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The economization of education and the implications of the quasi-commodification of knowledge on higher education for sustainable development

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Abstract

This paper analyses an ongoing economization trend in the sphere of higher education (HE) and discusses its implications on higher education for sustainable development (HESD). The sources of this trend are connected with neoliberalism understood as a political project that seeks to extend competitive market forces, consolidate a market-friendly constitution, and promote individual freedom. In global HE neoliberalism, decision-makers, be it educational, scientific, or other, are pressured to assess how their activities impact financially on the individual, organizational, and institutional levels and/or the imperatives of an internationally competitive economy. The paper provides a contemporary analysis of the rise of neoliberalism in HE, understood as the specific trend of an academic capitalist knowledge/learning regime explained by Jessop's six analytic distinct and potentially overlapping stages of economization. This analysis is based on a review of European policies from 2006 until 2017 and explains characteristics of current economization strategies. Their core principles relating to higher education are about improving economic performance based on knowledge and innovation. Smart growth is defined politically as the main purpose of HE and positioning students as future workers, with the right higher skills, as the means. The relevance of students' skills higher education institutions (HEI) are urged to develop highly depend on business demands. European policies are driven by a comprehensive entrepreneurial agenda restructuring the organizational mechanisms in HE. Accountability towards the labour market and skills performance of students set this agenda. Funding strategies rest on strong industry ties and diversification of revenue streams depend on HEI capability to establish tech-driven knowledge alliances between research, education and business. These new intermediary and powerful alliances drive economization strategies, influence curriculum development and decide on relevant higher level skills. Respective learning practices are oriented strongly towards developing entrepreneurial and digital skills based on personalized learning environments. Currently HESD adapts towards a neoliberal education agenda rather than preventing further shifts from a capitalist towards a competitive financialized economy. A profound critique would have to question the dominant economization trends in higher education i.e. the very purpose of education and the current raison d'etre of HEI. The core of the critique might build on new institutionalized learning environments allowing deep, social learning and, hence, the potential of HEI to act as social catalysts empowering collective and disruptive agency.

Keywords(3-6): economization, higher education, sustainable development, neoliberalism, knowledge-based economy

Introduction

Rethinking the purpose of education and the organization of learning is an urgent call for both public policy dialogue and forward looking research on learning systems in the 21st century (UNESCO, 2015). In this context, the need to recontextualize foundational principles for the governance of education, particularly the right to education – pointing at the access dimension – and the principle of education as a public good – referring to increasing privatization processes – has been claimed broadly (Höhne, 2015; Jessop, 2018, 2017; Marginson, 2013; Münch, 2016; Patrick, 2013; Slaughter and Rhoades, 2004; UNESCO, 2015). The present article sheds light on the role of universities as educators of new generations of citizens and leaders in processes of societal transformation, i.e. challenges to educational purposes and practice brought by contemporary social-ecological conditions of unsustainability, complexity and uncertainty. In this context, higher education for sustainable development (HESD) is to play a major role in developing key sustainability competencies allowing individuals to deal with wicked problems of ill-structured, complex systems in which cause and effect relations are uncertain or unknown (UNESCO, 2017). According to Sherren (2008), ESD is based on ideas of liberal education (including to encourage critical and creative thinking), cosmopolitanism (empathy, future orientation, focus on equity, systemic thinking), civics (focus on active citizenship and participation), and interdisciplinarity. These values are supposed to promote people's tendency toward altruistic behavior (De Groot and Steg, 2009; Nordlund and Garvill, 2002; Schwartz, 1994; Stern, 2000), which is in line with the pro-active ethos of ESD. Contrary to these ESD values, competition, disciplinary boundaries, power hierarchies, control and efficiency in management and output orientation dominate the academic world, undermining efforts to promote the necessary paradigm shift towards sustainability in HE (Moore, 2005; Wals, 2014).

The sources of these dominant trends are, however, complex and connected with neoliberalism understood as a political project that seeks to extend competitive market forces, consolidate a market-friendly constitution, and promote individual freedom (Jessop, 2012). The implications of neoliberalism on HE have been researched from multiple perspectives, such as critical political economy (Jessop, 2018, 2017; Marginson, 2013; Münch, 2016a, 2014; Slaughter and Rhoades, 2004a), gender studies (Aulenbacher et al., 2016, 2015; Binner et al., 2013) or critical discourse analysis (Mautner, 2010, 2005). With differing emphasis, these scholars examine an economization trend, which has been progressing in the work and production sectors and transferred to non-economic spheres such as education. This has been reflected by the emerging power of global financial markets as well. Educational, scientific, and other decision makers are pressured to assess how their activities have a financial impact on the individual, organizational, and institutional levels and/or the (perceived or socially constructed) imperatives of a strong, internationally competitive economy (Jessop, 2012;

Olssen and Peters, 2005; Ward, 2012). Systematically established development instruments based on competitiveness (A. Disterheft et al., 2013; Höhne, 2015; Münch, 2010) and market-oriented structures – quasi markets – are generated, aiming at the economization of education and a constant increase in productivity of education towards entire societies. The rise of neoliberalism in HE, understood as the specific trend of academic capitalism (Jessop, 2018, 2017, Münch, 2016a, 2014; Slaughter and Rhoades, 2004b), is debated as a unique hybrid that turns universities into enterprises competing for capital accumulation and businesses into knowledge producers looking for new findings that can be turned into patents and profitable commodities (Münch, 2016b). In this article, six analyticcally distinct and potentially overlapping stages of economization distinguished by Jessop (2018, 2017) are used as an analytic tool to better understand the ongoing trend of academic capitalism in HE.

Strategies and effects of these capitalist market dynamics are explored by investigating various European policies, for instance, the Guiding Framework for Entrepreneurial Universities, epitomising HE innovation throughout its research, knowledge exchange, teaching and learning, governance and external relations (Gibb et al., 2018a; OECD and EC, 2012). EU activities in the field of HE have an important orientation function and impact on national educational policies. Furthermore, their investigation is crucial to better understand HE as one key arena where neoliberalism transforms the concept of knowledge. In this context, conceptualizations of knowledge as a highly complex and constructed fictitious commodity are mentioned to be of particular relevance (Jessop, 2018, 2017; Kauppinen, 2014). Facing unprecedented challenges in the definition of its purpose, role, organisation and scope, a new raison d'etre attributed to HEI is explored. Universities funded by the public purse are under immense pressure and scrutiny to add more value to the economy and society - and become less dependent on the state (OECD and EC, 2012). These trends are deeply interlinked with the economic rationality of the global knowledge society (OECD, 2009, 1996a) and hence the influence of the knowledge-based economy paradigm (Jessop, 2018). In this context, universities - traditionally the primary producers and disseminators of knowledge and generators of innovations - are facing rapid technological development coupled with the recent economic and social changes all significantly affecting their role (Snellman, 2015). There seems to be an uneven trend for universities to act more like rival enterprises that seek to maximize their reputation and revenues than as disinterested, public-spirit institutions (Jessop, 2017).

Against this background, the implementation and mainstreaming of HESD, referring to structures and mechanisms that can influence the processes of sharing and creating knowledge, necessary to respond to unsustainable, complex and uncertain conditions, is challenging. Despite the political context ESD

emerged from, ESD literature rarely interacts with politics and political agendas per se (Atkinson and Wade, 2013). Scholars state an obvious danger of ESD being captured by mainstream agendas and, thus, the dilution of its transformational and radical role (Atkinson and Wade, 2015, 94). Others (Selby and Kagawa, 2011) ask more radically whether it [ESD] has been 'striking a Faustian bargain' with neoliberal, economic growth perspectives that run counter to achieving SD. The main purpose of this article is to better understand whether European HE policies are driven based on a neoliberal agenda. In particular, it aims to develop a more careful understanding of the dominant economization strategies HESD is embedded in: First, to avoid too optimistic conclusions about the potentials of HESD, second, to avoid deterministic conclusions about HESD failures, third, to understand contradictions of dominant agendas and make use of potential windows of opportunities for HESD. From this perspective, three research questions are formulated:

> **RQ1:** How is neoliberalism manifested and mediated through dominant policy strategies in Europe concerning higher education?
> **RQ2:** What are the underlying principles and purposes of these strategies for respective practices in higher education?
> **RQ3:** What are the implications of these strategies on higher education for sustainable development?

Based on a systemic review of EU policies from 2006 until 2017, the paper provides a contemporary analysis of processes enabling the domination of neoliberalism as well as its consequences for HESD. The article is divided into five parts: First, the main challenges concerning the increasing institutionalization of HESD are explained, as well as the building blocks of the dominant paradigm in HE, the knowledge-based economy and its fictitious key commodities. Six stages of economization in global HE neoliberalism are introduced as an analytical tool for the empirical analysis. Second, the methodological section explains the specific sampling characteristics and the procedures of the data analysis. Third, the main results of the empirical research are presented. Here, I describe the key characteristics of current economization strategies, i.e. dominant framings, organizational structures, funding strategies, forms of organisations and learning practices. Fourth, the implications of economization strategies on HESD are discussed. Fifth, the article concludes by summarizing the main challenges and highlights future research needed in the field of HESD.

Theoretical Framework

Challenges in higher education for sustainable development

Since the 1990s, the idea of sustainable development (SD) has been on the educational policy agenda and reflected in pedagogical practice. Numerous policy announcements and articles have been produced over the past 20 years calling for higher education institutions (HEI) to give greater focus to social, cultural, economic and environmental sustainability in their curriculum, research, engagement activities and operations (Mader et al., 2013). Based on its three equivalent dimensions - social, ecological and economic (the so-called "triple bottom line") - sustainability can be understood as a challenging learning process, and ESD should contribute to constantly questioning and refining the goals and foundations of sustainable development (Rieckmann, 2018a).

In addition, many scholars working on ESD agree that citizens need to have certain key competencies that allow them to engage constructively and responsibly with today's world (Lans et al., 2014b; Ploum et al., 2017; Rieckmann, 2018, 2012; UNESCO, 2017; Wiek et al., 2016, 2011; Withycombe and Wiek, 2010). Therefore, one key purpose of HESD is the development of students' transformation competencies, the ability to deal with wicked problems of ill-structured, complex systems in which cause and effect relations are uncertain or unknown. In this context, it is argued that a comprehensive understanding of competencies can challenge the current educational paradigm as it goes beyond describing learning objectives in the cognitive domain but emphasizes the socio-emotional and behavioural domain in order to advance SD (UNESCO, 2017). In connection with competencies development tackling wicked problems, axiological learning seems an important criterion, referring to the relevance of studying values, values perception and values judgments especially in ethics (Fam et al., 2017). Recognizing axiological (values) assumptions is crucial for understanding, exploring and challenging conflicting and unsustainable worldviews. In sum, ESD is about ensuring that learners acquire the knowledge and skills needed to promote SD, including, among other things, through ESD and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to SD (UN, 2018).

However, Selby and Kagawa (2010) argue that the increasing political institutionalization of ESD goes hand in hand with an adaption tendency towards neoliberal education and sustainability discourses. Neoliberalism hierarchizes the economic sphere and universities orient their activities to more economic-driven directions, with a strong belief in the power of market mechanisms and competition, based on a business-as-usual approach instead of sustainability principles (Disterheft et al. 2013, 17-18). This causes an irreconcilable conflict of objectives between economization strategies in HE and sustainability. Poor mainstreaming efforts and progress of ESD are dominating as well as a gap between espoused and enacted policy and visions in HESD. On a broader spatial level, ESD has not

been implemented or recognized as a core concept for HE. Based on Curren (2011), Selby and Kagawa (2010) Singer-Brodowski (2016) the main challenges concerning mainstream HESD involve:

- An uncritical policy-driven trend strongly oriented towards implementation and forced consensus to what SD might entail leading to tacit embrace of unrestrained economic growth and of continued globalization fed by rampant consumerisms. Current debates on ESD tend to be framed without taking the effects of the economization of education into consideration.
- An instrumentalist and deterministic perspective on education. A deep-rooted preference for an instrumental approach towards education in policy prescription (ESD 1) challenges the structural anchoring of emancipatory approaches/transformative conceptualization of education (ESD 2).
- Reproduction of technology-oriented approaches of the global market, combined with a strong skills-learning orientation with barely any tempering values orientation (the axiological learning deficit)
- A strong focus on the tangibles of standardization and measurement.

