

Humboldt-Universität zu Berlin
Philosophische Fakultät I
Institut für Europäische Ethnologie

Knowing the Social in Global Change Research

Understanding the Role of Social Sciences in Future Earth

Wissenschaftliche Arbeit zur Erlangung des
Bachelor of Arts (B.A.)

Erstgutachter: Prof. Dr. Jörg Niewöhner

10.01.2017

Dženeta Hodžić
557784

Table of Content

1. Introduction: Knowing the Social in Global Change Research.....	2
2. Global Change Research	3
3. Future Earth	7
4. Methods	11
5. Zooming in: ‘the Social’ in Global Change Research.....	13
5.1.The Role of Social Sciences: Studying Individual Communities.....	16
6. Further Contributions of Anthropology to Global Change Research: Studying Research Practices and the Production of (Scientific) Knowledge	20
7. Conclusion.....	23
8. References.....	25

1. Introduction: Knowing the Social in Global Change Research

The study of impacts and dynamics of climate change at various sites and in different communities across the world has been classified one of the most pressing tasks science is confronted with in an increasingly interconnected world. Although scientific findings of global environmental change are by now part of any larger research or adaptation policy (Barnes et al. 2013), a large part of the public is not convinced about the reality of global climate change as well as its consequences for the environment and the organisation of human life. While scientific explorations of anthropogenic impacts on the environment are well-established by now, research on sustainability has been primarily shaped and carried out by the natural sciences. In an academic landscape that is increasingly shaped by calls for interdisciplinarity, the social sciences and humanities have only been considered as a part of large research clusters that can provide complementary knowledge.

Recently, it seems as though Global Change Research has heard the calls for a more integrative and integral approach to studying global environmental change and has produced new, interdisciplinary and transdisciplinary research projects and programmes aiming at including all sciences invested in studying dynamics of global change. The international, interdisciplinary research programme ‘Future Earth – Science for Global Sustainability’ is often showcased as the one research programme that implements such an integrative perspective within Global Change Research by including disciplines such as economy, philosophy and anthropology—investigating ‘the social’ dimensions of global environmental change.

Social sciences have answered this invitation to look at coherences, inter-linkages and complexities of the dynamics of their field (Knecht 2012). In line with this shift, I examine to what extent Future Earth’s understanding of ‘social’ is coherent with observations scientists make and shifts they describe in connection with current trends of Global Change Research. By taking a closer look at Future Earth’s programmatic research papers, I attempt to point out the role the social sciences should play as well as ‘the social’ as subject matter.

The thesis is structured into three major parts. I begin with giving an overview over current trends in Global Change Research, focusing on the role that the social sciences play. After shortly describing Future Earth as a research platform as well as my own approach to studying their conception of ‘the social’, I reflect on further dimensions that anthropology can contribute to Global Change Research.

2. Global Change Research

Large-scale interdisciplinary research programmes have invested in studying environmental change processes and global change since the 1980s (Leemans 2016). In the last couple of years, Global Change Research (GCR) has witnessed a shift from a focus on modelling and meteorology to studying sustainability and possible transformations towards that. Scholars stress the relevance of GCR especially in regard to the many challenges that societies, politics and economics have to face in the Anthropocene¹. But what is understood by ‘Global Change Research’? Scientific literature does not offer a precise definition of the term as scholars often vary between the terminology ‘Global Change Research’ and others such as ‘Global Change Science’, ‘Global Environmental Change Research/Science’ or ‘Sustainability Science’. I contend that deciphering the different phrasings and contextualising them in an attempt to establish a theoretical framework for this thesis is unproductive because it does not offer any more analytic qualities than it does with these different terms. For this reason, I will use ‘Global Change Research (GCR)’ as an umbrella term for science that deals with global and environmental changes of any specific kind.

Human geographer Noel Castree describes GCR as “multidisciplinary endeavour devoted to describing, explaining, predicting, communicating and (increasingly) changing patterns of anthropogenic environmental change at the planetary scale” (Castree 2015: 303). He further elaborates that it is applied “across the distinction between environmental and social science. In aspiration, it encompasses the socio-economic, cultural and political aspects of environmental change, not only its physical dimensions.” (Ibid.)

GCR is most commonly characterised by interdisciplinary, transdisciplinary or collaborative modes of research. Issues and matters that are investigated by scientists in GCR projects increasingly become interrelated and more complex (Bromham/Dinnage/Hua 2016).

If aspiring to be successful, cross-disciplinary research² is confronted with various dimensions that often are difficult to face. An obstacle that presents itself even before the actual research can begin is funding policy. Cross-disciplinary research projects have to

¹ ‘Anthropocene’ is a term coined by geoscientists denoting an epoch in Earth Science. It denotes that humans not only alter the Earth but all planetary subsystems. Scholars identify three major ideas figuring into an understanding of this era: the Anthropocene, planetary boundaries and global ‘tipping points’ (Castree 2015).

