Holm, Claus; Martinsen, Anders

Mapping the relationship between higher education and sustainable development

MAPPING THE RELATIONSHIP BETWEEN HIGHER EDUCATION AND SUSTAINABLE DEVELOPMENT

CLAUS HOLM,
ANDERS MARTINSEN

Abstract

The article presents different approaches to the relationship between higher education and sustainable development. Its purpose is firstly to provide an overview of four main approaches to this relationship and their key conflicts. Secondly, it argues that the approach "lifelong learning skills for a resilient life" is beginning to establish itself as part of a main conflict with the approach "necessary knowledge for a secured life." That is to say that these two approaches to the question of the relationship between higher education and sustainable development are in conflict with each other and with understanding of higher education, in casu with the curriculum and assessment activity of the university, as well as with sustainable development. This gives rise to very different conditions for future forms of life and learning inside, as well as outside, higher education.

Keywords

higher education, sustainable development, curricula, lifelong learning, security and resilience

The consensus is that education is the key to sustainable development (Gough & Scott, 2007; Mochizuki & Fadeeva, 2010; Tilbury, 2003; Wals & Jickling, 2002). The consensus is also that the realization of sustainable development is an ever more acute requirement in relation to the educational system in general. But in the midst of this consensus are conflicting views of various types of education, which include the type of curricula and assessment activity that contributes to achieving a certain conception of sustainable development. This article's purpose is to identify four approaches which answer how the relationship between education and sustainable development is established, to describe the types of conflicts that exist between these approaches along with their relative strengths. The article examines and identifies these approaches and conflicts in the context of a contemporary policy issue – sustainable development – and how this issue is dealt with within higher education, which is one of the sectors across the globe that considers it as a necessary and urgent response to a range of social and environmental issues that threaten the integrity of the biosphere and human well-being.

The article pursues two theses. The first thesis is that it is possible to identify and reduce the number of approaches to the relationship between education and sustainable development to four, while at the same time describing the main conflicts between them which currently form higher education's approach to sustainable development. The second thesis is that an approach called lifelong learning skills for a resilient life is beginning to establish itself as part of a new main conflict with an approach called necessary knowledge for a secured life. The relevance of these two theses can be put into perspective by a brief comparison with approaches outlined by Stephen Gough and William Scott in their book *Higher Education and Sustainable Development: Paradox and Possibility* (2007). The authors describe seven approaches to – or seven perspectives of – the relationship between higher education and sustainable development. In this article, we agree with Gough and Scott that several approaches exist, but the first thesis, however, is that it is possible to identify and reduce the number of perspectives to only four. Moreover, as mentioned previously, it is our thesis that the approach lifelong learning skills for a resilient life is establishing to be a part of a current major conflict with necessary knowledge for a secured life. Comparing this second thesis with Gough and Scott's approach also presents a clear difference. Gough and Scott argue that the issue of sustainable development constitutes a formation conception in the form of a "fresh and challenging frame of reference for thinking about everything a university is and does" (Gough & Scott, 2007, p. 168). That, however, is subject to their model for higher education that on the one hand must ensure the continuing development of preferences over what preferences to have, and, on the other hand, must ensure the notion of freedom as the capability to choose a life that one has some reasons to

value (Gough & Scott, 2007, p. 7). In contrast, we therefore argue that the university's contribution to sustainable development currently seems to be shaped by the approach lifelong learning skills for a resilient life and the conflicts that arise in this context.

Mapping as a social-analytical boundary approach

Our approach to the analysis of the relationship between higher education and sustainable development consists in mapping of four approached thereto. So let us first describe the mapping approach as a theoretical perspective which is a useful way to identify these approaches and the major conflicts between them. This approach could more precisely be called a social-analytical mapping approach. It was developed by the Danish Professor Lars-Henrik Schmidt and was introduced to an international audience in the book *On Respect* (Schmidt, 2011). Social analytics does have a family resemblance to the far more established boundary-work approach, which is a part of science and technology studies. It can be argued (Holm, 2012, p. 17–40) – and we will argue, see below – that one could see social analytics as a fertile extension of the boundary-work approach, i.e. that social analytics is not only a part of the boundary-work approach, but it also helps to develop this approach by resolving some admitted problems of this approach.