Selby and Kagawa (2010) explain these tendencies in the context of a typical dilemma that promoters of HESD face: moderation of their own criticism to be compliant and not less eligible for government support, on the one hand, and radical critique of the current status quo, especially on the issue of unlimited growth, on the other hand. Against this background, the search for new concepts in HESD can be understood as a core motivation for the current paper. The potential of developing a transformative educational paradigm cannot be about improving within an established paradigm but needs to be based on a fundamental critique of the present transmissive educational paradigm (Sterling, 2010, 2001). The next two chapters aim to clarify the building blocks of the dominant neoliberal paradigm in HE.

The knowledge-based economy and its fictitious key commodities

The restructuring of the economic world system, with the transformation to a post-industrial knowledge economy at the core, is stressed as one of the key tendencies within current neoliberal globalization (Van Damme, 2001). The relevance of knowledge as a critical factor of production has been predicted for societies moving to post-industrialism (Bell, 1973; Jessop, 2017). Late modern societal self-descriptions such as information society, learning society or knowledge society (Souter, 2010; UNESCO, 2005) reflect this prediction (Jessop, 2017). In the widely acknowledged framework of the knowledge society, knowledge production and generation of innovation are seen as the primary contributors to economic and social development (Snellman, 2015). The relationship between HE and

the economy is seen as a key determinant of the university's future development (Scott, 1997). Scott argues that not only cultural capital but also economic wealth is expected to be created as a measure of national success and HE has become a key arena for creating this advantage. Therefore, HEI have been at the core of the knowledge economy since the 1990s, and knowledge has been emphasized as the most important form of global capital (Bank, 1998; OECD, 1997, 1996a, 1996b, 1996c). In this context, Foss (2013, 64) argues that

"Among these tendencies is the increasing importance of human capital inputs, immaterial assets and scientific knowledge in production, the increasing importance of immaterial products, the need to control in-house and increasing number of technologies, and in general to tap an increasing number of knowledge nodes, not only internally but also through alliances and networks with other firms and institutions. These tendencies profoundly impact economic organization and competitive advantages."

Certainly, the demand for diverse forms of knowledge as major inputs into accumulation helped to reorient university teaching and research from alleged ivory-towered intellectual isolation towards closer and more continuous contact with the economy, the state and wider community as co-producers and consumers of useful knowledge (Jessop, 2017, 855). The emergence of new modes of science, labeled mode 2 (Gibbons et al., 1994; Nowotny et al., 2003), post normal science (Funtowicz and Ravetz, 1993; Ravetz and Funtowicz, 1999) or triple-helix innovation (Etzkowitz and Leydesdorff, 2000), stands for the new demands increasingly aligning university-based research with other sites and transdisciplinary forms of knowledge production. Regarding competencies development for tackling wicked sustainability challenges, these trends certainly provide fruitful grounds for experimentation. However, these trends were intensified in the 1990s by the OECD in response to competitive pressures and the relative hegemony of the KBE as a way of making sense of disruptive technologies and economic crises (Jessop, 2017). This is reflected also in the increasing importance for universities concerning their engagement with technology transfer, tech parks, incubators or spin-offs. Further, there is intensified global competition for talent - including undergraduates and masters' students, doctoral and post-doctoral researchers, skilled knowledge workers, members of the creative class and high-flying, effective entrepreneurs (Jessop, 2017, 855). Indeed, entrepreneurial universities have become a major research theme, reflecting the rise of KBE discourse emphasizing that HEI are being required to operate more entrepreneurially, commercialising the results of their research and spinning out new, knowledge-based enterprises. Olssen and Peters (2005) emphasize that HEI are the new star ship in the policy fleet for governments around the world and universities are the key drivers in the knowledge economy. The increasing rationalization of per-se non-economical spheres like education has multiple effects such as the value appreciation of human capital ("Bildungskapital") or the

convertibility of various kinds of capital (Höhne, 2015). Education as a cultural capital is primarily transformed into a medium of exchange (Münch, 2010) dealt as a new form of capital under neoliberalism (Olssen and Peters, 2005, 330ff). Yet it is not clear that knowledge, skills or competencies are produced in any way similar to a commodity, as they do not have such a clear production function (INET, 2016). Knowledge is different from other goods in that it shares many of the properties of a global public good, which implies a key role for governments in protecting intellectual property rights in a global economy marked by greater potential monopolies than those of the industrial age (Stiglitz, 1999 In Olssen and Peters, 2005, p.331). Molesworth et al. (2011) analyze paradoxes of the so-called managerial revolution in universities and state that it is not obvious what is being bought and sold.

"So is the student purchasing instruction in an academic discipline or buying a credential necessary for the pursuit of a profession? Or is he doing both? It appears that what we have is a highly controlled quasi-market that forces institutions to compete against one another for resources and funding" (Furedi, 2011, 1).

From a Polanyian perspective, knowledge is an entirely fictitious commodity. The postulate that anything bought and sold must have been produced for sale is emphatically untrue, as it is for labor, land and money (Polanyi, 1957). Especially in the context of skills and competencies a standardized approach towards knowledge acquisition, production and evaluation becomes even more controversial. This is because tacit knowledge, i.e. tradition, inherited practices, implied values, and prejudgments, are a crucial part of knowledge production, circulation and valuation in HE, but also in the world of work. Michael Polanyi, the brother of Karl Polanyi, helped to deepen the appreciation of the contribution of tacit knowledge, its relevance to the generation of new understandings and social as well as scientific discovery (Polanyi, 1966). Tacit knowledge is, however, difficult to codify or measure (Kauppinen, 2014). The idea that science is a purely rational enterprise of cognition and calculation is contradictory. It necessarily involves a non-formalisable, non-mechanisable, characteristically human phenomenon which one might call 'judgment', 'intuition', 'tacit' or 'personal knowledge' (Grant, 2007; Polanyi, 1966, 1958; Smith, 1988, 7). In fact, one could claim that science itself is resting on a deep-rooted and fundamentally non-utilitarian fascination with order or patterns. Nevertheless, the self-regulating market relies on the commodity fiction of tacit knowledge, in the form of skills needed to handle codified knowledge, serving as a vital organizing principle. The next chapter will deepen the discussion how the commodity form is generalized to knowledge as a core input into production by explaining different stages of economization strategies towards a capitalist economy.

Stages of economization in global higher education neoliberalism

Global HE neoliberalism, the dominant paradigm in knowledge production, is characterized by transformations of the blurred lines between markets, states and HE (Slaughter and Rhoades, 2004a) in the context of current globalization (Brand, 2014). Differently to laissez-faire liberalism, in neoliberalism there is a positive conception of the state's role in creating the appropriate market by providing the conditions, laws and institutions necessary for its operation (Olssen and Peters, 2005, 315). Many scholars agree that neoliberalism, in particular the transition to a capitalist economy and society, introduced a new mode of regulation, form of governmentality[1] (Olssen and Peters, 2005, 314ff) and patterns of governance in HE (Cantwell and Kauppinen, 2014; Foss, 2013; Slaughter and Rhoades, 2004a; van Damme and van der Wende, 2018). They state that neoliberalism privileges the market and, above all, (capitalist) market competition as a principle of governance even more than liberalism. Neoliberalism advocates liberalization, deregulation, and privatization and introduces market proxies in those social areas, in the state, public sphere, and 'civil society', where profit-oriented, market-mediated principles based on the commodity form, price form, and money form have been absent and, in addition, have often deemed inappropriate. This prompts the neo-liberal search for functional equivalents to these principles and their associated forms. In addition, the forces and tensions understood by the umbrella concept of globalization constitute a dramatically different environment for HEI and policy makers to operate in (Cantwell and Kauppinen, 2014; Marginson, 2010; Van Damme, 2001; van Damme and van der Wende, 2018). Internationalization strategies in universities often imply structurally competitive relationships, conditions in which cooperation breaks down repeatedly (Brand, 2014). The impact of the various trends and challenges related to globalization such as internationalization, massification or inequalities in access (Altbach et al., 2009) is profound, but also diverse, depending on the specific location in the global arena (Van Damme, 2001, 2). In short, globalization brings in another level of complexity not in terms of a coherent causal mechanism – or set of causal mechanisms – but rather a complex, chaotic, and overdetermined outcome of a multi-scalar, multi-temporal, and multi-centric series of processes operating in specific structural contexts (Jessop, 1999).

In this regard, Olssen and Peters (2005) describe a new global culture in HE, focusing institutional stress on performativity, as evidenced by the emergence of an emphasis on measured outputs: on strategic planning, performance indicators, quality assurance measures and academic audits. The common

[1] The term governmentality refers to Foucault who addresses the overarching 'problem of government' – that is, 'how to govern oneself, how to be governed, by whom should we accept to be governed, how to be the best possible governor?' He is thus interested in both how governing happens and how it is thought (Foucault, 1991).

language in global HE neoliberalism roots from new public management logics aiming to make the university system more entrepreneurial (Palumbo and Scott, 2017). Its core dimensions are flexibility, clearly defined objectives, and results orientation. In applying quasi-markets to the management of public sector organizations, new public management has replaced the "public service ethic", where organisations were governed according to norms and values derived from the assumptions about the "common good" or "public interest", with a new set of contractualist norms and rules (Olssen and Peters, 2005, 324). HE ought to be managed as a competitive enterprise as increased competition is assumed to improve quality. Universities, in different ways and subject to greater or lesser financial, administrative, and ideological pressures, act less like centers of disinterested education and research, and more like economic enterprises that aim to maximize their revenues and/or advance the economic competitiveness of the spaces in which they operate (Jessop, 2018). The rise of neoliberalism in HE, understood as the specific trend of academic capitalism, or as Slaugther and Rhoades say academic capitalist knowledge/learning regime (2004), can be explained by Jessop's six analytically distinct and potentially overlapping stages of economization (Jessop, 2018, 2017). The characteristics of these stages provide a structured perspective on the logics and processes of neoliberalism in HE. However, applying this conceptual frame does not imply that a full transversal of all stages has yet occurred in HE but is in fact unlikely to occur. Thus, the framework aims to challenge the 'economistic fallacy' to describe all economies in terms of categories that are unique to the (capitalist) market economy (Polanyi, 1982). Indeed, it is claimed that capitalist markets (cf. stage 4 Jessop, 2017) cannot be fully established in HE (Hemsley-Brown, 2011). This is due to the specific features, such as the ambivalent goals of universities or the fictitious commodities of knowledge, skills and competencies that impede the full transversal of all six steps. As such, the stages were applied as an analytical tool for the empirical analysis in this paper and are explained here briefly (based on Jessop, 2018, 2017):

(1) Stage one is described as an *exchange economy* develops. Useful goods and services are circulated through direct barter, debt relations or use of a medium of exchange. Exchange replaces other modes of economic organization such as self-sufficiency, reciprocity or redistribution (Polanyi, 1982).
(2) In stage two, a *commercial economy* develops when commodification and monetization become basic features of economic organization. Goods and services are produced for sale and exchanged for money. Stage two sees commercialization as education and research are produced for sale. Examples are private tuition, fee-paying universities, distance learning and commercial research. Already in this stage, students become sought-after mobile customers and knowledge and creativity are commodified. Commercial criteria are adopted in decision-making.

(3) Stage three, a rational *market economy*, marks the first steps in capitalization, thereby reinforcing the process of commercialization. It involves rational organization of knowledge production based on formal bookkeeping principles and other efficiency measures. We see free trade in knowledge, the rationalization of its production based on tight control on costs and their recovery, and universities and research institutes using their own accumulated capital and/or loans to boost revenues.

(4) A *capitalist economy* evolves in stage four characterized by a more radical step towards capitalization. Here the commodity form is generalized to knowledge as a core input into production. It involves the quasi commodification of mental labor as an input, including the separation of intellectual labor from the means of intellectual production. This contributes to hierarchization and precarization of intellectual labor, formalization and codification of knowledge, and attempts to limit the freedom of teaching and research in the interests of cost reduction and profit maximization. Rights in intellectual property are transferred from students to their educators. The fourth stage also sees the appropriation of traditional knowledge, privatization of the intellectual commons, commodification of teaching materials, scholarship, scientific research, and scientific publications, and, more recently, digitization of lectures enabling their virtually costless reproduction and circulation – while charging consumers for access.