² I use the term ‘cross-disciplinary’ to summarise all kinds of research modes that encompass more than one discipline (multi-/interdisciplinarity) or more than one kind of stakeholder (transdisciplinarity/collaboration).

overcome the prejudicial perception that they are not as likely to be funded as similar research proposals with a much narrower or more discipline-focused proposal (ibid.: 684). A study of funding success rates shows that “because of the negative association between funding success and interdisciplinarity, interdisciplinary projects are often regarded as high-risk proposals” (ibid.: 685).

Another difficulty are the constant negotiations of disciplinary boundaries and knowledge(s) (Barry/Born 2013) that are heavily influenced by a hierarchy of scientific knowledge that is biased against the social sciences (Lahsen 2013, Lélé/Norgaard 2005: 972). This research hierarchy can also impact the social spaces and working atmosphere of research clusters on a daily basis in that it can manifest knowledge hierarchies in social interactions (Callard/Fitzgerald 2015, Mansilla et al. 2015). At last, evaluation criteria can stand in the way of successful projects as they are not adapted to the manner of cross-disciplinary research programmes as they seem ill-suited to assess specific research communities consisting of many different disciplines (Bromham/Dinnage/Hua 2016: 685).

The widespread belief that a single discipline cannot help dealing with challenges of global environmental change seeps into academic discussions at the intersection of funding agencies and policy-making. Despite low funding rates, interdisciplinarity, or cross-disciplinarity is widely regarded as the solution to thinking about and dealing with challenges posed by global environmental change. In this trend of scientific research, it seems a smart move to unite cross-disciplinary research under one thematic cluster of human-environment-relations or GCR. Although there are many ways the social sciences have been dealing with human-environment relationships, they have not been very present in GCR. This is partly due to the research hierarchy, which was biased against social sciences in funding and evaluation (Lahsen 2013).

Throughout the last decade, scholars from almost any discipline have been calling for a greater integration of the social sciences and humanities, highlighting the need for more epistemic communities involved in GCR (Castree 2015) or have been contending that the environment has to be understood as a social category in order to conduct research that would actually promote transformations to sustainability (Pálsson et al. 2013). This shift to a more integrative approach to GCR was initiated by the widespread realisation that a human dimension of global environmental change could not be ignored in mainstream GCR any longer. Key organisations, funding agencies and natural sciences acknowledged that human equality and health are linked to the environmental changes

currently taking place (Moran/Lopez 2016: 2). Therefore, it is particularly important to study “human behaviour, social arrangements, and human-environmental interactions” (Pálsson et al. 2013: 10f). It seems as though scholars realise the ‘anthropos’ of the Anthropocene is mostly unaccounted for, and they aim at changing that.

This course produced a convergence between natural and social sciences (Moran/Lopez 2016), where the natural sciences recognised the need to include social scientists in their research teams. However innovative taking into account ‘the social’ might seem (to the natural sciences as well as funding agencies), on part of anthropology and other social sciences, taking an interest in ‘the natural’, nature and human-environment interactions is nothing new.

Social sciences and anthropology long have realised the potential of studying the environment and nature on various levels. For one, subdisciplines emerged at the intersection of anthropological and sociological inquiries of the relationship between humans and their environment(s), such as ecological anthropology (Orlove 1980), cultural ecology (Barnes et al. 2013, Pálsson 2013) and social or urban ecology (Endlicher 2012: 12,14). This challenges anthropology to integrate knowledge produced by the natural and social sciences as well as humanities as they all bear reference to human activity (Beck 2008: 181).

Moreover, in the field of Science and Technology Studies (STS) there have been elaborate studies that investigate how implicit interpretations of ‘the social’ influence scientific knowledge and, more specifically, the knowledge about ‘nature’ produced by the natural sciences (Latour/Woolgar 1986, Knorr-Cetina 1999). Acknowledging a social dimension of scientific knowledge initiated thinking about nature as ‘de-naturalised’. This finding questioned the dichotomy of nature and culture and resulted in a shift in the focus of (anthropological) STS to tracing manifestations of this dichotomy (Latour 1993, 2005). This was in turn picked up by scholars shaping a ‘new materialism’ (Van der Tuin/Dolphijn 2012), investigating how materiality figures not only into research fields of the natural sciences but how it is also relevant for the social sciences.

Despite the multitude of approaches to the environment by the social sciences, it is only now that natural sciences turn to anthropology, economy, history, archaeology, political sciences and philosophy in order to enhance their own understanding of the social dimensions of global environmental change. The subfields dealing with questions of environmental change, whether it is how economic models change or how global

environmental change influences notions of what is ethical or not, are commonly summarised by the term ‘environmental social sciences and humanities (ESSH)’.

Scholars have identified many useful contributions GCR can gain from integrating ESSH that is always accompanied by a specific understanding of what ESSH ought to do. The research priorities identified in connection to the contribution of ESSH to GCR are particularly engaged with studying the dynamics between institutions, governments, decision- and policy-makers as well as society, all while being closely entangled and inform each other.

