Teaching Human Geography Sustainability: The Concept of the Anthropocene as a Didactic Tool for Higher Education

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ABSTRACT

Thesis. This critical reflection outlines the didactical challenge of teaching human geography in higher education, focusing on the concept of the Anthropocene as a tool for highlighting sustainability issues.

Concepts. The critical reflection discusses the diverse knowledge production traditions, including modernist, postmodernist, and post-postmodernist approaches. It highlights the importance of understanding the ontological and epistemological assumptions underlying these frameworks, in relation to human geography, the concept of the Anthropocene and sustainability.

Results and conclusion. The suggestion is a fourfold strategy for improving human geography education: emphasizing the relevance of knowledge production, understanding its impact on the student-teacher relationship, enriching teaching with epistemological discussions, and presenting the Anthropocene as a contested ontological concept rather than a predefined framework.

Originality. This critical reflection offers a novel perspective on human geography higher education in how the concept of the Anthropocene can be used for didactic purposes. The paper argues that the concept of the Anthropocene can function as a didactic tool for higher and human geography education, by drawing out the human element within scientific knowledge production.

Keywords: Anthropocene, human geography, higher education, sustainability, knowledge production

Introduction

This critical reflection focuses on the didactical challenge of teaching human geography within higher education. The focus is on the notion of sustainability within the age of the Anthropocene, drawing out some of the unintended consequences when done unreflectively. The reason of why this is a challenge, is that human geography as a discipline, is more defined by its canonical concepts, rather than a unifying disciplinary defining paradigm (Johnston & Sidaway, 2015). Whilst this makes for a vibrant and intellectually stimulating kaleidoscope of different approaches to understand the human condition and its interaction with space (Johnston, 2008), it does present a challenge for higher education. The reason being, as part of most post-graduate curriculums, there is the requirement to teach the students at least a rudimentary understanding within the sociology and philosophy of science, introducing them to concepts like ontology (how reality is parsed into conceptual categories, and how these concepts relate to each other) and epistemology (how we can know if statements about reality are true, and what gives them this quality) amongst others. This is part of what puts the higher, into the notion of higher education (Bengtsen, 2018).

To put differently, the concept of the Anthropocene has its own associated normalized epistemological and ontological assumptions (Latour, 2014). If we now teach students philosophy and sociology of science, opening for how these complicated realms of knowledge come to be, and we relate them to concepts within human geography. If we then in the very same breath, switch to discussions about issues of sustainability, and fail to problematize and reflect on these very issues, in the framing of the notion of our own knowledge production. Then not only is this an inconsistency within our own knowledge production, but potentially may make us appear as schizophrenic (e.g. Dymitrow & Brauer, 2018). The intention of this paper is not to name and shame, as quite frankly this tendency is so numerous, that identifying a single example would provide a skewed picture of how fundamental this very issue is.

The aim of this paper is to critically reflect upon why this knowledge gap exists, and how to communicate it to students in a consistent and transparent manner. Henceforth, the research question of this paper is: how to didactically elucidate the recursive influence of issues of knowledge production within the notion of sustainability within the age of the Anthropocene? This paper operationalizes this question into a fourfold reflection. Firstly, we need to identify if and how issues of knowledge production are relevant for human geography from its own perspectives in how the concept of space is understood. Secondly, we need to understand how issues of knowledge production influence human geography, what makes something scientific and factual. Thirdly, we then need put such issues into relation to other didactical concerns within human geography. Finally, we then need to take all of this together, and reflect upon what this implies for the notion of sustainability within the age of the Anthropocene and how human geography ought to be taught at higher education institutions.