(5) In stage five a *competitive financialized economy* develops when production, distribution and exchange are closely articulated with, and even subordinated to, the circuits of capitalist credit money. Money as functioning capital engages in profitable investment activities. Universities and research institutes have to look beyond public sources of capital and income and compete over the quality of their estate. Stage five begins with private universities but is reinforced as the final stage arrives and affects all universities and research centers.

(6) The sixth stage is reached when a fully-fledged *finance-dominated capitalist economy* subordinates education and research to the profitability requirements of 'capital as property'. Ever more rarefied forms of fictitious capital are subordinated to external demands for the profitability of capital as property. The development of a global secondary market in student loan asset-based securities are examples extensively used in the USA and Chile and will also develop in the UK.

While first movers in capitalist development are between stages 3 and 4, neoliberal orientations are significant in economization strategies and practices from stage four onwards. Global HE neoliberalism and the transfer of state activities into a commercial, market or capitalist economy, based on the creation of quasi markets, assist shifts to the fifth and sixth stages.

Research design and method

Research context and sampling strategy

To answer the research questions, a systematic document review was conducted based on EU higher education policy initiatives and activities carried out between 2006 and 2017 (see Table 1). This period is for many reasons an interesting one considering the research interest: First, because of the transition from the Lisbon strategy to the Europe 2020 strategy, spelling out the meaning of the European model even better in terms of existing social and sustainability concerns, now explicitly put at the service of growth as growth-enhancing factors (Bongardt et al., 2010); Second, the development of a pattern of so-called smart growth to develop an economy based on knowledge and innovation (Soete, 2010); Third, the context of an increasing heterogeneity of required knowledge for smart growth is challenging the role of HE and its raison d'être in a new context, characterized mainly by gaining private resource investment in individuals' future human capital.

For the analysis, a theoretical sampling strategy was applied based on emerging concepts, with the aim to explore the dimensional range or varied conditions along which the properties of concepts vary (Strauss and Corbin, 1990). The OMC[2] necessitated selecting documents not primarily focussing on hard law but position papers, strategy documents and initiative reports. The Directorate-General Education, Youth, Sport and Culture (DG-EAC) develops and carries out the Commission's policies on education and training. Therefore, it was selected as a starting point for document research concerning EU activities in the field of HE. To limit the scope of relevant documents three topic areas were selected reflecting key research interests: (1) entrepreneurial (higher) education (2) modernization of HE/supporting growth and jobs and (3) (key)competencies/skills for HE. Besides the EU, the OECD was selected as a key actor as it counts as a powerful agent in the convergence of national policies for HE commanding a range of sophisticated and subtle vehicles for advancing perspectives on HE (Amaral and Neave, 2009). Table 1 provides an overview of the analysed EU initiatives and activities on HE from 2006 until 2017. Based on a qualitative research approach, this study is a non-probability sample and, thus, it is not representative. The aim of the analysis presented in the results section is not to discuss each initiative in detail or detect generalizable facts, but rather to detect patterns that can help to understand an overarching logic, linking dominant EU-initiatives in HE.

[2] The OMC is a form of intergovernmental policy-making that neither results in binding EU legislative measures nor requires EU countries to introduce or amend their laws. The OMC takes place in areas, which fall within the competence of EU countries such as education, employment, social protection, youth and vocational training. In principle, soft law is legally not binding, but serves as letters of intent for a common policy and hence has political impact in the member states. Therefore, national educational discourses or decisions can be directed towards certain common EU objectives (EC, 2018).

Table 1: Analysed EU higher education policy initiatives and activities between 2006 until 2017 (see Annex)

Research procedures

For analytical purpose, Jessop's six stages of economization provided a structured perspective for identifying and analyzing the specific characteristics how neoliberalism is manifested and mediated through European policies in HE. In practice as well as in the analysis the stages, however, overlapped. This was not surprising as Jessop also states that higher education and research traverse the steps, to the extent that they do, in an economy already dominated by capitalist market relations (Jessop, 2017). In the documents analysed a clear tendency matching stage 3 and stage 4 characteristics emerged. In some areas, shifts towards stage 5 and 6 were detected as well. Due to the overlapping tendencies of the economization strategies, the presentation of results is not structured in the six stages, but oriented towards the key categories obtained during analysis. Table 2 shows the analytical key categories of data analysis and respective codes. The empirical material was coded with MAXQDA software. Considering vital results of the document analysis, but theoretical considerations based on Jessop's framework and other relevant literature as well, the key categories of Table 2 were developed and redefined in an iterative process. The so obtained key categories served as a methodological frame for the present research. In a final step, all the data was explored; main elements of each document were condensed and assigned to the key categories.

Table 2: Analytical key categories of data analysis and respective codes (see Annex)

Results

In this section, the characteristics of economization strategies, identified in selected EU HE policy initiatives (Table 1), constitute an attempt of interpreting and reading current economization stages in HE. The readings have to be understood in the context of the theoretical-analytical tool applied (see stages of economization), aiming to challenge the 'economistic fallacy' to describe HE in terms of categories that are based on the capitalist market economy. The interpretations do not claim to be carved in stone. Rather, they point to possible directions HE is shifted in and implications HESD should be aware of in order to strengthen foundations for more inclusive societies through education.

Problem framing

The maxim of smart growth and the asset of higher-level skills

The EU 2020 strategy (EC, 2010), also known as the agenda for growth and jobs, follows the Lisbon strategy and also sets the agenda for the strategic framework for European cooperation in education and training - ET 2020 (Council, 2009a; EU, 2015, 2012). One of the key priorities of EU 2020 - to be the most competitive knowledge-based economy in the world - is based on the objective of improving competitiveness and economic growth. Three initiatives, on innovation, education and the digital

society, are to promote specific strategies that increase the level of human capital, so-called smart growth[3] (EC, 2010). In this sense human capital, the quality of work, is the central measure for creating technological progress as a base for long-term growth rates (see e.g. Lucas, 1988; Romer, 1990). The general conditions as well as access to financing of research and innovation are to be improved, so as to strengthen the innovation chain and raise EU investment levels. These is to improve the results of HE systems and the international attractiveness of European HE (Bongardt et al., 2010). The positive economic externalities justify state activities in HE, both in research and development as well as providing tertiary education (Sauer, 2017).

In this context, the EU sets a benchmark for tertiary level attainment as by 2020 40% of young people (30-34 year olds) should have successfully completed HE (tertiary) or equivalent studies. At the same time, quality should be enhanced and the relevance of human capital development in HE should be reflected, as human skills are the key component of value in the KBE. Therefore, state activity is only justified if HE contributes towards the economic target of long-term allocative efficiency (Sauer, 2017). As such, these initiatives underline ongoing reforms in HE concerning the increasing relevance of efficient organization in HE and the exploitability of graduates' competencies (EC, 2016a, 2016b) for productive sectors. The need to raise skills and create a high-skilled workforce, represented in graduate records, is also linked to the argument of diminishing social dissatisfaction with HEI. The issue of lacking public trust in HE provides the rationale why HEI need to reflect on how they contribute to their communities and to society (EC, 2017a). The general mistrust in public services has spread globally together with the neoliberal reform discourse and its general suspicion of wasted tax money. Against this background, it is argued that new future jobs in the KBE request more people with higher skill levels[4], which should be acquired in tertiary qualifications from short-cycle degrees to doctorates. Clearly, employability is emphasized as a key service, which needs to be tackled by HEI. Currently, the availability of high-level skilled graduates is impaired by a so-called mismatch, referring to difficulties reported by public and private employers in finding the right people for evolving needs. Across the EU, the most frequently occurring shortages are in professional and associate professional occupations at high skill levels and for which a tertiary qualification is generally required[5] (EC, 2017a). However, an

[3] The EU envisages three targets that come to clarify the nature of growth: smart growth, developing an economy based on knowledge and innovation; sustainable growth, promoting a more efficient economy in terms of resource utilisation that is more ecological and more competitive; and inclusive growth, fostering an economy with high employment levels and which ensures social and territorial cohesion (Bongardt et al., 2010).

[4] The EU uses the term skills to refer broadly to what a person knows, understands and can do(EC, 2016a). Competencies are the ability to apply knowledge, skills and attitudes. Therefore, they are linked more closen to actual practices. Higher-level skills build on basic skills such as literacy, etc.

[5] The top five are ICT professionals; medical doctors; 'science, technology, engineering and mathematics (STEM) professionals'; nurses and midwives; and teachers (EC, 2017a).

agreed and comprehensive methodology for measuring skill mismatches is lacking (ILO, 2014) and the job market changes rather fast. Thus, the so-called higher skills of today might be out of date tomorrow already.

Nevertheless, improving economic performance (smart growth) is clearly framed as the purpose of education and positioning individuals as future workers, with the right skills, as the means. Acquiring, updating and developing individual attributes is mainly needed to ensure that young people are able to be entrepreneurial, adapt to changes in the labour market during their career and succeed in high-skill occupations (EC, 2011). In this context, some scholars refer to a new social contract being drawn up between the university and the wider society, in which public funding for the university is made contingent upon a more direct contribution to the economy in the form of delivering employable graduates (Etzkowitz 1994: 149, 151. in Sum and Jessop, 2013). Sum and Jessop identify two apparently contrary but actually complementary strategies in this regard. On the one hand, the state is asserting the importance of education in the realization of national economic interests, the realization of which is not always best left to the selfish interests of private economic agents. On the other hand, it is conceding greater autonomy (see organizational structures) to educational institutions in how they serve these interests on the assumption that they share the same broad vision of the dominant economic and political outlook regarding objectives and trends in economic development and competition. The raison d'être of HEI is based on this contradiction, and universities' responsibility towards broader and long-term societal needs is becoming secondary.

The Entrepreneurial agenda and HEI's digital capability

Entrepreneurship education, deeply linked to ET 2020 and intended to increase the number of entrepreneurs in Europe, is a key instrument of the rationalization logic in the KBE. For HEI the Entrepreneurship Action Plan (Council, 2015; EC, 2013a) constitutes a couple of decisive actions and intends to provide guidance for national strategies. It builds on the assumption that today the environment for entrepreneurs in Europe is challenging due to a widespread lack to sufficiently recognise and reward entrepreneurial endeavors. As a solution, a far-reaching cultural change in HEI towards entrepreneurship education and the development of entrepreneurial skills should contribute to new business creation and to the employability of young people. Entrepreneurship education is embedded in a broader strategy to foster entrepreneurship, targeting the creation of the right business environment, role models and reaching out to specific groups. The aim is to develop an entrepreneurial culture in HEI not only via strategies, but by establishing a "real" entrepreneurial agenda (see Table 3: Area 1). For this reason, a particular framework for entrepreneurial universities, named 'heinnovate' (OECD, 2012; OECD and EC, 2018), has been designed to help "interested" HEI assess themselves and improve their capability with tailor-made learning modules. The framework defines eight areas for HEI

(in the 2012 version it was seven areas but digitalisation has been added in the recent version) that should be changed when a university wants to become entrepreneurial (Gibb et al., 2018a; OECD and EC, 2018). As such, the framework suggests how universities should function, be organized (see organizational structures), but also push strategies for the financialization of universities, i.e. seeking income via behaving as entrepreneurs selling their services (see financial strategies). The success of being an entrepreneurial HEI depends upon individuals and innovative ways of doing things (OECD and EC, 2018). Table 3 summarizes the key areas of the EU initiative on Entrepreneurial Universities.

The model of the entrepreneurial university (Clark, 1998; Gibb et al., 2018b; Gibb and Hannon, 2006; Krimsky, 2010; Mautner, 2005) that utilizes relations with industry and government in order to contribute to an innovation-driven regional or national economic growth strategy is not new. Nevertheless, current competitive strategies of the KBE redefine the model, go beyond the national context, and clearly aim at global market competition (Cantwell and Kauppinen, 2014) (Table 3: Area 7 The Internationalized Institution).

