
The Matter of Geography in Education for Sustainable Development: The Case of Danish University Geography

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Abstract

Geographical imaginations are absolutely vital to make sense of sustainability challenges. Yet, a number of studies reveal that geography education has been slow in integrating issues of sustainability into curricula. Geography is particularly interesting in the context of ESD, due to its tradition of investigating human-environment interactions. In this paper we aim to contribute to this particular field of knowledge by providing an empirical analysis of ESD in Danish University Geography. In this paper it is examined how programs in Geography in higher education have taken different approaches to addressing issues of sustainability. Then, it is examined how geographers articulate their role and function as to addressing issues of sustainability. It is concluded that, though geographers generally are reluctant with using the concept of sustainability, and find it better serves as an implicit notion, geographers' find their discipline contributes considerably to ESD in three ways. First, geography's strong tradition in the human-environment theme provides a methodological basis for dealing with issues of sustainability. Second, the spatio-temporal dimensions of sustainability call for geographical approaches to be able to understand the dynamics, complexity and interactions in various scales. Third, geographers find their discipline provides an integrative knowledge platform between the natural and social sciences.

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Geography · Higher education · Education for sustainable development · Curricula constructs · Sustainability discourses

1 Introduction: Greening Educational Policy and Geography in Higher Education

Since the Stockholm Conference on the Human Environment (1972) that first established a relation between education and sustainable development, the Rio Declaration (1992) and a number of subsequent declarations, policies and national strategies have promoted the idea of integrating ESD into all disciplines and academic traditions. Today, more than 31 declarations on sustainability in higher education have been made and during the past few years also declarations that address specific disciplines have developed (Grindsted and Holm 2012; Lozano et al. 2013). In 2007 the International Geographical Union Commission on Geographical Education (IGU CGE) officially announced their commitment to ESD with the “Lucerne Declaration on Geographical Education for Sustainable Development” in addition to UNDES 2005–2014 (IGU-CGE 2007; Rienfeld 2009).

Declarations as well as the UN DESD, that will find new ways of continuation this year, are by nature designed to produce an impact on policy. Thus the development of declarations and the influence SHE declarations, have on educational policy and curricula constructs are closely interrelated (Adomßen 2013; Wals 2014). By way of example, the 2005 Graz Declaration on Committing Universities to Sustainable Development (Made under the umbrella of the European University Association and UNESCO) was developed to encourage the European Ministers of Education to integrate sustainability into the Bologna process. Thus the aim was to “Call on Ministers (...) to use sustainable development as a framework for the enhancement of the social dimension of European Higher Education as well as to contribute to the attractiveness of the European Higher Education Area” (Graz Declaration 2005). Sustainability issues have also gradually been incorporated in the Bologna process, and in Louvain-la-Neuve (2009) the European Ministers of Education decided to keep sustainability as a research topic for the next decade. Furthermore, the EU Commission has encouraged EU member states to use the UN Decade of Education for Sustainable Development (UNDES) 2005–2014 as a point of reference in the development of national plans for ESD (EU Commission 2009). Correspondingly, The European University Association’s annual rectors’ conference (2012) carried the theme “Europe for Sustainable Universities”. The EUA President, Maria Helena Nazaré, recognized that the challenges of sustainability is one of the greatest challenges for humanity: “Sustainability is the biggest issue for humanity on Earth; universities should be a role model to integrate sustainability into its activities, should contribute by informing (...) sustainable values and achievements should be part of education” (Personal Communication, Maria Helena Nazaré 2012).

In a Nordic context, national strategies have been prepared for implementing ESD. In 2007 the Nordic Council of Ministers (NCM) announced its commitment to education for sustainable development (ESD). The Nordic Strategy (NCM 2009) states that the Nordic countries should integrate knowledge on sustainable development into curricula from primary school, secondary school, adult education and higher education. In the NCM 2011 Strategy (NCM 2011) this was repeated, and national strategies, at least at a symbolic level, have been prepared for implementing ESD (Holm et al. 2012).

How the greening of educational policies influence various disciplines and academic traditions is particularly interesting in geography due to its strong tradition concerning the human-environment theme. Yet, a number of geographers (Yarnal and Neff 2004; Higgitt 2006; Chalkley 2006; Westawey 2009; Lui 2011; Kidmann and Papadimitriou 2012) reveal that in the US and UK the integration of sustainable themes into Geography curriculums is wanting: “Global warming presents an enormous threat to humanity, but the response from academia, including geography, has been relatively slow (...). I find this surprising, indeed astonishing, for there could hardly be a more important geographical topic” (Sayer 2009, p. 350). Sayer’s statement is remarkable. Geographical representations are highly relevant to the agenda(s) of ESD. Disciplines like geography is expected to take a leading role on taking methodological approaches into consideration in dealing with the interface of society-environment interactions relevant to contemporary and future sustainability challenges (Yarnal and Neff 2004; Chalkley 2006; Clark and Button 2011).