The presentation is structured as follows. Next follows a section that focuses on the background of the here held discussion, in terms of short overview of how different notions within human geography address issues of knowledge production, both internally and externally to the discipline ("Space and human geography"). Afterwards, there will be a brief theoretical overview of how different knowledge production traditions conceptualize what makes something scientific and factual ("Different forms of scientific knowledge crafting and human geography"). Subsequently, there will be a methodological reflection of how such issues related to the usual concerns of human geography didactics ("Human geography didactics sustainability"). Out of all these underpinning premises, then results a discussion on the very notion of issues of sustainability, and how the concept of the Anthropocene can be used to enrich teaching and learning ("Sustainability, flaws in the underpinning logic"). A conclusion finalizes this critical reflection of human geography didactics at higher education institutions ("Conclusion").

Space and Human Geography

As previously indicated, human geography has a multitude of key concepts, that all in one way or another attest for the complexity of how space is generated. Whilst not exhaustive, this short overview below, mentions; the production of space, Thirdspace, hybrid geographies, cultural landscape, feminist geographies, postcolonial geographies, place attachment and sense of place, and time-space geography. This is merely meant to provide a flavor, of the sophistication when it comes to understanding the notion of space within human geography.

The Production of Space

Henri Lefebvre's, inspired by Marxist ideas postulates that the production of space is not a passive backdrop for human actions but is actively produced and shaped by social relations. He identifies three dimensions of space: spatial practices (the physical and material environment), representations of space (space as represented by planners and scientists), and representational space (the space of everyday life as experienced by inhabitants). This triad highlights how space is socially constructed through the interplay of physical, mental, and social processes (Lefebvre, 1991).

Thirdspace

Edward Soja builds on Lefebvre's ideas with his concept of Thirdspace adding postmodern political ideas, which represents an integration of both the physical and mental

dimensions of space, whilst adding a critical perspective of the observer. As such, Thirdspace is a lived, experienced space that transcends the dualities of perceived and conceived spaces, offering a more holistic and inclusive understanding of spatiality that accounts for marginalized voices and experiences. Here the perspective and ideations of the observer are also integrated (Soja, 2008).

Hybrid Geographies

Sarah Whatmore goes even further with her notion of hybrid geographies, which challenges the conventional separation between nature and culture. She stresses that the interconnectedness and co-production of human and non-human actors, are vital dimension in our understanding of space. She incorporates perspectives from the sociology and philosophy of science, such as actor-network theory and posthumanist thought, suggesting that spaces are produced through networks that include both human and non-human elements, such as technology, animals, and natural forces (Whatmore, 2017).

Cultural Landscape

Carl Sauer, by training a cultural and historical geographer, significantly contributed to the concept of cultural landscapes, which views landscapes as cultural expressions that reflect the values, beliefs, and practices of societies. This tradition examines how human activities shape and are shaped by the physical environment, creating landscapes that are imbued with cultural meanings and historical significance (Sauer, 2008).

Feminist Geographies

Feminist geographies focus on how gender relations shape spatial experiences and constructions. This tradition critiques the male-dominated perspectives in geography and highlights how spaces are gendered, examining issues such as the division of domestic and public spaces, the role of women in urban and rural environments, and the impact of gender on spatial practices and representations (e.g. Laurie et al., 2014).

Postcolonial Geographies

Postcolonial geographies examine the spatial dimensions of colonialism and its enduring legacies. This tradition explores how colonial power dynamics have shaped

and continue to shape spaces, identities, and landscapes. It focuses on issues such as spatial segregation, the appropriation of land, and the resistance and reappropriation of space by colonized peoples. Postcolonial geographies aim to deconstruct dominant narratives and reveal the voices and experiences of those marginalized by colonial processes. Here the focus is on reconstitution and addressing past injustices that have created structural factors of domination and oppression (e.g. Jazeel, 2012).

Place Attachment and Sense of Place

The place attachment ideas, put an emphasis on the emotional and symbolic bonds people form with places. Specifically, place attachment refers to the personal and communal ties individuals have to specific locations, which can influence their identity, well-being, and behaviors. Sense of place, on the other hand, encompasses the meanings and values that people associate with specific spaces, often derived from cultural, historical, and personal contexts. These concepts highlight how space is not just a physical entity but also a locus of significant emotional and cultural connections (e.g. Hashemnezhad et al. 2013).