Table 3: Key areas of the Guiding Framework for Entrepreneurial Universities (OECD and EC, 2018) (see Annex)

The digital revolution certainly adds a new momentum to the entrepreneurial agenda as the EU detects almost limitless potential for innovation and reach, which in turn contributes to the modernisation of HE in Europe. Modernisation here equates growth, and more and better jobs, as part of the wider move towards an increasingly global KBE. HEI's digital capability (see Table 3: Area 5) is especially relevant when it comes to the establishment of new learning environments aiming to develop higher skills. In the latest version of the European Opening Up Education initiative (Inamorato dos Santos et al., 2016), HEInnovate (OECD and EC, 2018), hence an entrepreneurial agenda, is mentioned to complement the former. The exploitation of transformational benefits of ICT and other new technologies and the tendency towards flexible learning approaches and delivery methods fits well with the need to expand student numbers (compare the benchmark for tertiary level attainment of 40% by 2020). In the context of new ways of learning, in particular, open educational resources are emphasized to enable fundamental changes in the education world. However, HEI are currently accused of failing to keep pace with the digital society and economy. Opening up education (EC, 2013b; Inamorato dos Santos et al., 2016), in line with the principles of entrepreneurial universities, certainly requires adaptation of HE organizational principles, funding mechanisms or adherence to certain business models in order to profit from new commercial opportunities.

Organisational structures based on accountability towards labour market and skills performance

Despite the general ambition of the strategic framework for European cooperation in education and training (ET 2020) to streamline and rationalize HEI, there is no clear instruction on how the processes of implementing the strategies explained above should work. The political freedom for member states, and as such the autonomy of HEI, to decide how to achieve particular targets is bound to the OMC as indicated above. In short, there are no binding rules the EU can adopt in the area of HE and neither are there actual control mechanisms. Yet, there are a couple of other mechanisms, for instance as discussed above, establishing guidelines e.g. on entrepreneurial universities or open education. Quantitative and qualitative indicators, benchmarks (e.g. 40% tertiary level attainment by 2020), national and regional targets, backed by periodic evaluations and peer reviews, e.g. ET 2020 Working Groups[6] (EC, 2016c, 2016d) as one of the main instruments of the ET 2020 toolbox, are others. To provide an example, the evaluations of the latter are aimed at helping member states learn from one another and consequently improve their domestic policies. Still, 'peer pressure' and 'naming and shaming' are terms often used to describe the actual processes of learning and improvement, and these may hint at processes of greater weight than the apparently 'soft' nature of the governance implies (Prpic, 2014).

Against this background it is not surprising that mechanisms are referred to be of complex and unpredictable nature in the context of innovation, as a dynamic system of interactions and feedback loops link different actors in particular contexts (EC, 2017a). It is argued that innovation is not possible to plan but favorable conditions should be created for the strategic objectives such as entrepreneurial thinking, networking, creativity and risk-taking. Translated to mechanisms and instruments relevant for HEI, such favorable conditions preferably produce measurable outputs, emphasizing performance and accountability assessment. The accompanying legal, financial and administrative restrictions limit HEI freedom. Current emphasis lies on more transparency concerning information about specific profiles, performance of individual institutions, clear sets of performance metrics, for instance in the context of HEI digitalization strategies (OECD and EC, 2018), but also data on graduates. Monitoring progress of HEI is to assure their contribution towards evidence-based policy-making. Impact measurement and strong analytical evidence based on performance indicators are also emphasized to be essential for the effectiveness of the ET 2020 framework.

[6] Since 2014, a new generation of working groups has focused on concrete issues of ET 2020. They are informal and report on a voluntary basis. The dissemination of their outputs is to enable real knowledge-sharing between member countries. Peer-reviews focusing on country-specific challenges and peer-counselling can be used to support national reform agendas.

In this context, the quest for more flexible governance systems balancing greater autonomy for HEI with accountability to all stakeholders must be interpreted. Particularly important are stakeholders from business, as benchmark targets for HE are mainly oriented towards their demands (cp. Council, 2009a, EU, 2012, 2015, Council, 2016). The argument is this: As no PISA system exists for HE, indicators from other sectors, i.e. the labour market or general assessment of adult skills, have to be utilized. The current demand of employers becomes a decisive orientation for the form and content of education. In their present stage of evolution, mechanisms for tertiary graduate tracking try to improve information on how graduates enter and progress on the labour market professionally and personally. Monitoring career paths of former students, so the argumentation, can inform programme design and increase relevance of HEI for the world of work. Other mechanisms linked to entrepreneurial education emphasize codified expected learning outcomes in relation to knowledge, skills and competences in all degree programmes (cf. Table 3: Area 3 Entrepreneurial Teaching and Learning). The European Qualifications Framework (EU, 2008) certainly pushes commodification tendencies (Mikulec and Ermenc, 2016) as it sets clear procedures for recognizing learning outcomes to be validated at the institutional level through appropriate mechanisms (internal or external moderation for example) and is given due recognition in courses. Proceeding from an analysis of National Qualification Frameworks (NQF), Young and Allais (2011, 2009) conclude that a common aim of the different NQFs was to reduce the autonomy of educational institutions and encourage them to be more efficient by competing with each other (Mikulec and Ermenc, 2016). This would then result in the establishment of a qualifications market in which qualifications are defined, quantified and commensurable and can function as a commodity.

The importance of accountability is also pushed by quality assurance systems such as the European Quality Assurance Register for Higher Education (EQAR, 2018) or many national-based quality assurance institutions in Europe. Although the shift towards learning outcome assessment strategies seems quite important in the context of skills and competencies, it is not yet (fully) reflected in assessment tools. An intensive debate is, for example, going on about how to assess, validate and recognize skills acquired in non-formal educational settings in order to provide more accurate skill profiles for potential employers (EC, 2016a, 2016d, 2013a; Inamorato dos Santos et al., 2016). Competence assessment frameworks of students' and graduates' skills are currently hyped in terms of modernisation strategies in HE, linked with the providence of mechanisms for staff to work with external stakeholders to develop curricula and deliver course content (see Unbalanced Knowledge Triangles). This includes support mechanisms such as incentive systems and rewards for coordinating and sharing relationships across the HEI. Additionally, there should be a range of mechanisms which

can be tailored to the individual (staff and students) to develop entrepreneurial mindsets, behaviors and skills facilitating the entrepreneurial agenda of HEI.

Financial strategies and business models based on industry ties

The entrepreneurial agenda of HEI, so the ideal practice targeted in EU policies, should be supported by a wide range of funding and investment sources (EC, 2013a; OECD, 2012; OECD and EC, 2018). Investment in its entrepreneurial activities and diversification strategies of funding are key, in order to not depend too much on "limited" sources of public funding (see the general suspicion of wasted tax money argument above). Especially in entrepreneurial education, financial support for testing, demonstrating and piloting of startups is needed. Here, intensive cooperation with industry, hence stakeholders outside the university, is suggested. Examples of successful commercialization strategies are often linked to research results through technology transfer and business start-ups, or generation of revenues for the institution from spin-off activities. Self-funding activities include reinvestment from entrepreneurship activities or revenues generated from leveraging their own research, teaching and third mission activities (OECD and EC, 2018). Other options refer to utilizing networks of potential investors and linking access to financing activities with training, mentoring and incubation. Furthermore, external funding strategies are suggested, including in-kind services like sharing space and facilities. Greater investment in these revenue-generating operations such as the conference trade (e.g. Eaton et al., 2013) contribute to boosting creditworthiness (Jessop, 2017).

Further emphasis lies on funding options concerning the exploitation of digital technologies in education and training systems across Europe. As the educational marketplace is being transformed, there are growing numbers of non-commercial OER providers alongside technological advances such as open access, internet file-sharing and open source, and educational publishers and the wider industry continue to adapt to these changes (EC, 2012). They are already revising their business models in order to profit from new commercial opportunities. Taking the example of MOOCs (Massive Open Online Courses) mostly operated on an open access basis, business models are based on selling certificates. Many of the top providers such as udacity.com have close ties to industry and are compared to labour-market oriented job portals (Seiler Schiedt, 2018). For a fee, employers may look for suitable employees, people who have completed courses and have particular, well-matching skills profiles. However, these "free"-based business models are not yet implemented in the HE context and face many challenges (Kalman, 2014) mostly due to high developing fees for MOOCs. Nevertheless, they are an example of opening up HE towards new forms of exchange based on linking students to employers and guaranteeing benefits for high-skilled student profiles. In general, cooperation between HEI and technologically more advanced educational providers have high priority in order to meet the expectations of so-called "digital-born leaders". Particular forms of exchange and organization in the

format of knowledge triangles are argued to be a substantial condition towards meeting these and knowledge triangles diversify funding streams.

Unbalanced knowledge triangle between education-research-business

The motivation for increased collaboration and knowledge exchange is linked to value creation for HEI in terms of the exploitation of knowledge for the benefit of social, cultural and economic development of society (OECD and EC, 2018). Stronger links between education, business and research, as well as involvement of social partners and civil society are to strengthen the impact of ET 2020 and the relevance of learning systems to increase Europe's innovation capacity – hence smart growth. New forms of cooperation, so-called knowledge triangles, are the key drivers of the KBE and fostered by particular programs such as Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT), Knowledge Alliances or the Grand Coalition for ICT Jobs between universities and business. In most of these programs, the intensification of universities-industries ties, and thus technology-driven innovation and the funding of tech-consortia, is pushed.

Since 2008, the European University-Business Forum has been established as a particular platform to intensify links between HEI, companies, business associations, intermediaries and public authorities. Structured partnerships are analysed and supported through existing EU programs. Important fields of work include curricular development for better employability of graduates, the identification of skills that graduates need when entering the labor market, and ways of fostering an entrepreneurial mindset among graduates, professors and researchers (EC, 2009). In order to provide hands-on solutions for the assumed skills mismatch, curriculum design should be happening at the knowledge triangle in terms of co-design strategies between HEI and business. Thus, knowledge triangles are particular mechanisms (Council, 2009b; EC, 2009) allowing to exploit HEI potential for marketable products and services and, thus, unlock potentials.

In this context, the Quadruple Helix is mentioned in the renewed EU agenda for HE (EC, 2017a) as a newly emerging model of cooperation for HEI with a stronger focus on the involvement of citizens and communities in promoting positive change compared to the classical accentuation on business partners. Yet, a broad alliance of stakeholders insists on pointing out that these kinds of reform are granting new privileges and exploitation rights to private actors who, unlike traditional universities, are not willing to assume broader social responsibilities (Palumbo and Scott, 2017, 120). Slaughter and Cantwell (2012) underline that these intermediary bodies seem to be diverse but, in fact, participants represent limited segments of society – mainly business elites, government officials, professionals with additional degrees and high-level members of NGOs. Thus, they represent new organizational fields in the neoliberal state weakening professional autonomy and strengthening control over HEI, research, as well as modes of teaching and learning.

Learning as the neoliberal self

New learning environments, such as knowledge triangles and organizational structures fostering performance and results-orientation, have several effects on learning practices. Considering the context of the entrepreneurial agenda, it is hardly surprising that learning opportunities should emphasize more work-based learning especially in HE, which rarely includes any work-based experience (EC, 2016c, 2016b). Yet, work-based learning, such as apprenticeships is favored not only because of the opportunity to apply theoretical knowledge in practice, but because it is said to be a proven springboard to good jobs and to developing labour market-relevant skills. Particularly entrepreneurial skills and competencies as well as the development of digital competencies are top priority in the context of the so-called 21st century skills of EU 2020 (EC, 2010). Further focus lies on science, technology, engineering and mathematics (STEM) related skills, as the demand for those is said to be high on the labour market. Additionally, the capacity of HEI to provide mentoring and incubators fits in this argumentation line to increase entrepreneurship competencies, engage in start-ups, spin-offs and support student venture initiatives.

