



Educating geographers in an era of the anthropocene: paradoxical natures – paradoxical cultures



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ABSTRACT

Geographical imaginations are vital to make sense of challenges to sustainability which are produced and distributed across scale. Yet, a number of studies find that geography has been reluctant to integrate sustainability issues in its curricula. Geography is particularly interesting and can contribute to education for sustainability debates in various disciplines due to its strong tradition within the human–environment theme. This article presents an empirical analysis of contested ideas of sustainability approaches in Danish University geography degree programs, and the significance given to them by geographers. Hereby the paper critically examines political ecologies when introducing sustainability themes into the curricula. In so doing, it is discussed how different sustainability typologies in education bear relation to different ways of dealing with spatio-temporal tides and waves of the human–environment interface. It is concluded that though geographers find sustainability themes important to geography, sustainability is more often implicit than it is explicit. This produces a number of dilemmas and contradictions since geographers both seek to distance themselves from produced politics while at the same time elucidating them. This finding reveals contradictions within and between traditional ESD approaches, counterproductive to the aims of different typologies themselves. Since frictions between different ESD approaches are fundamentally interdisciplinary, the relevance of this finding is significant across disciplines. Thus, scholars and students should learn to go beyond the geopolitics of education in order to transcend the paradoxical-culture-natures identified.

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1. Introduction

Humans interact with the physical environment to the extent that humans are now transforming the planet from one geological epoch, the Holocene, towards a new geological era, the Anthropocene (Crutzen, 2002; Steffens et al., 2011). The history of human–environmental interaction is indeed astonishing and the anthropocene conceptualizes the magnitude, scale and acceleration of the per capita exploitation of natural resources (Reenberg, 2006; Griggs et al., 2013).¹ The journey of geographical transformations is also a journey of the nature of time and space, which is why geographical representations are absolutely vital to make sense of human–environment interaction and their policy implications (Castree, 2001). As Sayer states, “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).

In a world, where more than half of the planet's land surface has been changed by human activities, geographers like Yarnal and Neff (2004), Westaway (2009) and Lui (2011), reveal that the integration of sustainable themes into curricula is desirable in the UK and US and in some other European countries, e.g. Germany. In general there is consensus among scientific and geographical communities concerning the cause and effect of climate change and unsustainable production patterns. Cook et al. (2013) find that in 97.1% of more than 4000 peer reviewed articles published over the past 20 years it is asserted that global warming is mainly or entirely human induced. Correspondingly Oreskes (2004) shows that 97% of research articles in high-impact factor journals like Science, find climate change to be fundamentally anthropogenic. Controversy, however, arises when dealing with strategic actions and solutions to sustainability challenges since a given position legitimizes a given political agenda (Morgan, 2011). Thus, the geopolitics of education for sustainable development (ESD),

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¹ The idea of the Anthropocene, can be traced back to a number of thinkers in the early 19th Century, e.g. Valdimir Vernadsky's, mankind's geochemical work, Eduard Suess's anthropogenic transformation of the biosphere into the neosphere or humans as an geological agent (Steffen et al., 2011).

environmental education (EE) sustainability in higher education (HESD) or similar acronyms, produce complex dilemmas (Corcoran and Wals, 2004; Sterling et al., 2013). This inevitably tends to frame education as a change agent that socializes students into accepting certain kinds of explanations, values and pre-analytic assumptions (Lozano et al., 2013a; Hesselbarth and Schaltegger, 2014).

While studies dealing with ESD and geography are growing (e.g. Chalkley, 2006; Westaway, 2009; Firth, 2011), there is only a limited number of studies on the second nature approach in explaining, describing and evaluating how sustainability is socialized in geography in higher education. A second nature perspective argues that nature is inescapably social. Nature is not only defined and construed socially, but also modified physically by humans (at all scales, from genetics to climate change), with particular social interests involved in such transformations (Castree, 2001, p. 3). According to the second nature perspective, nature-society relations intertwine through socio-ecological processes in such a way that any dualism becomes meaningless, why any examination of nature cannot ignore the social interests involved in such work, either in research, in the classroom or text books. Consequently, in any examination inheres political ecologies that cannot escape from the social processes of valuating nature(s). The need to comprehensively take into consideration methodological approaches in the interface of society–environment interactions seems highly relevant to contemporary and future sustainability challenges (Yarnal and Neff, 2004). Thus the background of this study is based on a geographical approach, addressing spatio-temporal figurations associated with ESD theorization of the human environment interface. The rationale of the study takes a second nature perspective, to explore ESD approaches in geography.