Time-Space Geography

The Swedish human geographer Torsten Hägerstrand, introduced the idea of tapestry of existence, which is a visual metaphor that conceptualizes human life as space-time paths shaped by constraints (capability, coupling, and authority). These paths trace daily activities, forming intricate patterns across time and space. The time-space prism illustrates the potential reach of individuals' movements, while stations and bundles represent key locations and interactions. This framework highlights the interplay between individual actions and societal structures, emphasizing the spatial and temporal dimensions of human behavior (Hägerstrand et al. 2009).

Knowledge Production within Human Geography

As the non-exhaustive list of examples above shows, there is a great diversity and high degree of sophistication when it comes to understanding of how notions of space are constructed from a geographical perspective. What is sometimes less, clear, is specifically which conceptual and intellectual traditions these ideas built upon, and if their – on the surface – similar conceptualizations, are commensurable, with much deeper underlying epistemic and ontological axiomatic assumptions (cf. Brauer & Dymitrow, 2017).

Different Forms of Scientific Knowledge Crafting and Human Geography

For sake of simplicity, exploring the overarching differences between the above-mentioned notions, and their underpinning traditions, is far too complex for a mere brief reflection. Thereby, for sake of simplicity, let us group these into modernist ("Modernism: a universal human rationality"), postmodernist ("Postmodern: anything goes") and post-postmodernist ("Post-postmodern: a metaphorical handshake") approaches to knowledge production. As to allow us to comment upon what this multitude of scientific approaches says about human geographic knowledge production, as we can find all of them within the discipline ("Human geography, and scientific knowledge production").

Modernism: A Universal Human Rationality

With the rise of the Enlightenment, some modernists' approaches to investigating scientific knowledge emphasized the role of universal human rationality. Schools like the Vienna Circle posited that researchers could uncover objective truths about the world (Kraft, 2015). The assumption was that by subduing human biases, correcting for logical errors, and adhering to the rules of the scientific method, an objective understanding of reality could be achieved. Alongside this form of positivism, there are several other philosophical approaches that share the same underlying assumption, including induction, falsification, and empiricism amongst others (Chalmers, 2013). Nevertheless, once Ludwik Fleck's account of the problem of epistemology was translated into English (Fleck, 1986), Thomas Kuhn published his reflections on the structure of scientific revolutions (Kuhn, 1997), and Paul Feyerabend made his case against method (Feyerabend, 2020), the idea that science had direct access to truth came to be understood as "intellectually bankrupt" (Collins & Evans, 2002, p. 240).

Postmodern: Anything Goes

The notion of a universal human rationality was already questioned by various thinkers in a multitude of different ways, e.g. ironically by Arthur Schopenhauer (2018), poetically by Friedrich Nietzsche (1974) and spiritually by Gilbert Keith Chesterton (2013). After the Second World War, the postmodern critique of grand narratives gained prominence. Scholars began to examine the production of scientific knowledge, revealing its socially constructed nature. They highlighted the social conditions influencing science (Foucault, 1972), the interpretive flexibility even in rigorously defined systems like mathematics (Bloor, 1991), and the impact of researchers' cultural contexts on their

findings (Latour & Woolgar, 1987). Such, and other insights around the role of language in knowledge production (Wittgenstein, 2019), led to a broader postmodern condition characterized by scepticism towards the modernist ideals of progress and universality (Lyotard, 1984). Some postmodernists even went so far in arguing that, as scientific facts are contingent and constructed through processes of negotiation and translation, it merely represents a process of politics by other means (Latour, 1993). These types of critiques resonated with earlier criticisms from the Frankfurt School, which argued that Western culture often perpetuates exploitation and marginalization (e.g. Adorno & Horkheimer, 1972). In general, fostering the view that the most important factor in knowledge production was power.