Based on an empirical study (Grindsted 2013), we explore how sustainability challenges have been dealt with in the case of geography. The aim of this paper is to examine how Geography in Danish higher education contributes to ESD approaches. To do so, the following questions have been addressed: (1) Is the human-environment theme being reconfigured in geography? (2) How do Geography courses contribute to ESD? (3) How are issues of sustainability addressed in curricula? and (4) What is the influence of the Lucerne Declaration on Geographical Education for Sustainable Development? Answering these questions shows that the environmental theme is being reconfigured in geography paying greater attention to sustainability and how ESD has been introduced into curricula.

2 Is the Human-Environment Theme Being Reconfigured in Geography?

Three interesting perspectives substantiate the hypothesis that the human-environment theme is being reconfigured in geography, but also suggest a discrepancy between the “role(s)” of ESD in geography. However this does not imply that all geographers working on human-environment interactions conceive their research activities in terms of sustainability. Nothing could be more contradictory. Geography is much else than sustainability and most research geographers find their field of study have no relevance to the topic at hand. Nevertheless, the following three tendencies suggest changes in discourse coalitions toward being associated sustainability.

Table 1 The human-environment theme in the International Geographical Union Declarations

International Charter on Geographical Education (1992)	International Declaration on Geographical Education for Cultural Diversity (2000)	Lucerne Declaration on Geographical Education for Sustainable Development (2007)
Sustainable: 0	Sustainable: 1	Sustainable: 60
Pollution, Contamination, Hazards: 0	Pollution, Contamination, Hazards: 1	Pollution, Contamination, Hazards: 1
Climate change/global warming: 0	Climate change/global warming: 1	Climate change/global warming: 2
Ecology: 0	Ecology: 0	Ecology: 7
Environment: 2	Environment: 13	Environment: 13
Emission, greenhouse gas: 0	Emission, greenhouse gas: 0	Emission, greenhouse gas: 0
Nature: 0	Nature: 1	Nature: 8
Energy: 0	Energy: 0	Energy: 3
Biodiversity: 0	Biodiversity: 0	Biodiversity: 1
Human-nature interaction: 1	Human-nature interaction: 6	Human-nature interaction: 14

Firstly, the development of geographical declarations demonstrates a remarkable shift. Three declarations have been developed by the International Geographical Union, i.e. The International Charter on Geographical Education (1992), The International Declaration on Geographical Education for Cultural Diversity (2000), and The Lucerne Declaration (2007). The three declarations demonstrate a shift in the role of geography. From a shrinking and globalized world, with spatial transformations of economic, social and political significance, the Lucerne Declaration suggest the discipline performing a key role in solving sustainable challenges on Earth. By way of example, the International Charter of Geographical Education (1992) represents spatio-temporal tides and waves scarcely paying attention to the human-environment theme. Though human-environmental interactions are mentioned once, issues of globalization related to human rights remain the central focus (The Geographical Charter (1992) was developed the same year as the Rio (1992) conference and Agenda 21, Chap. “Experiences of ‘Reflective Action’: Forging Links Between Student Informal Activity and Curriculum Learning for Sustainability”). The Lucerne Declaration by contrast states that the themes of the UNDES D 2005–2014 are very much in common with geography’s objects of study; “the paradigm of sustainable development should be integrated into the teaching of Geography at all levels” (Lucerne Declaration 2007 p. 243). In Table 1 a word search condenses key aspects of the human-environment theme in the Geographic Education Declaration (1992), International Declaration on Geographical Education for Cultural Diversity (2000) and Lucerne Declaration (2007) sketching the role for geography.

As can be seen from Table 1 sustainability was not mentioned in 1992, once in 2000 and 60 times in 2007 which marks a noteworthy increase in the quantification of “sustainable related content”. This illustrates that social-ecological and

political-economic processes are not only intertwined, but also that core themes in geography are under reconfiguration. For whatever reasons they might be, the content analysis of declarations illustrates the down scaling of the human environment theme during the late 1980s and early 1990s, as Birkeland (1998), Fitzsimmons (1989) and Stoddart (1987) among others have argued.