Indeed, it is not just knowledge within HE that is reduced to utilitarian value, but the student as embodiment of that knowledge (Patrick, 2013). The student as a person is commodified within the system, where the individual good equals the aim of education. Students are consumers of knowledge, but also a commodity in itself, delivered to the labour market. HEI are service providers, offering high-quality commodities for the demand on the labour market. An HEI key service is to ensure that the delivery of knowledge, skills and competencies towards future knowledge workers can succeed in the global competition for high-skilled employment. Open learning environments are adding further key opportunities to create new competition and centres of excellence among universities. In this context, learning practices and approaches need to be flexible and innovative, based on a variety of study modes (e.g. part-time, distance and modular learning) and delivery methods. Particular emphasis lies on the potential to exploit ICTs to enable and support personalized learning experiences, teaching and research methods (e.g. eLearning and blended learning) and increase the use of virtual learning platforms. In practice, learning processes today, irrespective of whether they use ICTs, mostly focus on few learning styles and passive learning as current structures of HEI are characterized by external assessment (see Organizational Structures). The quality and relevance of learning outcomes are coupled with a competitive strategy of the development of skills and competences (EU, 2015). Consequently, student-centred learning not necessarily means emphasizing active pedagogical approaches, but there is a growing concern with the right fit of graduates' skills matching business demands. Even pedagogies which seemingly offer the learner autonomy and choice are not without issue (Patrick, 2013). The term self-directed learning is indicative of a shift in language use, from

education to learning; the teacher is there to meet the needs of the learner, but these needs are narrowly defined as "learning" needs within a model that reduces learning to a series of teaching inputs designed to meet pre-specified outcomes. Currently, main indicators for successful learning experiences, and therefore the benchmark for effective learning methodologies, are to be based on measurable learning outcomes. By focusing on the output, methods fail to recognize various ways in which learning can enhance competencies and disregard the multiplicity of learning processes. Teaching systems and not learning systems are developed in formal educational territories.

Another contradiction in this context is the oversimplification of knowledge, skills and competencies, as they are fictitious commodities, not simply a normal commodity that is produced to be bought and sold in the marketplace. Compared to propositional knowledge (knowing that/factual knowledge) which is easier to make available explicitly, because people are aware of it, skills and competencies rely on tacit knowledge (the know-how and know-who) which is often gained in informal learning experiences and therefore rather unconscious, intangible and not easy to test, document or codify. Still, the digital agenda of the EU and more regular use of ICTs, in terms of learning analytics, are driving the output orientation in learning practices. Through these, the possibilities to monitor learners' performance are multiplied and teachers may even better control learning outcomes of students. On the other hand, learning analytics raises many questions around data protection, retention and privacy that need to be addressed (EC, 2016d). It remains to be clarified, if these issues might decelerate the pace of neoliberal learning practices. Certainly, they provide opportunities to raise questions and discuss inconsistencies of economization strategies.

Implications of economization on HESD

The previous chapters discussed the effects of the current paradigm, HE neoliberalism, related ongoing economization strategies and how they affect students, dominant learning practices, organizational mechanisms controlling these practices, and how they structure forms of exchange. In the following section, the main implications on HESD are discussed with a focus on contradictory elements and dysfunctionalities of core economization principles.

Reframing the raison d'etre of HEI

The first but probably most fundamental implication of HE neoliberalism on HESD concerns the very purpose of education. In dominant policy strategies, as the previous chapters have shown, education is reconfigured as a massively undervalued form of knowledge capital that determines the future of work, the organization of knowledge institutions and the shape of society (Olssen and Peters, 2005). The purpose of education is being transformed from citizen education and "public service ethics" towards "private service provider mentality". As such, neoliberalism reduces education to an economic

production function and academic capitalism privileges a corporate, growth-oriented logic in HE. This threatens the educational mandate of universities of using public funds to provide a democratic common good. In HESD, the implications of organizational structures based on accountability towards the labour market and skills performance are, however, trivialized. They systemically prevent equal partnerships between researchers and practitioners, a core component for transdisciplinary sustainability research and education. Current standards-based accountability reforms in HE are resulting in an emphasis on entrepreneurial skills, in many cases to the detriment of learning environments oriented towards key sustainability competencies e.g. normative competencies. This is the ability to reflect, to negotiate and to apply sustainability values, grounded in deeper concepts of justice, equity and ethics (Biberhofer et al., 2018). Limiting the purpose of education, and thus knowledge, skills and competencies to their contribution to economic performance, provides students only with ineffective power. If the student is commodified within the system, student-centred pedagogical approaches have to be read from a perspective where student consumerism is the norm. But if consumerism is a key driver of non-sustainability, learning outcomes to strengthen consumerist skills oppose sustainability targets.

For HESD this means raising questions about the very purpose of education towards reframing the raison d'etre of HEI. The legitimacy of commodification practices, the ethics of commodifying the individual and the aims and means of education as a collective, public good are at stake. Axiological learning, hence learning environments studying values, values perception and values judgments especially in ethics, have to be established. These alternative learning settings need to question fundamental values of economization strategies in HE such as creating competitive learning economies and emphasize the societal value of a learning culture based on cooperation and trust. If further shifts towards a competitive financialized economy (cf. stage 5 and 6 in Jessop, 2017) are to be prevented in HE, different educational approaches are needed, questioning the illusion of the market logics in public service sectors. An understanding of the past, of culture, and of democratic values, among other things, is part of education, and these elements cannot be subsumed in some global marketplace. Different to an instrumental approach (ESD 1), an emancipatory approach towards education (ESD 2) means to practice a culture of dialogue (Cincera et al., 2018), which allows fundamental critique towards the current dominant paradigm in HE and its desired end states. Essentially education needs to be framed as an open-ended learning process with no fixed end-states. The potential of developing a sustainable educational paradigm cannot be about improving within an established paradigm with its growth and fossil-fuel bias (ESD 1). An understanding of education in line with the notion of emancipatory transformative education has to empower the learners to transform themselves and the society they live in. Critical reflection then has the purpose of discovering power and helps learners develop an

awareness of agency to transform society and their own reality. Clearly, HESD would have to formulate a more radical critique towards the capitalist growth paradigm and proof that the raison d'etre of HEI has to be beyond creating economic assets.

Quasi-commodification preventing deeper and social learning

The commodification of knowledge, skills and competencies is especially contradictory in the context of sustainability competencies, as the development of the latter is bound to axiological learning. Therefore, they have to be understood as nested into deeper levels of knowing (Biberhofer et al., 2018). Exploring, debating and challenging values and worldviews, the essence of axiological learning, is necessary because with the commodification of education, the latter goes through systematic and deep transformational processes, which change their axiological basis. However, the illusion of measurability, based on the self-regulating market, relies on the commodity fiction of knowledge in general, including tacit knowledge. Nevertheless, the latter is difficult to codify or standardize, as its nature is implicit and often not tangible. In addition, competencies, in particular sustainability competencies, depend on local knowledge and tacit learning. Similar to tacit knowledge, they are bound to local residents, organisations, culture, collective practices and routines of particular regions (Tödtling, 2018). Developing these contextual competences is deeply connected to local contacts and direct cooperation. Thus, it depends on locally tied knowledge, the respective institutions and cultural patterns. This knowledge loses its value, once decontextualized. It cannot be traded on a global knowledge market. Multistakeholder partnerships such as Regional Centres of Expertise on Education for Sustainable Development are examples of locally embedded knowledge approaches tackling ESD principles based on regional and local approaches to ESD learning, strengthening ESD activities of HEI, and capacity development of educators and change agents (Fadeeva et al., 2014). Real world laboratories (Schäpke et al., 2018) are another example linking scientific expertise with local knowledge creating collaborative experimental learning spaces. These locally embedded knowledge approaches are contradicting with the perspective on knowledge as a generally and globally available resource which can be developed predominantly based on ICT and social media via personalized learning experiences (Tödtling, 2018). Thus, an attempt to measure sustainability competencies based on standardized approaches from a summative evaluation perspective is not possible. The paradox of knowledge markets with their aim to rationalize all types of knowledge certainly avoids the fact that knowledge differs from other commodities, and ignores the opposing logics needed to have a successful operating system. In fact, knowledge markets depend critically on reputation, repeated interactions, and significantly, on trust versus competition (Olssen and Peters, 2005, 337). In the process of tacit knowledge reconstruction – the basis for codification – trust and reciprocity are key values for a culture of knowledge sharing.

However, neoliberalist educational policies tend to engender a technical rationalist approach to knowledge and its value (Patrick, 2013). The individual is paramount and not its social embedding in communities, neither the relevance of equal partnerships designing suitable social learning environments. Education is mainly about improvement, efficiency and the conservation or the reproduction of a particular socio-economic model. This corresponds with the concept of first order learning or learning within a particular paradigm. In the best case learning is about improving a system (efficiency) and enhancing incremental change, referring to change within particular boundaries (without examining the assumptions) (Sterling, 2010). Transformative learning, based on an emancipatory approach, goes deeper and allows second or third order change, referring to meta-cognition and epistemic learning (Mezirow, 2000, 1997; Taylor and Cranton, 2012). A technical rationalist approach is suitable if the task is to improve the combustion engine. It becomes more difficult if the combustion engine has to be substituted, e.g. by electric cars. But it is totally insufficient once the technological innovation has to be accompanied by social and systemic innovations of the mobility system, changing ownership structure (e.g. car sharing) or settlement patterns (e.g. overcoming urban sprawl). Consequently, if utilitarian approaches towards knowledge dominate, the complexities of defining the heuristic, epistemological, ontological and axiological (own note) value of knowledge as a socially constructed phenomenon are lost (Patrick, 2013). In the discourses of the KBE, the word knowledge is used in an almost entirely rhetorical way. Yet productive activity in the KBE is increasingly based on immaterial elements, which come directly from the utilization of the relational, sentimental, and cerebral faculties of human beings (Fumagalli, 2011). However, as we have learned, this does not bring the individual “knowledge worker” power over the products of their intelligence, nor does it bring them increased agency or autonomy in their work (Brown and Lauder, 2006). On the contrary, professional knowledge, which is often contextual and tacit, is devalued. Fulfilling universally targets of a one-size-fits-all logic, independent of its contextual impact, substitutes context-sensitive solutions, acknowledging personal characteristics or place-based dynamics.

Conclusions

Polanyi’s prediction was that in modern societies neither the political function nor the social mechanism behind the economic order were understood, and the economy was no longer embedded in its social and ecological contexts. This is valid for contemporary HE as well, as the article shows. HEIs are predominantly perceived as economic institutions. Improving economic performance based on knowledge and innovation, smart growth, is framed as the main purpose of HE and positioning students as future workers, with the right higher skills, as the means. The social and political embeddedness of HEI and hence their potential to act as social catalysts is pushed to the background.

Today, the rationalization of knowledge production is based on short-time and fragmented efficiency measures, tight control on costs and their recovery, and universities using their own accumulated capital to boost revenues. European policies are driven by a comprehensive entrepreneurial agenda restructuring the organizational mechanisms in HE. Accountability towards the labour market and skills performance of students set this agenda. The relevance of students' skills HEI are urged to develop, greatly depend on business demands. Funding strategies rest on strong industry ties and diversification of revenue streams are determined by HEI capability to establish tech-driven knowledge alliances between research, education and business. These new intermediary and powerful bodies drive economization strategies, and influence the curriculum and skills development. The dominant framing in HE neoliberalism seeks to create an individual that is an enterprising and competitive entrepreneur. Respective learning practices are oriented strongly towards developing entrepreneurial and digital skills based on personalized learning environments. In sum, whether graduates are employable or not depends on the right skills and learning environments HEI are providing to strengthen these. This shifts the problem of unemployment towards the individual, taking the responsibility away from politics. Therefore, the responsibility for success or failure does not depend on macroeconomic crises or structural conditions, but the individual.

In order to avoid subordination of society and alleviation of democratic forms and processes enhancing mutual learning, knowledge exchange and co-creation of knowledge are needed towards restructuring the dominant patterns in HE. The focus on universities as actors of change in terms of knowledge creation as well as communicators to various groups in society is key. In the course of this new accentuation universities´ role needs to be stronger and based on methodological sound integration of actors of practice. However, challenges and difficulties of new institutional frameworks in the context of ongoing economization strategies need to be better understood. Future research is needed to take a close look on institutionalization practices based on emancipatory educational approaches as well as the political and social function of HEI. Currently HESD adapts towards a neoliberal education agenda rather than preventing further shifts from capitalist (cf. stage 4) towards a competitive financialized economy (cf. stage 5 and 6). A profound critique has to question the specific form of economization and the hierachization of the economic sphere in HE, essentially causing an irreconcilable conflict of objectives between economization strategies and sustainability in HE. Reframing the raison d'etre of HEI towards an emancipatory educational approach needs to challenge the quasi-commodification of knowledge. The core of the critique might build on new institutionalized learning environments allowing deep, social learning and, hence, the potential of HEI to act as social catalysts empowering collective and disruptive agency. Research on key sustainability competencies as important higher level skills can question the strong bias towards entrepreneurial skills. A nested understanding of competencies allows axiological learning, and as such a debate about fundamental

values and worldviews. Shedding light on these levels of learning has the potential to challenge the dominant paradigm in HE and trigger reorientation towards transformative education.