Post-Postmodern: A Metaphorical Handshake

The post-postmodern approach to scientific knowledge production began gaining traction in the 1990s. This period also saw the so-called 'Science Wars,' a series of intellectual debates that pitted natural scientists, who often held modernist views of objective scientific truth (Sokal, 2000), against sociologists and scholars from the humanities who espoused postmodernist perspectives. These postmodernists pointed to that scientific facts are socially constructed (e.g. Shapin & Schaffer, 1985/2011) and subsequently raised questions regarding the supposed objectivity and neutrality of scientific knowledge. The eventual consensus that emerged was not a simple resolution but a nuanced understanding that, where the boundaries of science are indeed socially constructed and require careful consideration and defence, but it is precisely this defence in what makes science rigorous and credible (Gieryn, 1999). This consensus recognized that scientific knowledge is produced through a rigorous process that involves constant scrutiny, updating, and agreement among experts in the field (Collins & Evans, 2008). In this framework, scientific facts are considered 'true' in a provisional sense, meaning they are the best representations of reality given current evidence and methodologies (Law, 2004). Put simply, it represents a metaphorical handshake between *equals* that agree upon something as true, as a provisional truce, until further information arises which would warrant a re-investigation.

Human Geography, and Scientific Knowledge Production

If we look back at the previous section, we can see that we can find two things. Firstly, we can find traces of a modernist emphasis on universalism and objectivity. We can find signs of a critique of universal rationality and emphasis on the idea that knowledge is socially constructed. We can also find that there is an emergence of a nuanced understanding of the provisional nature of (scientific) truths. In other

words, all three above-described notions are present. Secondly, neatly categorizing the above introduced concepts into this tripart separation of different approaches to knowledge production would belie the complexity and specificity of every one of them. Henceforth, this is precisely how we ought to understand them. As loose conceptual categories that have limited applicability, to make a specific point. In this paper, the point is how the concept of the Anthropocene opens of for didactic possibilities. This point is raised, because issues of knowledge production underly everything, and henceforth it can generate unintended consequences when not properly understood and adjusted for. Especially, when the so called is-ought distinction is being crossed (MacIntyre, 1969), which easily happens with judgements of what is and is not sustainable. To put differently, just because we can identify that something might not be sustainable (is), does not imply that we can proposition how something should be sustainable (ought).

Human Geography Didactics

Human geography didactics, the teaching and methodology of human geography, traditionally focuses on several key areas of concern. These areas reflect both the theoretical underpinnings of human geography and the practical aspects of teaching the subject. Traditionally, areas of concern are:

- *Curriculum development:* This involves designing and structuring the content that will be taught. It includes selecting topics, themes, and case studies that reflect current geographical issues and theories (e.g. Lambert et al. 2015);
- *Pedagogical strategies and technology:* These are the methods and approaches used to teach human geography. It includes active learning techniques, fieldwork, the use of Geographic Information Systems, and other interactive methods to engage students (e.g. Walshe & Healy, 2020);
- *Assessment and evaluation:* This area focuses on the tools and methods used to evaluate student understanding and progress. It includes formative and summative assessments, project-based learning, and the development of critical thinking and analytical skills (e.g. Solem et al. 2018);
- *Interdisciplinary approaches:* Human geography intersects with many other disciplines such as history, sociology, environmental science, and economics. This area emphasizes the importance of integrating these perspectives to provide a comprehensive understanding of human geography (e.g. Kuby, 2013).

The above shortlist is not exhaustive, yet the interdisciplinary nature of human geography is particularly important in higher education, as (human) geography can be described as a synthesizing subject – a quality that has always been fundamental to the discipline (Holt-Jensen, 2018). Here, the very notion of the Anthropocene, and

its subsequent totalizing demands, raise specific didactical challenges. In the sense, if they become a "final judgment, for earthly human purposes, [which] is then not by God, but by the Earth (however conceived)" (Huijbens & Gren, 2021, p. 29), then we have left the realm of higher education if this is done too simplistically. To put differently, how can we ensure that the educational aspect is distinct from (religious/political) indoctrination (Brauer, 2023)? Likewise, how do we ensure that arguments for sustainability do not take a dogmatic position (Brauer, 2020)? The next section will use the context of sustainability to discuss these types of fallibilities that can occur and how they can be addressed didactically by using the concept of the Anthropocene.