Secondly, interviews demonstrate that sustainability issues are considered hugely important to geography. For example, one interviewee stated: “The concept of sustainability is of huge importance to geography at Copenhagen University, but also are related concepts such as resilience, vulnerability or ecology” (Interview 2012). Nearly all geographers interviewed found sustainability issues essential to geography, but remain critical of the concept itself and question of whether related concepts are better applicable for geographical analysis. The majority of the teachers claimed that sustainability is important to geography as an implicit notion, but when explicitly articulated many related concepts may better address particular phenomena (Interview 2012).

Compatibly, the international review suggests it is not hard to find geographers pushing the agenda for up scaling sustainability. By contrast, an interview with Danish geographers disclosed that sustainability best serves as an implicit or “hidden” curriculum. For example, Bednarz (2006, p. 239) states: “It seems that non-geographers also think that geography has an important role to play in environmental education (...) many geographers have defined geography as a discipline with a major, if not primary, interest in human—environmental interactions”. Also in the context of ESD many researchers (e.g. Huckle 2002; Yarnal and Neff 2004; Chalkley 2006; Westaway 2009; Firth 2011; Morgan 2011; Cotton et al. 2013), offer an explanation of why geography plays an indispensable role in ESD. The recognition that geographical knowledge has importance for sustainable development makes Westaway (2009, p. 9) state that geography has a special role, maybe even above other disciplines: “Sustainable development is the extrinsic educational purpose that geography is best, indeed almost uniquely, equipped to serve (...). There is little doubt that geography is the best place to take the lead on sustainable development in schools.” Such claims are indeed controversial, but authenticate the human environment theme gives geography its *raison d’être* in the struggle for having a share in sustainability issues. Thus, the nature- society as well as the spatial dimension of sustainability becomes a major pillar that geography seeks to patentee.

Thirdly, Zimmerer (2010), Lui (2011) and Kidman and Papadimitriou (2012) demonstrate how geographers’ research human-environment interactions particularly relating to sustainability issues has increased exponentially. Likewise Karatzoglou (2013) illustrates how leading ESD journals like International Journal of Sustainability in Higher Education and Journal of Cleaner Production reveal a similar growth. Despite the increasing numbers of articles, Lui (2011) shows how the number of articles contrast with efforts to integrate sustainability into curriculum in practice. “An examination of publications in sustainability education journals also reveals geography’s lack of participation in sustainable education” (Lui 2011). This suggests a discrepancy between statements of the “role of ESD in geography”

and geographers' research activity. Hence, there appears to be little evidence that ESD is recognized a central concern in geography within the US or UK (Higgitt et al. 2006; Morgan 2011). Also Turner (2002), Bednarz (2006), Yarnal and Neff (2004) among others argue that geography courses lag behind the growing environmental and sustainable research. But, what is the situation within Danish education in geography and might a similar tendency be identified in curricula?

3 How Does Geography Contribute to ESD?

Geography education shows its commitment to ESD in various ways. Examination of the study regulations, curriculum and interviews with chairs of the study boards and researchers reveal that the importance of geography to ESD demonstrates similarities to the Lucerne Declaration. "Geography has a major role in terms of sustainability. Many disciplines are experts on relatively narrowed subjects, whereas geography possesses the broadness which is an important dimension of sustainability. Geography is particularly potent because of its interdisciplinary approach as many other disciplines do not encompass. Moreover, geography merges the natural sciences and social sciences" (Interview 2012). Interdisciplinary approaches which integrate economic, social and physical aspects of sustainability are not only well suited for geography, but remain a pre-condition for understanding its multiple dimensions. Phenomena on global scales are caused by cumulative small scale activities in local places, and the impact of global processes exacerbates phenomena in specific localities (Morgan 2011). We may not appropriately understand sustainability issues if we ignore the climatological, hydrological or environmental processes that work in nature. Likewise, we misguide explanations of sustainability problems if we ignore social dynamics and economic activities. Geography knowledge is important to ESD and distinguished from other disciplines, because a narrow disciplinary focus may not unfold problems of sustainability that operates on multiple scales (Interview 2012). Another aspect found to be critical is that geography has a role in integrating perspectives from the natural and social sciences. "Geography can contribute in a unique way to sustainable development, especially regarding the integration of knowledge between social and natural sciences. In this way, geography plays a crucial role in dealing with sustainable challenges that you do not find in the tradition of many other disciplines, e.g. Sociology. Secondly, sustainability has an immanent spatial dimension" (Interview 2012). Thus it is argued that current environmental problems not only call for research and education that epistemologically transcend traditional disciplinary divides, but that geographers help to bridge the gap between natural and social sciences. To this may be added that geography has a distinct role being able to enrich related disciplinary discussions on ESD. "I find that geography has a responsibility to deal with issues of sustainability. We range competences and skills from the social and natural sciences—a holistic approach is imperative for dealing with sustainability" (Interview 2012). Additionally, complex interaction between nature and society and the spatio-temporal dimension of sustainability,