The boundary-work approach – or more precisely the boundary work as credibility contest-approach – was initially described by the American sociologist Thomas F. Gieryn (1983, 1995, 1996, 1999). Gieryn's focus is on the demarcation line between science and non-science, education and non-education, etc. In general, Gieryn focuses on the boundary work which is done between different cultural fields. From an actor-theoretical constructivist perspective, Gieryn argues that there are no universal principles of demarcation between, for example, science (scientific research) as a cultural field and other forms of knowledge production; the distinction is contextually contingent and based on interests. As a consequence, he restates the problem of demarcation by focusing on the boundary work of scientists. However, he not only sees boundary work from the perspective of actors; in principle he also sees it from the perspective of cartographical categories. From that perspective, research is seen as a delimited field in line with fields such as politics, religion, economy and education. Such fields serve as relatively stable frameworks for interpretation across society, and displace the question of demarcation from "what is research?" and "who is a researcher?" to "where is research?" These fields offer a repertoire of familiar characteristics for the actors' selective actions (Gieryn, 1999, p. 415). But at the same time, Gieryn is well aware that cultural maps are an accomplishment in need of

sociological explanation: Why are some characterisations of the borders and territories of certain cultural fields more portable through space and time than others (Gieryn, 1995, p. 420)?

To put it another way, Gieryn names his perspective as a cartographical perspective, which is basically equivalent to saying that maps matter. But the problem is that he never does any concrete mapping himself, i.e. he never delivers a sociological and structural analysis of the cases he is investigating. This is where the social-analytical approach to boundary work comes into the picture: delivering the fruitful extension, reinterpretation and renewal of the boundary-work approach. The social-analytical approach works as a tool for analysis of the articulation of conflicts between structurally defined fields in a social landscape, and the analysis consists of a concrete mapping – and configuration – of these fields and the articulation of conflicts and the relative strength between them. In the next section, we introduce the social-analytical perspective, see Figure 1, in the form of a concrete map useful for an analysis of the relationship between higher education and sustainable development.
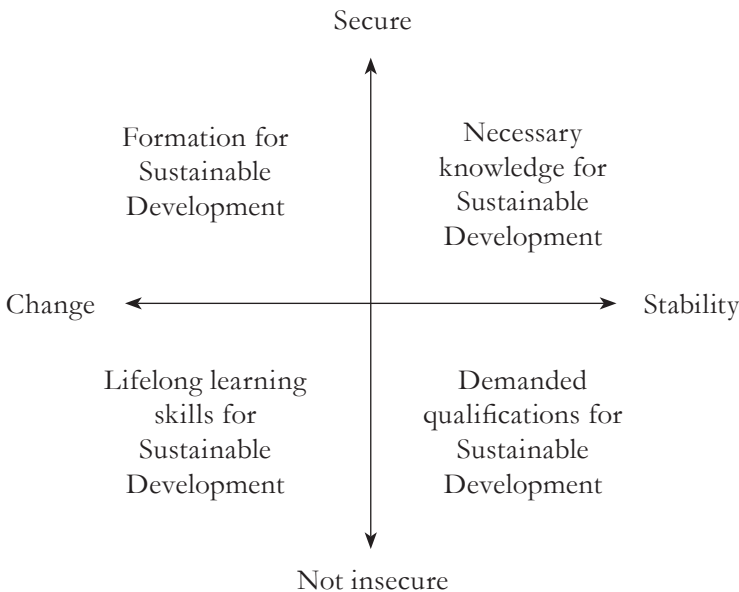

Figure 1
Four approaches to the relationship between higher education and sustainable development

The map in Figure 1 shows what we call four approaches to the relationship between higher education and sustainable development. It is based around two axes, each of which – and this is of crucial importance for understanding the logic of the map – constitutes a continuum. This means, for instance, that we ask whether the educational approach is more or less oriented towards a situation where the conditions for achieving sustainable development is changing, and not whether they are either change-orientated or stability orientated. In other words, one axis, the horizontal axis, is a stability–change axis, and the other axis, the vertical axis, is a secure–not insecure axis, whose position in relation to the first axis can vary over time, but the position substantiates and determines the relationship between change and stability. The two axes create four fields, in which the two fields to the right, i.e. named "necessary knowledge" and "demanded qualifications," establish what we refer to as a "necessary education discourse," and the two fields to the left i.e. named "formation" and "lifelong learning skills" establish what we call a "learning discourse."