Sustainability, Flaws in the Underpinning Logic

This section is subdivided into four sub-sections. Each section will discuss a specific weakness of when modernist, postmodernist, or post-postmodernist perspectives come to dominate the discussion of issues of sustainability. Please note, the argument in the paragraphs below is discussed in the abstract, without citing specific human geography literature. The reasoning is twofold: firstly, to raise general awareness and address potential problems without targeting individuals, and secondly, to avoid unfair criticism of literature not intended for didactic purposes. This approach ensures the discussion remains focused on conceptual issues rather than on specific works or authors. The section concludes with discussing the benefits of the Anthropocene framing, in relation to issues of sustainability.

Modernism and Sustainability

Arguments from sustainability, may they be environmental, economic, social, or otherwise, imply that there is an assemblage of constitute elements, that can, and *ought to be* preserved going forward. In relation to the framing of the Anthropocene, we can conceptualize a *critical zone* (Brantley et al., 2017) that in its entirety constitutes the atmosphere, water, biology, subterranean features, land systems, which in conjunction with human processes, enables human civilization and habitation of the planet. Henceforth, if this wider framing is not taken into consideration within our knowledge production, and instead there is a mere emphasis on sustainability, in whatever the dimensionality now maybe, this will then create their own unintended consequences (Brauer & Dymitrow, 2022). Here, modernists logics may fall easier prey to notions of scientism, and this "needs to be reflected in the culture and the curriculum of the school if we are to have environmental education worthy of the name. In addition to intimate personal experience of the natural world, this reasserts the significance of poetry and the arts in environmental education" (Bonnett, 2013, p. 189). Put differ-

ently, the facts never speak for themselves, and educating students on how they speak, is as much part of higher education, as communicating their content, and what makes something sustainable.

Postmodernism and Sustainability

Postmodern criticisms of knowledge production are often employed to put a greater emphasis on the need for social sustainability, and/or inclusion of marginalized groups in the name of social justice. Whilst these arguments may be perfectly valid *in isolation*, it is this relationship to a wider and general framework that sometimes maybe missing. This is doubly important, when it comes to emotional and passionate issues of activism that some people may be deeply invested in. Johnathan Haidt argues, people are characterized by what can be called a righteous mind (Haidt, 2012). This means, that when it comes to moral aspects in which they are invested in, their logical functions shut down and the emotive sides takes over (Brauer et al. 2020). Here the concept of the Anthropocene provides a holistic framing, whilst also opening for issues of knowledge production, as it is humanity in its entirety which is the subject of this historic epoch (Latour & Chakrabarty, 2020). If not properly stressed, "the ideological workings of direct experience are obscured because experience is assumed to be transparent by the person describing the experience and/or the person hearing about the experience, and because, as educators, we tend not to critically interrogate experience" (Nairn, 2005, p. 305) In other words, highlighting and problematizing the pitfalls of activism and subjectivity, is as much part of higher education, as it is to increase empathy and activism if the students choose to do so.

Post-Postmodernism and Sustainability

Post-postmodern perspectives that acknowledge the contentious character of knowledge production, tend to ontologize issues (e.g. Bhaskar, 2008). Here, the danger in relation to sustainability then arises in that it just becomes a bit too convenient (Arsovski et al., 2021). In the sense, that the speaker, can conveniently emphasize aspects of reality that are opportune for the framing of sustainability that is desired, meanwhile inconvenient aspects can be de-emphasized/omitted. This type of ontological politics (Mol, 1999) is very pernicious, because oftentimes it occurs on such a high level of abstractions that the listener usually does not have the conceptual framework to notice and put-up counter arguments. Furthermore, not only does this type of framing re-entrench existing power imbalances, but it also represents an epistemic sleight-of-hand. Because, by "educating for intellectual self-confidence […] one is in danger of creating students who exhibit dismissive attitudes to those less knowledgeable than

they are, and hence being intellectually arrogant in the process" (Pritchard, 2020, p. 405). As such, constantly re-emphasizing that epistemic conviction and intellectual humility do not have to be at odds, and knowing how and when to choose which stance, is as important as training students in both key aspects of higher education individually.