requires methodological approaches to grasp such interactions that may even be impossible without geographical knowledge. “Before specialization, all students will acquire a holistic and broad basis of knowledge and approaches, about soil science, climate change, society and urban development (1.5 years of study red.). This broad foundation enables students to think critically and analyze side effects of a given phenomenon or human action. This body of knowledge is vital for sustainability, in order to understand side effects in very different areas and scales. Such questions I would say are only possible to deal with through geographical skills” (Interview 2012). Integrating the production of space and nature as a fundamental perspective of abstraction generates geographical knowledge and methodologies that make it possible to manage risks involved in the spatial distribution of problems. Non-geographical methodologies often fail to understand dynamics of spatial distribution. Though the interviews reveal recognition of the importance of sustainability issues to geography they also demonstrate that most geography teachers remain critical to the concept itself and/or find it better as an implicit basis for educating geographers (Interview 2012). “When I teach in accessibility for instance, then the aspect of sustainability is in the background. Whether or not sustainability is there [on the curriculum] depends how explicitly it should be mentioned. I rarely mention the term, but implicitly sustainability is the main objective for what we do and why we study it in this way. Sustainability is part of all geographers mindset I would say; sometimes so penetrated that one may not need to explicate it” (Interview 2012). This may be one of the reasons why the analysis of study regulation reveals that sustainability has a limited status in geography educations in practice.

4 How Are Issues of Sustainability Addressed in Curricula?

An examination of the preamble of the Aalborg, Copenhagen and Roskilde universities’ curricula indicates a methodological foundation in which interconnectedness, processes and flows are given a primary status rather than fixed objects, direct causalities and permanencies. Ecological approaches focus on environmental problems from an interdisciplinary and normative angle (Rasmussen and Arler 2010). By way of example, the study regulation at Aalborg University requires that “students should acquire knowledge on human influences on ecosystems and the most important anthropogenic changes in history. They should be able to critically reflect on different philosophical views upon nature and its implications (...) understand concepts of sustainability and ecosystems in relation to elasticity and robustness to be able to analyze interactions between human activity (demands) and nature’s capacity and limits” (Study regulation, Aalborg University 2010a, p. 29).

Second, there seems to be only little distinction between encouragements of the Lucerne Declaration and geographical educations as to interdisciplinary approaches. Thus study regulation requires problem based group work. “Students should be able to examine scientific problems and solutions using an interdisciplinary approach—not only from particular disciplinary premises, but also by including relevant theories, methods and philosophical interpretations from related disciplines”

(Study regulation, Roskilde University 2006, p. 23). Though study regulations do not go into detail in describing which methods are to be used, it gives a basis for enriching methodological reflection on real world problems (Clark and Button 2011). A holistic understanding of wicked problems like sustainability or climate change requires a reflective rather than an explanatory or commercial ambition (Interview 2012). In terms of sustainability, critical thinking is essential to understand different practices and agendas in play to be able to find possible solutions to sustainability challenges. However, though student driven projects on sustainability are few in practice (Interview 2012) similarities in learning objective and interdisciplinary approaches correspond to the Lucerne Declaration.