The distinction between an education-oriented discourse and a learning-oriented discourse can hardly be overrated. For instance, with this map you can explain that, within the education discourse, a pipefitter may have gained knowledge through schooling about how to fit old-fashioned ceramic pipes without being qualified to fit modern plastic pipes – and vice versa. Similarly, within the learning discourse, you can meet an educated person (formation) who only reads entire books and classics, and who is therefore unable to continually deliver the performance that requires the skills to browse and combine fragments from old and new texts into a new, original context – and vice versa.

The social-analytical map is an orientational tool designed to illustrate different and also conflicting ways of articulating specific problems, in this case the problem of the main, but conflicting, approaches to the establishment of the relationship between educational aims and sustainable development inside higher education. This means, first of all, that the identification of the different articulations of these fields produces a relationship between a specific educational strategy of higher education institutions for establishing sustainable development. Secondly, it means that the overall analysis will show that there are specific differences and specific major conflicts between these fields. Thirdly, it can be said that the mapping-analysis specifies the content of higher education and sustainable development and not least the relationship between them as dependent on the strategic articulation of these inside each field and between the fields. Fourthly, it can be proposed that this mapping-approach represents a theoretical perspective whose ambition is to say a few big and not unimportant things by letting the unimportant fade in order to summarize the not

insignificant.[1] So let us continue with filling out this map with our analysis of how the relationship between higher education and sustainable development is articulated and seen from four different strategic perspectives.

The necessary knowledge

The first field in the education-oriented discourse is called necessary knowledge and refers to the setting of goals measured for knowledge as a question of capacity. It describes a level of knowledge that a student has or should reach through schooling and which is typically tested and documented by passing or not passing an examination. As a result of this definition, one needs to examine the mindset of the necessary knowledge approach, which is helping to shape and justify the relationship between higher education institutions and sustainable development.

There is a strong and growing global consensus among all countries that there is a need to take account of environmental issues in their policy making. Hence, many countries, of the Asian and European continent have already evolved complex and erudite procedures to accomplish this. Having said this, it is clear that environmental degradation is still accelerating across many different environmental dimensions in many parts of the world – all of this is bound to resul in uncertain, but potentially very serious, implications (Ekins, 2003). In relation to education in general this means that there is a need to educate people to have a sustainable mindset, and in relation to higher education it means the following within the necessary knowledge approach.

Firstly, it is connected with a notion that scientific research can provide evidence for what necessary knowledge is needed to have sustainable development. Rather than not knowing that you did not know (Gough & Scott, 2007), it is a matter of knowing that you know. Following the research within sustainable development, a specific type of knowledge, and therefore

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[1]   The formulation is inspired by international politics theorist Kenneth Waltz, who in his famous and influential book *Theory of International Politics* (1979) reflects on what theory is. Here, Waltz partly says that theory – in this case his own theory of international politics structure – forms a mental image that makes it possible to orient oneself in a particular context, and partly that a theory of structures does the following: "Structures never tell us all that we want to know. Instead they tell us a small number of big and important things. They focus our attention on those components and forces that usually continue for long periods" (Waltz, 1986, p. 329). Professor Ole Wæver follows up on this question by interpreting a Waltzian theory activity as a cartographic activity, which is a structural configuration associated with a reductionist cognitive interest (Wæver, 2009).

also a specific curriculum in higher education, has come to be the primary target of learning, and thus has made its mark on curriculum and assessment activities in higher education. The necessary knowledge approach is accordingly based on scientific knowledge about the causes and solutions to the issue of sustainable development – a matter of identifying solutions through scientific enquiry. In the process new information may be identified, and once the communication of this has taken place, appropriate behaviour change is expected to follow (Gough & Scott, 2007). Further elaboration in relation to a necessary knowledge approach for sustainable development grants a specific valuing of knowledge in higher education institutions. We relate this to the often used phrase *saving the environment*. As Gough and Scott (2007) point out, the phrase relates to the desire to conserve certain aspects of particular environments that have meaning or value for specific people, and it also defines what kind of knowledge is necessary. There are things about this environment that specific people value, or attach certain meanings to. It is these values and meanings that they wish to express and preserve through attempts at environmental protection. For humans the term *the environment* labels a space in which artefacts of nature interact with artefacts of societies to create sets of understandings.