The Didactic Virtue of the Concept of the Anthropocene

The didactic virtue of concept of the Anthropocene, is that it frames the current geological age as one where human activity significantly impacts the Earth's ecosystems and geology. By that very framing, the discussion is already elevated to a level of time of geological scale, human civilization, planetary system, all which are super-complex processes and humanity as collective geological force. Put differently, the very notion may constitute a threshold concept (Meyer & Land, 2003), that elevates the students understanding to a level of epistemic and ontological abstraction, that they need to understand these realms of knowledge to make sense of the very concept. Henceforth, any subsequent discussion of issues of sustainability, may then allow students to develop a nuanced appreciation of temporal and spatial scales, recognizing long-term environmental shifts alongside immediate human impacts. Furthermore, it nurtures an ethical dimension in geographical education, prompting students to consider sustainability and the future of human-environment interactions, alongside civilizational contingents as part of a wider humanistic conversation (Castree, 2014). Simply put, learning about the Anthropocene is not just learning about facts, but it also implies humanistic and ethical dimensions. Henceforth, the educator needs to be prepared to guide the students through these issues, allowing them to come to their own conclusions, as much as providing guidance in relation to factual issues.

Conclusion

Within the debate of how to best teach human geography's intricate engagement with the concepts of space and sustainability, there are a few reflections necessary for the discipline not to lose its unique contribution to students' growth and their (geo) capabilities (Bladh, 2020). Here, the concept of the Anthropocene, may hold some additional benefits for teaching the discipline. There is always a challenge of imparting complex ideas to students, as the issue lies not only in conveying the diverse theoretical frameworks that shape our understanding of space but also in critically addressing the epistemological and ontological assumptions that underpin these very frameworks. The didactical challenge, therefore, is to ensure that students grasp these complexities and the ways in which knowledge about space is produced and contested, when reflexively applied to their own knowledge production about space and claims

for sustainability. Precisely, because the concept of the Anthropocene is still contested (Swyngedouw & Ernstson, 2018), it may prove useful for such a purpose, as it makes the inference to knowledge production and understanding why such issues are relevant easier to grasp for the student.

A central issue in higher education is the inherent tension between teaching established canonical concepts and fostering a critical, reflective mindset (Brauer, 2023). The concept of the Anthropocene, which frames human activity as a significant geological force, serves as a powerful tool for illustrating the interconnectedness of human and environmental systems. However, the risk lies in presenting sustainability in a way that overlooks the critical examination of the knowledge production processes and the potential inconsistencies in our own academic practices, exemplified by the ongoing debate about defining the concept of the Anthropocene. Henceforth, this critical reflection makes a fourfold suggestion of how teaching human geography can be improved by using this concept as a didactic tool. Firstly, there needs to be a relevance building of why issues of knowledge production also pertain to human geography itself. Secondly, the issue of knowledge production also needs to be extended to understanding their impact on the student-teacher relationship. Thirdly, using issues of epistemology can enrich the teaching experiences, as finally, not to present the concept of the Anthropocene as a pre-packaged and readymade ontological framework. In such a fashion, the very concept can also be used as a tool, to bring issues of knowledge production to the forefront and address of how they are relevant, for example within questions of sustainability. This reflective approach aims to bridge the gap between theoretical knowledge and practical teaching, ensuring that students are not only informed about sustainability issues but also equipped to critically engage with them.

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