Third, the spatial-temporal dimensions of sustainability in curricula focus on processes in different time scales and spatial contexts. By way of example the graduate geographical qualification profile in *Ecological climatology and climate change, causes, effects, limitation and adaption* at Copenhagen University seeks to integrate the range from geological to economic time scales. The aim is to gain fundamental knowledge on climate change in history, relations between climate systems, ecosystems and land use, as well as relations between climate and the content of GHG gasses in the atmosphere. Thus the learning outcome is to be able to work with climate data and environmental observation in various scales to grasp complex relationship between physical and economic activities affecting the global climate (Study regulation, Copenhagen University 2009b, p. 8). The specialization illustrates how curricula seek to explain contemporary challenges to sustainability and climate change (e.g. desertification and deforestation) in its interconnectedness, complexity, aligned with the gradual perspective on climate change. If it is assumed that a dialectic approach comprehends the complexity of socio-spatial and economic-ecological processes, this, in turn, will make us recognize that environmental/social problems mutually interact, are spatially distributed, and produce different effects in different spatial scales. Relational time-space configurations vary considerably in different sciences, from geologists (million to billions of years) to economists (month, years and decades), even between physical and human geography (Rasmussen and Arler 2010). Geographical education programs emphasize how the matter of scale and the analysis of environmental problems are inseparable. Although the study regulations at Roskilde University, does not mention neither sustainability nor climate change, the Chair of the Study Board explains “students are given a body of knowledge on economic geography, natural processes and planning—also in a context of sustainability—so that they will be able to analyze the impact of a given plan or action in ecological, economic and social terms” (Interview 2012). However, it seems that Aalborg and Copenhagen Universities attach greater importance to the human environment theme as sustainability challenges than Roskilde University. The reason may be that urban geography is dominant at Roskilde University and has a strong spatial tradition. Aalborg University offers the most proactive geographical program dealing with issues of sustainability at BA level where 80 of 180 ECTS (and similarly at MA level) are allocated to various themes of the human-environment theme, mostly within issues of sustainability, climate change and anthropogenic environmental stress.

Geography at Copenhagen University offers a similar curriculum in terms of sustainability, both at BA and MA level. Thus it is only one of six qualification profiles (transformation of cities) that do not explicate sustainability, climate nor energy and resource themes (Study regulation, Copenhagen University 2006, p. 5). Here too, the reason may be that urban geography traditionally has identified itself as being closer to the spatial chorological theme.

5 What Is the Influence on Danish Universities of the Lucerne Declaration Concerning Geography?

The interviews revealed that the declaration was unknown for geographers at Copenhagen, Roskilde and Aalborg Universities and has neither been dealt with in the study boards nor on any other occasion (Interview 2012). “I have never heard of the declaration and it has neither been discussed in the study board nor at teachers meetings” (Interview 2012). It therefore goes without saying that the Lucerne Declaration has not produced an impact at the Danish universities. Instead, the declaration (and curricula) can be considered to be a product of specific history-geographical circumstances signalling geographical representations of human environment theme. As the Chair of the Study Board at Copenhagen University explains: “sustainability is not something we discuss, it is not necessary to discuss what you agree upon and which already is there” (Interview 2012). Though sustainability themes take various forms in geography at Copenhagen and Aalborg Universities, the chairs of the study boards do not find it is necessary to develop the study of sustainability further: “Well, I see no need for improving the sustainable content quantitatively. I would say it is saturated. Sustainability issues are filling out much of the education already, so I see no need of giving it more room, but sustainability will remain a core dimension of geography also in the long run” (Interview 2012). Also at Aalborg University geography seems to be saturated: “Sustainability is already integrated at many levels and has a strong critical mass. I do not see a point in enhancing it further. Environmental sustainability has the strongest position though, so in a way we could enhance aspects of social sustainability” (Interview 2012). Despite the fact that ESD at geography at Roskilde University is given less priority, the reconfiguration of the human-environment theme seems to be undergoing a process toward sustainability (certainly not definitely). Thus the gradualist perspective of climate change is easily identified. In contrast, the Lucerne Declaration resembles discourses of climate catastrophes and ESD as moral development (Lambert and Morgan 2009).

6 Conclusion

Analysis of study regulations, interviews and geography declarations suggest that the human-environment theme is under reconfiguration toward more notably being associated with sustainability. Thus, geographers find their discipline makes a

particular contribution to ESD in three important ways. First, geography's strong tradition in the human-environment theme provides a methodological basis for dealing with issues of sustainability. Second, the spatio-temporal dimensions of sustainability call for geographical approaches to be able to understand the dynamics, complexity and interactions in various scales. Third, it is widely accepted that geography contributes by its interdisciplinary approaches to bridge the social and natural sciences, though it does not seem to be the case in practice. Dealing with geographical imaginations may not only better prepare students, teachers and practitioners in understanding sustainability challenges in various spatial contexts, but may help us better understand that, what appears to be a solution in one scale may produce sustainability challenges in another. To achieve such an understanding is not only relevant for geographers, but is relevant to ESD in various (inter) disciplinary contexts. Although issues of sustainability and climate change have been materialized in Danish geographical curricula, geographers remain critical to the concept itself and sometimes find it more suitable as an implicit notion. Still nearly all geographers interviewed find sustainability themes or related concepts important to geography.

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