References

Altbach, P.G., Reisberg, L., Rumbley, L.E., 2009. Trends in Global Higher Education : Tracking an Academic Revolution Trends in Global Higher Education, The UNESCO 2009 World Conference on Higher Education. https://doi.org/10.1016/j.bse.2004.04.006

Amaral, A., Neave, G., 2009. The OECD and its influence in higher education: A critical revision, in: International Organizations and Higher Education Policy: Thinking Globally, Acting Locally? pp. 82–98. https://doi.org/10.4324/9780203876664

Atkinson, H. Wade, R., 2013. Education fo sustainable Development and political Science: Making Change happen. Policy Pract. A Dev. Educ. Rev. 9.

Atkinson, H., Wade, R. (Eds.), 2015. The challenge of sustainability: Linking Politics, Education and Learning. Policy Press, UK.

Aulenbacher, B., Binner, K., Riegraf, B., Weber, L., 2016. Unternehmerische Universitäten im Wohlfahrtsstaat. Wissenschaftliches Arbeiten, prekäre Beschäftigung und soziale Ungleichheiten in Großbritannien, Schweden, Deutschland und Österreich, in: Baur, N., Besio, C., Norkus, M., Petschick, G. (Eds.), Wissen-Organisation-Forschungspraxis. Der Makro-Meso-Mikro-Link in Der Wissenschaft. Beltz Juventa, Weinheim, pp. 122–154.

Aulenbacher, B., Binner, K., Riegraf, B., Weber, L., 2015. Wandel der Wissenschaft und Geschlechterarrangements. Organisations und Steuerungspolitiken in Deutschland, Österreich, Großbritannien und Schweden. Beiträge zur Hochschulforsch. 37, 22–39.

Bank, W., 1998. World development report: knowledge for development. Oxford.

Bell, D., 1973. The coming of post-industrial society. Heinemann, London.

Biberhofer, P., Lintner, C., Bernhardt, J., Rieckmann, M., 2018. Facilitating work performance of sustainability-driven entrepreneurs through higher education: The relevance of competencies, values, worldviews and opportunities. Int. J. Entrep. Innov. https://doi.org/10.1177/1465750318755881

Binner, K., Kubicek, B., Rozwandowicz, A., Weber, L., 2013. Die unternehmerische Hochschule aus der Perspektive der Geschlechterforschung. Zwischen Aufbruch und Beharrung. Verlag Westfälisches Dampfboot, Münster.

Bongardt, A., Torres, F., Pochet, P., Begg, I., Csaba, L., Lannoo, K., Soete, L., Egenhofer, C., 2010. Europe 2020 — A promising strategy? Intereconomics 45, 136–170. https://doi.org/10.1007/s10272-010-0332-9

Brand, U., 2014. Internationalisierung des Staates, in: Wullweber, J., Graf, A., Behrens, M. (Eds.), Theorien Der Internationalen Politischen Ökonomie, Globale Politische Ökonomie. Springer.

Brown, P., Lauder, H., 2006. Globalisation, knowledge and the myth of the magnet economy. Glob. Soc. Educ. 4, 25–57.

Cantwell, B., Kauppinen, I., 2014. Academic Capitalism in the Age of Globalization. John Hopkins University Press, Baltimore.

Cincera, J., Biberhofer, P., Binka, B., Boman, J., Mindt, L., Rieckmann, M., 2018. Designing a sustainability-driven entrepreneurship curriculum as a social learning process: A case study from an international knowledge alliance project. J. Clean. Prod. 172. https://doi.org/10.1016/j.jclepro.2017.05.051

Clark, B.R., 1998. Creating Entrepreneurial Universities: Organizational Pathways of Transformation. High. Educ. 38, 373–374. https://doi.org/10.1023/A:1003771309048

Council, 2018. Council Recommendation on Key Competences for Lifelong Learning (2018/C 189/01). Brussels.

Council, 2016. Resolution of the Council on promoting socioeconomic development and inclusiveness in the EU through education: the contribution of education and training to the European

Semester 2016. (2016/C 105/01).
Council, 2015. Council conclusions on entrepreneurship in education and training (2015/C 17/02).
Council, 2009a. Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ("ET 2020") (2009/C 119/02).
Council, 2009b. Conclusions of the Council and of the Representatives of the Governments of the Member States, meeting within the Council on developing the role of education in a fully-functioning knowledge triangle. Brussels.
Curren, R., 2011. Education for sustainable development: A philosophical assessment. Impact 2009, 1–68.
De Groot, J., Steg, L., 2009. Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm activation model. J. Soc. Psychol. 149, 425–449. https://doi.org/10.3200/SOCP.149.4.425-449
Disterheft, A., Caeiro, S., Azeiteiro, U.M., Leal Filho, W., 2013. Sustainability science and education for sustainable development in universities: A way for transition, Sustainability Assessment Tools in Higher Education Institutions: Mapping Trends and Good Practices Around the World. https://doi.org/10.1007/978-3-319-02375-5_1
Disterheft, A., Caeiro, S., Azeiteiro, U.M., Leal Filho, W., 2013. Sustainability science and education for sustainable development in universities: A way for transition, in: Sustainability Assessment Tools in Higher Education Institutions: Mapping Trends and Good Practices Around the World. pp. 3–27. https://doi.org/10.1007/978-3-319-02375-5_1
Eaton, C., Goldstein, A., Habinek, J., Kumar, M., Stover, T.L., Roehrkasse, A., 2013. Bankers in the ivory tower: the financialization of governance at the University of Carlifornia. IRLE Work. Pap. 151.
EC, 2018. EUR-Lex Access to European Union law [WWW Document]. Open method Coord. URL https://eur-lex.europa.eu/summary/glossary/open_method_coordination.html (accessed 11.18.18).
EC, 2017a. A renewed EU agenda for higher education COM(2017) 247 final. Brussels.
EC, 2017b. European Semester Thematic Factsheet. Tertiary Education Attainment.
EC, 2016a. A new skills agenda for Europe. Working together to strengthen human capital, employability and competitiveness COM(2016) 381 final. Brussels.
EC, 2016b. Improving and Modernising Education COM(2016) 941 final. Brussels.
EC, 2016c. Education and Training 2020. Working Group Mandates 2016-2018.
EC, 2016d. Education and Training 2020 Highlights from the Working Groups 2014-2015. Brussels.
EC, 2013a. Entrepreneurship 2020 Action Plan. Reigniting the entrepreneurial spirit in Europe.
EC, 2013b. Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources COM(2013) 654 final. Brussels.
EC, 2012. Rethinking Education: Investing in skills for better socio-economic outcomes COM (2012) 669 final. Brussels.
EC, 2011. Supporting growth and jobs – an agenda for the modernisation of Europe's higher education systems COM(2011) 567 final. Brussels.
EC, 2010. Europe 2020. A European Strategy for smart, sustainable and inclusive growth. COM(2010) 2020. Brussels.
EC, 2009. Commission proposes regular EU Forum for University-Business Dialogue [WWW Document]. URL http://europa.eu/rapid/press-release_IP-09-529_en.htm (accessed 12.18.18).
EC, 2006. Delivering on the Modernisation agenda for universities: Education, Research and Innovation. COM(2006) 208 final.
EQAR, 2018. Website EQAR [WWW Document]. URL http://www.eqar.eu
Etzkowitz, H., Leydesdorff, L., 2000. The Dynamics of In novation: From National Systems and Mode 2 to a Triple Helix of University-Industry-Government Relations. Res. Policy 29, 109–123.
EU, 2015. Joint Report of the Council and the Commission on the implementation of the strategic framework for European cooperation in education and training (ET 2020) New priorities for European cooperation in education and training.

EU, 2012. Joint Report of the Council and the Commission on the implementation of the Strategic Framework for European cooperation in education and training (ET 2020) “Education and Training in a smart, sustainable and inclusive Europe.”
EU, 2008. Recommendations of the European Parliament and of the Council on the establishment of the European Qualifications Framework for lifelong learning (2008/C 111/01).
EU, 2006. Key competencies for lifelong learning - A European reference framework (2006/962/EC).
Fadeeva, Z., Payyappallimana, U., Tabucanon, M., Chhokar, B.K., 2014. Building a Resilient Future through Multistakeholder Learning and Action : Ten Years of Regional Centres of Expertise on Education for Sustainable Development. Tokyo.
Fam, D., Mitchell, C., Ross, K., De La Sienra, E., 2017. Challenging my and your worldview - recognizing ontological (beliefs), epistemological (knowlegde) and axiological (values) assumptions to enrich TD research and practice, in: ITD Conference 2017. Transdisciplinary Research and Education - Intercultural Endeavors. Abstract Booklet. Leuphana University of Lüneburg, td-net Network for Transdisciplinary Research, Lüneburg.
Foss, N.J., 2013. Knowledge governance: meaning, origins and implications, in: Grandori, A. (Ed.), Handbook of Economic Organization: Integrating Economic and Organization Theory. Edward Elgar Publishing, Cheltenham, UK; Northhampton, MA, USA, pp. 62–84.
Foucault, M., 1991. Governmentality, in: Burchell, G., Gordon, C., Miller, P. (Eds.), The Foucault Effect: Studies in Governmentality. University of Chicago Press, Chicago, pp. 87–104.
Fumagalli, A., 2011. Twenty theses on contemporary capitalism (Cognitive Biocapitalism). J. Theor. Humanit. 16, 7–17. https://doi.org/10.1080/0969725X.2011.626555
Funtowicz, S.O., Ravetz, J.R., 1993. The Emergence of Post-Normal Science, in: Science, Politics and Morality. pp. 85–123. https://doi.org/10.1007/978-94-015-8143-1_6
Furedi, F., 2011. Introduction to the marketisation of higher education and the student as consumer, in: Molesworth, M., Scullion, R., Nixon, E. (Eds.), The Marketisation of Higher Education and the Student as a Consumer. Routledge, London and New York, pp. 2–7.
Gibb, A., Hannon, P., 2006. Towards the Entrepreneurial University. Local Econ. 18, 38–48. https://doi.org/10.1080/03797720120116004
Gibb, A., Hofer, A.-R., Klofsten, M., 2018a. The entrepreneurial and innovative higher education institution. A review of the concept and its relevance today.
Gibb, A., Hofer, A.-R., Klofsten, M., 2018b. The Entrepreneurial and Innovative Higher Education Institution. HEInnovate - A review of the concept and its relevance today.
Gibbons, M., Limoges, C., Nowotny, Helga Schwartzman, S., Scott, P., Trow, M., 1994. The new production of knowledge. The Dynamics of Science and Research in Contemporary Societies. SAGE, London,Thousand Oaks, New Delhi.
Grant, K. a, 2007. Tacit Knowledge Revisited – We Can Still Learn from Polanyi. Electron. J. Knowl. Manag. 5, 173–180.
Hemsley-Brown, J., 2011. Market heal thyself: The challenges of a free market in higher education. J. Mark. High. Educ. 21, 115–132. https://doi.org/10.1080/08841241.2011.623832
Höhne, T., 2015. Ökonomisierung und Bildung. Zu den Formen ökonomischer Rationalisierung im Feld der Bildung. Springer VS.
ILO, 2014. Skills mismatch in Europe. Statistics Brief. Geneva, Switzerland.
Inamorato dos Santos, A., Punie, Y., Muñoz, J.C., 2016. Opening Up Education: A Support Framework for Higher Education Institutions. JRC Science for Policy Report, EUR 27938 EN. https://doi.org/10.2791/293408
INET, 2016. “Knowledge” as a Fictitious Commodity [WWW Document]. URL https://www.ineteconomics.org/perspectives/blog/knowledge-as-a-fictitious-commodity (accessed 12.18.18).
Jessop, B., 2018. On academic capitalism. Crit. Policy Stud. 12, 104–109. https://doi.org/10.1080/19460171.2017.1403342
Jessop, B., 2017. Varieties of academic capitalism and entrepreneurial universities On past research and three thought experiments. High. Educ. 73, 853–870. https://doi.org/10.1007/s10734-017-

