or institutional boundaries (Rhodes 1996), and is inclined to emphasize processes of self-regulation and self-governance feeding into governance. Self-governance in context of Network Governance can be interpreted as an attempt trying to cope with the growing complexity of higher education (for example, the overlay of national higher education systems by transnational and global structures and patterns, by this establishing multi-level systems of governance in higher education). These aspects of self-governance conceptually cross-refer to some of the notions and concepts of systems theory (see Willke 1983, 1989). Ferlie et al. (2009) assert that New Public Management as well as Network Governance of and in higher education also constitute a major macro-trend and a transformational shift, which most likely will continue. New Public Management is being challenged how to further promote creativity, diversity and pluralism within higher education, which are considered of being important for the knowledge production in higher education. Between New Public Management and Network Governance there can be a hybrid governance overlap, which may be desirable and feasible for several purposes. However, there also can be cases, where some of the principles or concepts of New Public Management and Network Governance are at contradiction with each other.
3. *Epistemic governance/the academic profession* (*academic faculty*), *their different employment statuses, their academic careers*: The proposition here is that (in relative terms) the academic core faculty is decreasing, while the academic noncore (peripheral) faculty is increasing. There still is and always will be an influential core faculty, at least at the universities. At the same time, the academic core faculty might turn into a structural "minority" of academic staff at higher education institutions. Noncore (peripheral) faculty might

become the growing majority of academic staff, but with less influence on university-internal decision making than the shrinking core faculty. Core faculty often is associated with tenured or tenurable full-time employment statuses. Employment statuses of noncore faculty are more associated with part-time, fixed-term or continuously employed, but nontenured or outside of a tenure track scheme. Under the premise of Mode 1 it can be assumed that the members of academic faculty (academic profession), who stay within higher education, are interested in becoming (tenured) members of the core faculty. The employment status of a core faculty member is by tendency most likely a "single-employment" relationship with the respective university or higher education institution. *Under Mode* 2, *Mode* 3 *and Network Governance, there can also be simultaneous "multi-employment" or "cross-employment" of the members of the academic profession across several organizations or institutions within and outside of higher education, for example with a university and non-university organization at the same time* (Campbell 2011; Carayannis and Campbell 2012, pp 24–26). *Furthermore, for cross-employed academic staff* (*academic faculty*) *there are options of simultaneous parallel-careers inside and outside of higher education*, where academic research competences (Mode 1) are being combined, coupled, and linked with application-oriented problem-solving competences (Mode 2). This should create new qualities and new network qualities in knowledge production. Metaphorically, but not only metaphorically, but rather also conceptually, it could be asserted that the tenure-track model performs a "vertical integration" of the academic core faculty, while cross-employment focuses on a "horizontal integration" of academic faculty and the academic profession (see Fig. 4.2). In between the single-employed academic core faculty and the multi-employed (cross-employed) academic staff may be those academic workers, who move through a cycle of different "sequential single-employment" contracts (statuses) either completely inside higher education or crossing the boundary of higher education and the non-higher education sectors (once or several times). The relative decrease of academic core faculty and the relative increase of academic non-core (peripheral) faculty can be traced in the empirical data. How common now multi-employment or cross-employment are, for the academic profession or the noncore faculty, could, of course, still be questioned. Academic multi-employment and cross-employment certainly exist, but are they representative? Here we are facing the empirical data problem that two OECD key sources on higher education, "Education at a Glance" (OECD 2009, 2010, 2011b) and "Science, Technology and R&D Statistics" (OECD 2001a, 2012), look at higher education from different perspectives: either from the viewpoint of education (teaching) or of research (basic research), therefore, possible phenomena of academic cross-employment are not comprehensively captured by those functionally specialized indicators (see again Sect. 2.2 and the Figs. 2.3, 2.4, 2.5, and 2.6). Should, as a trend, academic cross-employment increase, even increase substantially, what would be possible effects? *Would we see the development and co-evolution of a single-employed academic core faculty and*




Source: Authors' own conceptualization.

**Fig. 4.2** Vertical integration by tenure-track (by being tenured), horizontal integration by cross-employment (multi-employment)

*a cross-employed and multi-employed peripheral* (*non-core*) *academic profession, also branching out, branching out outside of higher education and coupling* (*on the basis of employment*) *the higher education sector with society and the economy*? *Will it be a single-employed academic core faculty versus a cross-employed academic profession*? Based on the principles of knowledge production of Mode 2, Mode 3, and nonlinear innovation, academic cross-employment (either within higher education or across higher education and non-higher education) would be reasonable, would meet rational criteria and arguments. An academic profession, simultaneously multi-employed or cross-employed, associates more closely with the narrative of Network Governance than with the narrative of New Public Management, as they are being portrayed by Ferlie et al. (2009). To which extent will self-governance drive further and advance those networks of cross-employed members of the academic

profession (academic faculty)? How would New Public Management governance (of higher education, of non-higher education) apply to here? *Academic careers of cross-employed academic faculty could pursue different objectives: either addressing the opportunity of becoming an academic core-faculty member later and/or continuing the cross-employed* (*multi-employed*) *employment statuses* (*only inside or simultaneously inside and outside of higher education*). The concept and wording of "academic parallel-careers" covers here the whole spectrum of possibilities, options and involved opportunities.

Our frame and framework of epistemic governance of and in higher education points to several interesting and challenging issues and questions that refer to the academic profession (academic faculty), their academic careers and their governance. Higher education systems or individual higher education institutions (and their subunits), following the approach of linking Mode 1 and Mode 2 together, perhaps considering also to become a "Mode 3 university" (Mode 3 higher education institution), could be inclined and interested in combining different funding schemes and different employment contracts for further developing their organization. This could be done at the structural level of organizational units but also at the level of the individual academic faculty members. There would room and opportunities for organizational flexibility and creativity. For example: a higher education institution could offer to an individual academic a part-time tenure position, financed on the basis of public basic funding, whereas additional income would have to come from generated third-party funding that would qualify as a P&P funding ("projects and program-based", Campbell 2003, p 103). Higher education institutions could promote cross-employment at least for some of their academic faculty. Higher education institutions also could seek to make the internal boundary line and division between academic core faculty and the academic noncore (peripheral) faculty as elastic and open as possible, still permitting to peripheral faculty to become core faculty in a later phase. *Epistemic governance, in this context, emphasizes that the external and internal governance of higher education, and of the academic profession* (*faculty*) *and their academic careers, would have to be checked by and cross-referred to the epistemic structure and knowledge paradigms that underlie higher education*. Only this would allow a good, effective and sustainable governance of and in higher education. *Epistemic governance in higher education introduces and portrays a novel approach and strategy of quality enhancement of universities for further development*.

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