There are always things that we need to know to solve particular problems. Similarly, there is a need for this necessary knowledge and this provides rich clarifying territory for universities, in whatever (un)defined role they have. There are openings to learn, and these opportunities are more extensively included in the curriculum and assessment activities in higher education. This necessary education, however, is also to be seen in the light of an understanding of needed qualifications, which the next section will describe.

The demand for qualifications

As for the second field in the education-oriented discourse– the qualification –, it is of interest to us that the validation of the relationship between higher education institutions and sustainable development has to do with the question as to whether one has the qualifications to solve a specific task that would typically be documented by successful accreditation. The rational for this approach lies in the great focus on human capital that we see in today's society. According to Schuller, Bynner and Feinstein (2004) human capital is defined as referring to knowledge, skills and qualifications. Inside the field of the demanded qualifications for sustainable development, the focus is on the qualifications that are to be learned from a certain type of knowledge – a certain type of curriculum – in higher education institutions. More specifically, this defines the specific demands.

As Professor and OECD-consultant Ulrich Teichler describes it, we are now seeing a public control of professions for which a certain field of study is the required entry qualification. This is in part a general tendency of the public sector to foster a close link between curricula and work assignments (Teichler, 2007, p.19), which is a view that relates to the demand for qualifications. Having this view in relation to sustainable development gives a purpose to universities as contributing to a certain type of knowledge that the students then can be certain to convert in order to develop a sustainable society.

To continue with the thoughts of Ulrich Teichler, he describes higher education as having a qualifying function for the world of works (Teichler, 2007). In the same manner this can be said about the relationship between higher education and sustainable development. Higher education institutions have a qualifying raison d'être for sustainable development, and are responsible for both transmission and preservation of relevant knowledge. To justify the use of the phrase relevant knowledge, the higher education institutions should be able to promise that students are actually acquiring abilities that are potentially relevant for a professional practice that has sustainable development as the objective.

In the domain of demanded qualifications for sustainable development, knowledge produced by higher education institutions, first of all, only has value if it is converted into standardized/interchangeable (stable) ability. This is justified by the fact that we need not to be insecure because the assignment is carried out by continuously qualified employees/workers Secondly, it could be said that responsibilities of institutions of higher education are tied to delivering demanded qualifications for sustainable development that have value seen from a societal perspective. The perspective of sustainable development in this approach is clear as the value of sustainability is fixed and predetermined by specific hegemonic authorities and/or experts. Using the authority of policy-makers, industry and/or academics, these actors determine what they want university graduates to do and what they consider valuable. This kind of authority – or these kinds of authorities – is/are thus defining the demanded qualifications for removing problems for sustainable development and the sustainable development we as a society want.
Having described the two fields of necessary education discourse, we now turn our focus of the two fields of the learning discourse.

The need for Bildung/formation

A classical formation approach has to do with the formation of personality. In the classical –neo-humanistic – notion of Bildung, the formation of the individual is guided by a universal notion of mankind according to an idealistic

notion of humanity. The direction of the formation process is from the particular to the universal person through socialisation (Hammershøj, 2009). So the question is what kind of an idea of formation that is forming and justifying the relationship between higher education (university) and sustainable development.

An example of an updated classic formation approach to the relationship between higher education and sustainable development is Stephen Gough and William Scott's position which they outline in their monograph called *Higher Education and Sustainable Development: Paradox and Possibility*. Their approach is based on the idea of a free society as "one in which choices about how each individual life should be lived are best left to the individuals concerned and general propositions about how everyone should collectively behave require collective consent" (Gough & Scott, 2007, p. 14–15). This means that "[e]ducation – including higher education – is a means of helping individuals to make better personal choices in their own judgment and give intelligent consent to collective behaviour" (Gough & Scott, 2007, p. 14–15). In this way they argue that it is important that sustainable development in higher education is not subjugated by a certain conception of sustainable development, for example by being converted into a certain curriculum "within departments of economics or environmental science or sociology or politics, but as a fresh and necessary challenge to the way that ideas are classified into economics, environmental science, sociology, politics and so on" (Gough & Scott, 2007, p. 167). The advantage of this approach – Gough and Scott argue – is that the idea of sustainable development avoids being determined and fixed by the look of a particular discipline. Instead, sustainable development becomes a supporting thematisation across universities, that is, a phenomenon that exerts its influence through the selection of specific themes, but also opens up for different approaches for understanding them (Foros & Vetlesen, 2012).