0120-6
Jessop, B., 2012. Understanding the “Economization” of Social Formations, in: Schimank, U., Volkmann, U. (Eds.), The Marketization of Society: Economizing the Non-Economic, Research Network “Welfare Societies.” Forschungsverbund “Welfare Societies”, Research Network “Welfare Societies”, University of Bremen, Bremen.
Jessop, B., 1999. Reflections on Globalisation and Its (Il)ligic, in: Globalisation and the Asia-Pacific: Contested Territories. pp. 19–38. https://doi.org/10.4324/9780203984574-10
Kalman, Y.M., 2014. A race to the bottom: MOOCs and higher education business models. Open Learn. 29, 5–14. https://doi.org/10.1080/02680513.2014.922410
Kauppinen, I., 2014. Different Meanings of “Knowledge as Commodity” in the Context of Higher Education. Crit. Sociol. 40, 393–409. https://doi.org/10.1177/0896920512471218
Krimsky, S., 2010. The entrepreneurial university. Academe 96, 2. https://doi.org/10.1080/17405900500283540
Lans, T., Blok, V., Wesselink, R., 2014. Learning apart and together: Towards an integrated competence framework for sustainable entrepreneurship in higher education. J. Clean. Prod. 62, 37–47. https://doi.org/10.1016/j.jclepro.2013.03.036
Lucas, R.E., 1988. On the mechanics of economic development. J. Monet. Econ. 22, 3–42. https://doi.org/10.1016/0304-3932(88)90168-7
Mader, C., Scott, G., Razak, D.A., 2013. Effective change management, governance and policy for sustainability transformation in higher education. Sustain. Accounting, Manag. Policy J. 4, 264–284. https://doi.org/10.1108/SAMPJ-09-2013-0037
Marginson, S., 2013. The impossibility of capitalist markets in higher education. J. Educ. Policy 28, 353–370. https://doi.org/10.1080/02680939.2012.747109
Marginson, S., 2010. Higher education in the global knowledge economy, in: Procedia - Social and Behavioral Sciences. pp. 6962–6980. https://doi.org/10.1016/j.sbspro.2010.05.049
Mautner, G., 2010. Language and the market society: Critical reflections on discourse and dominance, Language and the Market Society: Critical Reflections on Discourse and Dominance. https://doi.org/10.4324/9780203855997
Mautner, G., 2005. The Entrepreneurial University: A discursive profile of a higher education buzzword. Crit. Discourse Stud. 2, 95–120. https://doi.org/10.1080/17405900500283540
Mezirow, J., 2000. Learning to think like an adult: core concepts of transformation theory, in: Mezirow, J. et al. (Ed.), Learning as Transformation: Critical Perspectives on a Theory in Progress. Jossey-Bass, San Francisco, CA, pp. 3–34.
Mezirow, J., 1997. Transformative learning: Theory to practice. New Dir. Adult Contin. Educ. 1997, 5. https://doi.org/10.1002/ace.7401
Mikulec, B., Ermenc, K.S., 2016. Qualifications Frameworks Between Global and European Pressures and Local Responses. SAGE Open 6. https://doi.org/10.1177/2158244016644948
Molesworth, M., Scullion, R., Nixon, E., 2011. The Marketisation of Higher Education and the student as a consumer. Routledge, London and New York.
Moore, J., 2005. Barriers and pathways to creating sustainability education programs: policy, rhetoric and reality. Environ. Educ. Res. 11, 537–555. https://doi.org/10.1080/13504620500169692
Münch, R., 2016a. Die Universität im akademischen Kapitalismus, in: Baur, N., Besio, C., Norkus, M., Petschick, G. (Eds.), Wissen-Organisation-Forschungspraxis. Der Makro-Meso-Mikro-Link in Der Wissenschaft. Beltz Juventa, Weinheim, pp. 95–121.
Münch, R., 2016b. Academic Capitalism. Oxford Res. Encycl. Polit.
Münch, R., 2014. Academic capitalism: Universities in the global struggle for excellence, Academic Capitalism: Universities in the Global Struggle for Excellence. https://doi.org/10.4324/9780203768761
Münch, R., 2010. Bologna oder die Kapitalisierung der Bildung. Bl. Dtsch. Int. Polit. 1, 47–54.
Nordlund, A.M., Garvill, J., 2002. Value structures behind proenvironmental behavior. Environ. Behav. 34, 740–756. https://doi.org/10.1177/001391602237244
Nowotny, H., Scott, P., Gibbons, M., 2003. Introduction: “Mode 2” revisited: The new production of

knowledge. Minerva. https://doi.org/10.1023/A:1025505528250
OECD, 2012. A Guiding Framework for Entrepreneurial Universities. OECD Eur. Comm. 1–54.
OECD, 2009. Globalisation and higher education: What might the future bring? Programme on Institutional Management in Higher Education. Paris.
OECD, 1997. Industrial competitiveness in the knowledge-based economy: the role of governments. Paris.
OECD, 1996a. The knowledge-based economy. Paris.
OECD, 1996b. Measuring what people know: human capital accounting for the knowledge economy. Paris.
OECD, 1996c. Employment adn growth in the knowledge-based economy. Paris.
OECD and EC, 2018. heinnovate [WWW Document]. URL https://heinnovate.eu/ (accessed 12.18.18).
OECD and EC, 2012. A Guiding Framework for Entrepreneurial Universities, OECD & European Commission.
Olssen, M., Peters, M.A., 2005. Neoliberalism, higher education and the knowledge economy: From the free market to knowledge capitalism. J. Educ. Policy. https://doi.org/10.1080/02680930500108718
Palumbo, A., Scott, A., 2017. Remaking market society: A critique of social theory and political economy in neoliberal times, Remaking Market Society: A Critique of Social Theory and Political Economy in Neoliberal Times. https://doi.org/10.4324/9780203796375
Patrick, F., 2013. Neoliberalism, the Knowledge Economy, and the Learner: Challenging the Inevitability of the Commodified Self as an Outcome of Education. ISRN Educ. 2013, 1–8. https://doi.org/10.1155/2013/108705
Ploum, L., Blok, V., Lans, T., Omta, O., 2017. Toward a Validated Competence Framework for Sustainable Entrepreneurship. Organ. Environ. 108602661769703. https://doi.org/10.1177/1086026617697039
Polanyi, K., 1982. The economy as instituted process, in: Granovetter, M., Swedberg, R. (Eds.), The Sociology of Economic Life. Westview, Bolder, pp. 29–51.
Polanyi, K., 1957. The Great Transformation. The Political and Economic Origins of Our Times. Beacon Paperback edition, Boston, Massachusetts.
Polanyi, M., 1966. The tacit dimension. University of Chicago Press, Chicago and London.
Polanyi, M., 1958. Personal knowledge: Towards a Post-Critical Philosophy. University of Chicago Press, London.
Prpic, M., 2014. The Open Method of Coordination.
Ravetz, J., Funtowicz, S., 1999. Post-Normal Science—an insight now maturing. Futures 31, 641–646. https://doi.org/10.1109/PDP.2014.109
Rieckmann, M., 2018a. Die Bedeutung von Bildung für nachhaltige Entwicklung für das Erreichen der Sustainable Development Goals (SDGs). Zeitschrift für Int. Bild. und Entwicklungspädagogik 41, 4–10. https://doi.org/doi.org/10.31244/zep.2018.02.02
Rieckmann, M., 2018b. Chapter 2 - Learning to transform the world: key competencies in Education for Sustainable Development, in: Leicht, A., Heiss, J., Byun, W.J. (Eds.), Issues and Trends in Education for Sustainable Development. Unesco Publishing, pp. 39–59.
Rieckmann, M., 2012. Future-oriented higher education: Which key competencies should be fostered through university teaching and learning? Futures 44, 127–135. https://doi.org/10.1016/j.futures.2011.09.005
Romer, P., 1990. Endogenous Technological Change. J. Polit. Econ. 85, 1002–1037.
Sauer, P., 2017. Von der Bildung von Eliten zur Ausbildung von Allen. Die Verwertungslogik teritärer Bildung. Kurswechsel 2, 46–54.
Schäpke, N., Stelzer, F., Caniglia, G., Bergmann, M., Wanner, M., Singer-Brodowski, M., Loorbach, D., Olsson, P., Baedeker, C., Lang, D.J., 2018. Jointly experimenting for transformation?: Shaping real-world laboratories by comparing them. GAIA 27, 85–96. https://doi.org/10.14512/gaia.27.S1.16
Schwartz, S.H., 1994. Are There Universal Aspects in the Structure and Contents of Human Values? J.

Soc. Issues 50, 19–45. https://doi.org/10.1111/j.1540-4560.1994.tb01196.x
Scott, P., 1997. The Postmodern University?, in: Smith, A., Webster, F. (Eds.), The Postmodern University? Contested Visions of Higher Education in Society. SRHW and Open University Press.
Seiler Schiedt, E., 2018. Massive Open Online Courses (MOOCS) Moderne Form der Wissensvermittlung für alle. Vortrag am Libary e-day der UZH.
Selby, D., Kagawa, F., 2011. Development education and education for sustainable development: Are they striking a Faustian bargain? Policy Pract. A Dev. Educ. Rev. 12, 15–31.
Selby, D., Kagawa, F., 2010. Runaway Climate Change as Challenge to the "Closing Circle" of Education for Sustainable Development. J. Educ. Sustain. Dev. 4, 37–50. https://doi.org/10.1177/097340820900400111
Sherren, K., 2008. A history of the future of higher education for sustainable development. Environ. Educ. Res. 14, 238–256.
Singer-Brodowski, M., 2016. Transformative Bildung durch transformatives Lernen. Zur Notwendigkeit der erziehungswissenschaftlichen Fundierung einer neuen Idee. ZEP – Zeitschrift für Int. Bild. und Entwicklungspädagogik 31, 13–17.
Slaughter, S., Cantwell, B., 2012. Transatlantic moves to the market: The US and the EU. High. Educ. 63, 583–606. https://doi.org/10.1007/s10734-011-9460-9
Slaughter, S., Rhoades, G., 2004a. Academic Capitalism and the New Economy. Markets, State, and Higher Education. The John Hopkins University Press, Baltimore and London.
Slaughter, S., Rhoades, G., 2004b. Academic Capitalism and the New Economy, Academic Capitalism and the New Economy. https://doi.org/10.1007/s13398-014-0173-7.2
Smith, B., 1988. Knowing How vs. Knowing That, in: Nyfri, J.C., Smith, B. (Eds.), Practical Knowledge. Outlines of a Theory of Traditions and Skills. Croom Helm, London, New York, Sydney, pp. 1–16.
Snellman, C.L., 2015. University in Knowledge Society : Role and Challenges. J. Syst. Manag. Sci. 5, 84–113.
Soete, L., 2010. Towards a Sustainable Knowledge-based Economy in Europe: from the Costs of "Non-Europe" to the Costs of Europe? Intereconomics 45, 160–166. https://doi.org/https://doi.org/10.1007/s10272-010-0332-9
Souter, D., 2010. Towards inclusive knowledge societies: a review of UNESCO's action in implementing the WSIS outcomes. Paris.
Sterling, S., 2010. Transformative Learning and Sustainability: sketching the conceptual ground. Learn. Teach. High. Educ. 17–33.
Sterling, S., 2001. Sustainable Education: Re-Visioning Learning and Change., Green Books. Dartington.
Stern, P.C., 2000. New Environmental Theories: Toward a Coherent Theory of Environmentally Significant Behavior. J. Soc. Issues 56, 407–424. https://doi.org/10.1111/0022-4537.00175
Strauss, A., Corbin, J., 1990. Strauss, A., & Corbin, J., Basics of qualitative research: Grounded theory procedures and techniques. Newbury. https://doi.org/10.4135/9781452230153
Sum, N.-L., Jessop, B., 2013. Towards a Cultural Political Economy: Putting Culture in its Place in Political Economy. Edward Elgar, Cheltenham, UK; Northhampton, MA, USA.
Taylor, E.W., Cranton, P., 2012. The Handbook of Transformative Learning: Theory, Research, and Practice. Jossey-Bass, San Francisco, CA.
Tödtling, F., 2018. Michael Polanyi, der Bruder. Von der physikalischen Chemie zur Philosophie des Wissens. Falter Transform. des Kap. Karl Polanyi. Wiederentdeckung eines Ökonomen 27–29.
UN, 2018. UN Website [WWW Document]. Sustain. Dev. Goal 4. URL https://sustainabledevelopment.un.org/sdg4
UNESCO, 2017. Education for Sustainable Development Goals Learning Objectives. France.
UNESCO, 2015. Rethinking education: Towards a global common good?, Published in 2015 by the United Nations Educational, Scientific and Cultural Organization, 7, place de Fontenoy, 75352 Paris 07 SP, France. https://doi.org/10.1016/j.jacc.2003.09.053
UNESCO, 2005. Towards knowledge societies: UNESCO world report. Paris.
Van Damme, D., 2001. Higher Education in the Age of Globalization: The need for a new regulatory