This paper contributes to this particular field of knowledge by providing an empirical analysis of the ESD in education of geographers in Denmark. By providing a retrospective view of the development of the human–environment theme the study explores what geographical approaches may offer to the ESD debate. Secondly, it presents an empirical analysis of contested ideas of sustainability approaches in Danish University geography, and the significance given by researchers for the education of geographers. Lastly, the politics of representing nature in relation to society (Greenberg and Park, 1994) when introducing sustainability themes into curricula are critically examined. Through the case of Danish University geography the following questions have been addressed. 1) What ESD approaches are to be identified in geography? 2) What political ecologies can be associated with them? and 3) how do research geographers address dilemmas of ESD? The remaining part of the paper discusses ESD typologies and contradictions, dilemmas and paradoxes of representing sustainability nature(s). Hereby the findings of this paper on ESD as a fact based approach, ESD as a norm based approach, and ESD as a policy based approach are discussed (Molin, 2006; Grahn, 2011) and a comparison is made between Vare and Scott (2007) ESD 1 and ESD 2 approaches, Burandt and Barth (2010) syndrome and scenario approach. First, however, it is valuable to reflect upon what the author has elsewhere called spatio-temporal tides and waves (Grindsted, 2013) to examine how different ESD approaches bear relation to representing the human – environment interface. Whereas spatio-temporal tides refer to how different ontological and epistemological positions change the ways in which scientists deal with human–environment interactions, spatio-temporal waves refer to the relevance, frequency and intensity given to the human–environment interface, whatever topic is explored.

2. Spatio-temporal tides and waves and representations of the human – environment interface

Geography may be one of the most prominent and oldest disciplines concerned with the conceptualization of human–environment interactions (Rasmussen and Arler, 2010). In a historical perspective it is interesting to observe that invitations to upscale ecological themes have been numerous during the past centuries. Geography goes much beyond dealing with the human–environment nexus, sustainability or climate change. Still to many: *“The theme of man–environment relation has never been far from the heart of geographical research, and for many it has functioned as the overriding theme”* (Harvey, 1969, p.115). Since Vidal de la Blache (1845–1918), Alexander von Humboldt (1769–1859) or John Mackinder (1861–1947) geographers like Harlan Barrows (1923), Carl O. Sauer (1927), Forsberg (1962) or Stoddard (1967) have argued for upscaling ecological themes by defining the discipline in such a way that geographers need to study human beings in relation to their environment (Christiansen, 1967; Stoddard, 1987; Turner, 2002).

The history of the human environment theme, however, has taken multiple forms and methodological approaches over the years. Some geographers conceptualize the human–environment theme more or less *ad hoc*, implicitly or explicitly, whereas others organize it in constructs separating human and nature or build certain interfaces.

Dialogue about these issues in ESD may not only better prepare students for dealing with wicked and controversial problems like sustainability, resilience or climate change. Dialogue about these issues may also make students better understand the geopolitics of scientific and educational practices that constitute the “object of study” and fundamentally shape the relevance of geographical thinking, questions asked and data collected (Castree, 2001). Turner (2002) illustrates how the interface between the spatial chorological approach and the human–environment theme has been the dominating source of (often) conflicting identities. Therefore the issue of human–environment reconfigurations is addressed in the interface between identities that have dominated in geography. These are conceived of as complex spatio-temporal tides and waves intersecting, overlapping and conflicting; as a mosaic of understandings often in opposition to other geographical representations. For this reason next section, briefly consider how determinism, the quantitative revolution and the cultural turn reconfigured the human–environment theme.

2.1. Determination of nature – natures of determination

One spatio-temporal tide and wave concerns the eighteenth and nineteenth centuries' debates on environmental determinism with their roots in Darwin. This debate argued against possibilism and whether culture or nature played the determining part in the relationship (Christiansen, 1967). Explanations of determinism are often causal and seek to demonstrate how bio-physical factors such as climate, soil and altitude determine social and economic activity or vice versa. Nature is external, is objective and exists independently from humans (Castree, 2001). Legitimation of geographical knowledge relates to how geographers construct their object of study and within the enlightenment tradition geographers built explanations that objectified nature to be instrumentally used, tamed and exploited (Harvey, 1996). Environmental determinism is still present in today's sustainability debates, though the discussion whether nature dominates culture has shifted completely. In the context of ESD much environmentalism acknowledges that societies harm nature destructively across scales ranging from climate change to

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