The reasons for taking this position is, firstly, that the requirements for sustainable development are dependent on numerous factors, some of which are uncertain and other unknown. In fact, the university in itself is one of these factors as a university is eager to clarify what we know and how we know it, but first and foremost the university insists on this incompleteness of knowledge, both in the present and in the future (Gough & Scott, 2007). So the safest approach is to be open to new knowledge.

The main discussion in the field of the necessary knowledge approach and qualification approach relates to the question of which type of knowledge or qualifications should be the primary target for learning. With the formation approaches one will refrain from defining these, while the other two approaches will insist on the existence of both knowledge and required skills that can be used to develop the world to be a sustainable environment.

The lifelong learning approach

And now, finally, we reach the description of the last field – the lifelong learning approach – as it appears in figure 1. We think that it is fruitful to start the description of this field by – again – using the story of the old and the new pipefitter as an example. In the past, companies would typically just ask the educational system: "Let's educate a new professional plumber who can fit the pipes." Today one will often hear something else too: "Let's see if we can find a person who can also solve our problem of fitting pipes." Thus today we can, in principle, use many different people, as long as their individual performance is good enough. But why are we still more interested in the individual performance and less interested in the plumber as a member of a profession? Why are we still more interested in the individual performance and less interested in securing knowledge and qualifications in relation to the question of higher education and sustainable development?

The answer to that question has to do with the fact that it is quite common to describe the modern society as a risk society (Beck, 1992, 2001) where the constant and unexpected changes, threats and hazards constitutes the condition of modern man. And when it comes to the issue of sustainable development it can be argued that it also includes the question of what type of education higher educations must be to contribute to both the individual and society to live, probably not, a fully secure life, but a life where one is able to relate to the uncertainty that changes bring about in an acceptable way. This section gives the answer to this question in the form of the thesis that higher education's contribution to sustainable development lies in the continuous development of lifelong learning skills for resilient life. This formulation is derived from two current perspectives (the first being higher education and the second sustainable development) which increasingly seem to come into contact.

The first perspective claims that higher education in a complex risk society must find a new balance between a reproductive view of knowledge in which students learn to see the world in the ways known by their teachers (Boud, 2000, p. 154) and a learning-to-learn-view of knowledge that prepares students for "a lifetime of assessing their own learning" (Boud & Falchikov, 2006, p. 400). David Boud uses the concept of sustainable assessment to summarize the ideal of this new balance. That is, that assessment could be sustainable if it meets the need of the present without compromising the ability of students to meet their own future learning needs. And to achieve this new balance one must put more emphasis on formative assessment (assessment to foster learning through life) rather than on summative assessment that has traditionally been dominant, even in higher education. Summative assessment has the clear purpose of certifying a level of attainment of a student at the point of completion of a course or programme. Formative assessment guides us in how

to learn what we wish to learn and it tells us how well we are doing in relation to getting there. And what is most important for David Boud is to emphasize that while summative assessments alone puts the responsibility for exercising good judgment on the teacher, the formative assessment is oriented towards enhancing the learner's judgment in order to help students become lifelong assessors. This kind of assessment should drive learning, but still acknowledge the legitimate role of certification by others. That brings us partly back to Boud's idea of sustainable assessment which reflects a new balance; a new balance that is achieved by assessment activities which have what David Boud calls double duty. This happens for example in having both focus on the immediate task and on implications for equipping students for lifelong learning in an unknown future (Boud, 2000, p. 160). And a key subset of this new focus on learning-how-to-learn includes sustainable assessment; i.e. learning how-to assess: "Students must be effective self-assessors; to be anything less is to be dangerously ill prepared to cope with change" (Boud, 2000, p. 160).

The second perspective consists in the view that when the risk society has an arbitrary notions of sustainable development then development towards a completely safe living situation becomes secondary in favour of thinking about resilience as something that constantly evolves – through learning – to become. According to Evans and Reid (2014), one should in present time understand resilience partly as a child of the notion of sustainable development, and partly reflect a shift from an ideal of security to an ideal of resilience. This means that development is about improving the resilience of a self-reliant life in ever new forms of social organization. Resilience is therefore a preoccupation with raising our awareness of pursuing a kind of scout motto – be prepared – in relation to unexpected events and attacks. It is a matter of learning from these specific events to make one self and society more responsive, more resilient compared to temporary or lasting change, but not to guard against the possibility of such changes occurring. This, for example, appears in the report *The Roots of Resilience*, co-sponsored by the United Nations Development Programme, United Nations Environment Programme, the World Bank and the World Resources. The report states that resilience is the capacity to adapt and to thrive in the face of challenge. This is particularly true in relation to how the poor successfully and sustainably scale-up ecosystem-based enterprises in ways that enable them to become more economically, social and biologically resilient (*United Nations Development Programme, United Nations Environment Programme, World Bank and World Resources Institute*, 2008). So we are in a situation where the general confidence in the continued development of resilience through continuous adaptation and learning (Folke, Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 438) is growing.