framework for recognition, quality assurance and accreditation Introductory Paper for the UNESCO Expert Meeting, UNESCO Expert Meeting Paris, 10-11 September 2001.
van Damme, D., van der Wende, M., 2018. Global higher education governance, in: Handbook on the Politics of Higher Education. pp. 91–113. https://doi.org/10.4337/9781786435026.00014
Wals, A.E.J., 2014. Sustainability in higher education in the context of the un DESD: A review of learning and institutionalization processes. J. Clean. Prod. 62, 8–15. https://doi.org/10.1016/j.jclepro.2013.06.007
Ward, S.C., 2012. Neoliberalism and the global restructuring of knowledge and education, Neoliberalism and the Global Restructuring of Knowledge and Education. https://doi.org/10.4324/9780203133484
Wiek, A., Bernstein, M.J., Foley, R.W., Cohen, M., Forrest, N., Kuzdas, C., Kay, B., Withycombe Keeler, L., 2016. Operationalising competencies in higher education for sustainable development. Routledge Handb. High. Educ. Sustain. Dev. 241–260.
Wiek, A., Withycombe, L., Redman, C.L., 2011. Key competencies in sustainability: A reference framework for academic program development. Sustain. Sci. 6, 203–218. https://doi.org/10.1007/s11625-011-0132-6
Withycombe, L., Wiek, A., 2010. Sustainability, Anticipatory competence as a key competence in sustainability.
Young, M., Allais, S., 2011. The shift to outcome based frameworks. Key problems from a critical perspective. Austrian Open Access J. Adult Educ. 14, 2–10.
Young, M., Allais, S., 2009. Conceptualizing the role of qualifications in education reform, in: Allais, S., Raffe, D., Young, M. (Eds.), Researching NQFs: Some Conceptual Issues. International Labour Office, Geneva, Switzerland, pp. 5–22.

Annex

Table 1 Analysed EU higher education policy initiatives and activities between 2006 until 2017

Year	Initiative (Source)	Objectives	Source
2006	EU Agenda for the modernisation of universities	Member States are urged to increase universities contribution to the Lisbon Agenda for more growth, and more and better jobs, as part of the wider move towards an increasingly global and knowledge-based economy. Key aim is the untapped potential of universities, in particular knowledge and talent, hence, the mobilisation of EUs brainpower. This concerns strategies from the way in which higher education systems are regulated and managed, to the ways in which universities are governed.	Communication from the Commission on to the Council and the EP (EC, 2006)
2006	Key competencies for lifelong learning – a European reference framework	The knowledge, skills and aptitudes of the European workforce are a major factor in the EU's innovation, productivity and competitiveness. The Framework identifies and defines, for the first time at the European level, the key competences that citizens require for their personal fulfilment, social inclusion, active citizenship and employability in [a] knowledge-based society.	Recommendation of the EP and of the Council on key competences for lifelong learning (EU, 2006) Council Recommendations (Council, 2018)
2009	Strategic Framework for European cooperation in education and training (ET 2020)	Knowledge is at the heart of the ET 2020 strategy for achieving smart, sustainable and inclusive growth in order to become the most competitive and dynamic knowledge-based economy in the world cp. Europe 2020 strategy (EC, 2010). Its four strategic objectives and current EU benchmarks to are: 1) Making lifelong learning and mobility a reality 2) Improving the quality and efficiency of education and training 3) Promoting equity, social cohesion and active citizenship 4) Enhancing creativity and innovation, including entrepreneurship, at all levels of education and training	Council conclusions on ET 2020 (Council, 2009a) Joint Report on the implementation of ET 2020 (EU, 2012) ET 2020 Highlights from the Working Groups 2014-2015 (EC, 2016d) Joint Report on the implementation of ET 2020 (EU, 2015) Resolution of the Council, (Council, 2016) ET 2020 Working Group Mandates (EC, 2016c)
2009	Knowledge Triangle and Innovation	The aim of knowledge triangles is to improve collaboration and partnerships in between businesses, research and education. The flagship initiative is the European Institute of Innovation and Technology (EIT) and its Knowledge and Innovation Communities (KICs). They aim to create innovative products and services, new companies and a new generation of entrepreneurs. Further initiatives involve knowledge alliances, university-business forum, Grand Coalition for ICT Jobs. Key aim is to strengthen the capacity of higher education institutions to integrate research results and innovative practice into the educational offer, and to exploit the potential for marketable products and services.	Council conclusions on developing the role of education in a fully-functioning knowledge triangle (Council, 2009b) Press Release (EC, 2009)
2011	Supporting growth and jobs – an agenda for the modernization of Europe's higher education systems	The strategy again emphasizes HEI as crucial partners in delivering ET2020 and emphasizes the need to increase attainment levels in higher education in order to drive forward and maintain growth. It focuses on crucial policy issues for member states and HEI but also reforms supported by the EU in order to provide the highly skilled human capital and the articulate citizens that Europe needs to create jobs, economic growth and prosperity.	Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions. (EC, 2011)

2012	Rethinking Education: Investing in skills for better socio-economic outcomes	The rethinking education initiative focuses on the higher level skills as a core strategic asset for growth. It aims to provide concrete advice as to how member countries can invest in skills for better socio-economic outcomes. The report introduces quality concepts and approaches related to Open Educational Resources (OER). Hence, it suggests HEI to tap into the potential of ICT and OER for learning and utilize opportunities of the digital revolution.	Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions. (EC, 2012)
2012	Guiding Framework for Entrepreneurial Universities	The guiding framework for entrepreneurial universities is a tool for HEI to assess their entreprneurial innovativeness. It focuses on HE innovation and throughout its research, knowlegde exchange, teaching and learning, governance and external relations. The tool allows universities to assess their principles of organisation, funding strategies and entrepreneurial orientation in research and teaching.	(OECD, 2012) (OECD and EC, 2018) (Gibb et al., 2018a)
2013	Entrepreneurship in Education and Training. The Entrepreneurship 2020 Action Plan	The Entrepreneurship Action Plan is a blueprint for decisive action to unleash Europe's entrepreneurial potential, to remove existing obstacles, and to revolutionise the culture of entrepreneurship in Europe. The Entrepreneurship Action Plan 2020 is a key vision and sets out a number of actions for implementing the EU strategy for growth and jobs. It is based on three key pillars: developing entrepreneurial education and training; creating the right business environment; role models and reaching out to specific groups.	Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions (EC, 2013a) Council conclusions (Council, 2015)
2013	Opening Up Education Digital Agenda for Europe	The Opening Up Education agenda aims towards exploiting the potentials of digital technologies for learning and teaching. Open learning environments and innovations such as MOOCs is to transform higher education and create new competition and centres of excellence among universities worldwide. In sum the agenda should contribute to the Europe 2020 goals of boosting EU competitiveness and growth through skilled workforce and more employment based on the utilization of ICT.	Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions (EC, 2013b) JRC Science for Policy Report (Inamorato dos Santos et al., 2016)
2016	A new skills agenda for Europe. Working together to strengthen human capital, employability and competitiveness.	Based on the revision of the Key Competences Framework from 2006 special attention is paid to promoting entrepreneurial and innovation-oriented mindsets. The agenda highlights the need to develop digital skills but also the need for improvement of teritiary graduate tracking regarding the performance of graduates after their education and training experiences.	Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions (EC, 2016a) Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions (EC, 2016b)
2017	A renewed EU agenda for higher education (Updates and supersedes 2011 Agenda for the modernization of Europe's HE systems)	In line with ET2020 the renewed EU agenda for HE identifies four key goals for European cooperation in HE: 1. Tackling future skills mismatches and promoting excellence in skills development 2. Building inclusive and connected higher education systems 3. Ensuring higher education institutions contribute to innovation 4. Supporting effective and efficient higher education systems. To help achieve these goals specific actions are proposed in Erasmus+ and Horizon 2020 programmes.	Communication from the Commission to the EP, the Council, the European Economic and Social Committee and the Committee of the Regions (EC, 2017a) European Semester Thematic Factsheet (EC, 2017b)

Table 2 Analytical key categories of data analysis and respective codes

Identified codes of economization	Description
Problem framing/Argumentation	• Rationalization logic of knowledge production in the knowledge-based economy • Priorities in terms of aims and goals, principles of objectives • Concrete reform steps needed to achieve priorities
Organizational Structure	• Principles of mechanisms, instruments and/or tools to ensure efficiency and control • Performance indicators and supporting conditions
Funding strategies	• Financial strategies and business models to exploit higher level skills
Forms of exchange/partnerships	• Concrete forms of (self-)organization, networking and environments • Exploitation of knowledge exchange and value creation
Learning practices	• Learning approaches and aims • Value of knowledge, skills and competencies as fictitious commodity • Limitations of freedom in learning and teaching e.g. formalization, codification and embodiment of knowledge

Table 3 Key areas of the Entrepreneurial Universities initiative (based on OECD, 2012; OECD and EC, 2018)

Area of interest	**Description**
1. Leadership and Governance	HEI should develop an entrepreneurial culture visible in its mission statement and strategy. Key performance indicators should secure implementation and high-level commitment facilitates coordinated activities across departments.
2. Organisational Capacity: Funding, People and Incentives (Funding was not in 2012 Version)	The organizational capacity of HEI drives the ability to deliver on its strategy. Hence, key resources are to support its capacity for entrepreneurship. These involve a wide range of funding and investment sources, individuals with entrepreneurial attitudes, behavior and experience, expertise and knowledge and incentive systems rewarding entrepreneurial activities.
3. Entrepeneurial Teaching and Learning (Entrepreneurship development in teaching and learning, 2012 Version)	Entrepreneurial teaching and learning should stimulate entrepreneurial mindsets, skills and competences in formal as well as informal learning opportunities. Entrepreneurial learning outcomes should be codified, validated and recognized in students' records of achievements. Curriculum design processes and mechanisms should involve external stakeholders.
4. Preparing and supporting entrepreneurs (Pathways for entrepreneurs, 2012 verison)	HEI should ideally act as part of a wider business support ecosystem. This concerns awareness raising of the value of entrepreneurship and the support of its students, graduates and staff to move from idea generation to business creation. Training, mentoring and financing should be provided to assist starting, running and growing businesses.
5. Digital Transformation and Capability (not present in 2012 version)	HEI's digital capability is defined as the ability to integrate, optimise and transform digital technologies to support innovation and entrepreneurship. An HEI should integrate the design and organization of its digital infrastructure to support innovation across all its activities. This includes for example the integration of its learning technologies and platforms, research and administrative systems, and supporting ICT services. The HEI is committed to digital teaching, learning and assessment practices.
6. Knowledge Exchange and Collaboration (University – business/external relationships for knowledge exchange, 2012 version)	Knowledge exchange with industry, the public sector and society is an important catalyst for organizational innovation. Direct application and exploitation of knowledge should be secured as well as opportunities to establish strong links with incubators, science parks and other external initiatives (business). The integration of research, education and industry activities are crucial (cp. knowledge triangle).
7. The Internationalised Institution (The Entrepreneurial University as an internationalised institution, 2012 version)	An international or global dimension on education, research and knowledge exchange is a vehicle to opening up governance and management to external stakeholders. The internationalization strategy of HEI should be harmonized with its entrepreneurial agenda. This should attract international staff and international research partnerships, hence, strengthen HEI's ability to compete on the international market.
8. Measuring impact (Measuring the impact of the Entrepreneurial University , 2012 Version)	Regularly impact assessment of HEI entrepreneurial agenda should set clear intended outcomes, collect evidence and use evidence of the outcomes as a tool for reviewing the institutions strategy. Personnel and resources support, teaching and learning, start-up support, knowledge exchange and collaboration and international activities in relation to its entrepreneurial agenda should be regularly assessed.

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