But what kind of adaptation and learning are we talking about when it comes to higher education? The answer arises when one brings the resilience

perspective in contact with the higher education perspective; that is, with the perspective that states that higher education should enable us to solve specific tasks while maintaining a focus on implications for equipping students for lifelong learning in an unknown future. The fact is that there today is no basis for such contact since both perspectives partly draw on the consequence of the risk society as a premise that full security is not possible to achieve, and partly because both perspectives are concerned with continuous learning as a prerequisite for sustainable assessment, respectively resilience. This means that contribution of higher education to sustainable development lies in the continuous development of lifelong learning skills, which include sustainable assessments skills, and that in turn contributes to a resilient life.

Conclusion

The purpose of this article was to identify four approaches to the question of the establishment of the relationship between higher education and sustainable development. We have done this by using a social-analytical approach that makes use of mapping to serve as a fruitful mapping of a boundary-work approach. Mapping in the form of description of the domains gives rise to emphasize the four following points.

Firstly, it is clear that a comparison between the learning discourse and education discourse points to a fundamental difference between the learning discourse, represented by the domains of formation and lifelong learning, and the education discourse, represented by the domains of knowledge and qualification. The basic difference lies in the difference between freedom and necessity. While the learning discourse identifies higher education with a certain freedom of curriculum, assessment and learning, even when it comes to the issue of sustainable development, education discourse identifies, on the contrary, higher education with the necessary knowledge and/or qualifications required in order to create sustainable solutions.

Secondly, it is clear that the conflict between a formation approach and a qualification approach in relation to the student points to a fundamental difference between a university that serves as a Humboldtian university, which has broad knowledge across disciplines as its founding ideal, against a university that acts as a profession-based university and which addresses and honours external demands to solve specific problems. Again, in relation to sustainable development, very different demands for higher education exist. At the Humboldtian university we talk about the fact that sustainable development becomes essential to relate to, but the way one relates to it is driven with freedom and part of a social discussion. In a profession-based university it is not only essential to relate to, it is also required that one acts in a manner that consistently results in qualified solutions.

Thirdly, it is clear that the conflict between an education-based approach and a lifelong learning approach partly refers to the difference between, on the one hand, the ties of a university to generate the necessary knowledge about problems and solutions to a problem or issue, namely to launch knowledge generation and dissemination of a sustainable development that will ensure our lives. On the other hand, the conflict is also related to a university that is linked to lifelong learning that situates itself relatively free in relation of teaching themselves skills – scout-skills – that makes it possible to deal with, but not to solve, shifting challenges within sustainable development of resilient manner.

Fourthly, it is the thesis of this article that precisely the conflict between a necessary knowledge approach and a lifelong learning approach is establishing itself as the main conflict within the framework of the fundamental conflict between a learning discourse and an education discourse. That is to say that this conflict can refer to the classic conflict between the Humboldtian and profession-based university to be a secondary conflict. Specifically, it is referring to Gough and Scott's formation inspired idea of how a university should relate to a smaller current location. If it turns out that this thesis – diagnosis of the contemporary – is bulletproof, it means, first, that this article not only provides various solutions to the issue of sustainable development in the future, but that these solutions are also associated with a variety of ways to understand university. And secondly, we can also in prolonging of the conflict between the necessary knowledge approach and the lifelong learning approach say that if it actually is this conflict that becomes dominant then it opens the possibility that higher education is designed according to a historic – and especially university historic – new ideal: the ideal of the resilience of the individual, the community and the world.

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Corresponding authors

Claus Holm
Danish School of Education, Aarhus University, Denmark
E-mail: clho@edu.au.dk

Anders Martinsen
Danish School of Education, Aarhus University, Denmark
E-mail: andm@edu.au.dk