One reason why ESSH are considered relevant for GCR is because they could help to understand social and political dynamics as well as power structures that are salient to facing challenges global environmental change poses (Lahsen 2016). Moreover, understanding the dynamics of the societies where adaptation policies to climate change should be implemented (Barnes et al 2013: 541), current consumption and production patterns as well as wealth and power distributions (Lahsen 2016) is pertinent to enhance GCR. Similarly important is studying the social and moral orders of biophysical and economic development and how people organise living together (Niewöhner et al. 2016: 4), examining what impact climate change has for people in their everyday lives, and what power relationships climate change challenges and reinforces (Passoth 2010: 57). Scholars stress studying such power relationships is particularly important in dynamics between the Global North and the Global South, as the impacts of global environmental change are not distributed equally across the globe (Pálsson et al. 2013).

Social anthropologist Emilio F. Moran identifies many key priorities of GCR that ESSH should contribute to. Such research interests are, among others, institutions, consumption, decision-making and climate change alongside long-term social-ecological research and industrial ecology (Moran/Lopez 2016: 3ff). With regard to institutions, ESSH could research how the use of resources in specific localities is affected by social institutions, governments and markets and how they in return shape human activity in general, and under which conditions they would advance adaptation goals (ibid.). To add, when investigating the dynamics of consumption, ESSH can help understanding the motivations behind environmentally responsible behaviour that is essential in order to adapt economic strategies (ibid.: 4). Subsequently, Moran states that gaining insight into the values linked to important elements of the Earth system and global environmental change, such as biodiversity or ecosystem services, is salient to comprehend how humans make decisions about the environment (ibid.: 5). Human geographer Jessica Barnes adds

one more dimension that anthropology can offer to GCR: “an awareness of the historical context underpinning contemporary climate debates” (Barnes et al. 2013: 541).

Anthropology is confronted with methodological challenges, despite its integrative character, fieldwork based and field-specific opportunism when it comes to varying methods; still, it is a highly flexible discipline to any kind of research site or question. As Barnes observes, the “focus on in-depth fieldwork makes it difficult for them [anthropologists; D.H.] to work over large geographic areas” (Barnes et al. 2013: 543) but at the same time, those “are the scales at which climate model results are the most reliable” (ibid.).

Looking at these trends and calls in current GCR, a new innovative research programmes such as Future Earth seems to be the epitome of a progressive, integrative approach to global environmental change and an advocate for integrating ESSH, to such an extent that it convinced the Belmont forum – one of the most important funding agencies for GCR—of the value of ESSH in understanding global environmental change so that it wants to support and promote Future Earth in the integrative, action-oriented research that it suggests (Lahsen 2016).

3. Future Earth

Future Earth (FE) describes itself as a “major international research platform providing the knowledge and support to accelerate transformations to a sustainable world”³. It was launched in 2015 after decades of GCR conducted in a plethora of projects, organisations and research programmes. Future Earth aims to advance GCR,

build capacity in this rapidly expanding area of research and provide an international research agenda to guide natural and social scientists working around the world. But it is also a platform for international engagement to ensure that knowledge is generated in partnership with society and users of science (ibid.).

Promoting collaborative and transdisciplinary modes of research, Future Earth is the successor to programmes like the International Geosphere-Biosphere Programme (IGBP) and the International Human Dimension Programme (IDHP), merging various interdisciplinary international GCR programmes, projects and organisations (Leemans 2016, Castree 2015).

The idea behind this merge was to create a single overhead structure and platform

³ <http://futureearth.org/who-we-are>, accessed on 12.12.16.

for studies of global environmental change, which is better suited to coordinate the myriad GCR scholars, projects and programmes (Lahsen 2016: 4). At the same time, establishing a large research community across the world and giving them a common denominator through uniting them through a single research platform aims at enhancing not only exchange between scholars of all disciplines but also among stakeholders and public participants such as governments and civil society.

Future Earth wants to generate and provide knowledge in order to help facing the risks and challenges resulting from global environmental change together with societies and governments world-wide (Leemans 2016: 105). The centrality of investigating and exploring ‘pathways to sustainability’ is evident in every document I analysed as well as in academic reviews of Future Earth and its website, promoting possibilities to accelerate the transition to global sustainability.

The conceptual framework of Future Earth attempts to denote the common research interests as well as the priorities that funding agencies, policy makers and governments identify by linking three domains—‘Dynamic Planet’, ‘Global Development’ and ‘Transition to Sustainability’ (FE 2025 Vision) which roughly translate to studying drivers of (environmental) change and their interactions, environmental change issues and how they affect various aspects of human well-being (ibid.: 106). The trigger to think about uniting different research issues in one research agenda was initiated at the UN Rio+20 Summit in 2012. At this conference on Sustainable Development organised by the UN, the decision was made to define sustainable development goals that should “address and incorporate the economic, social and environmental dimensions of sustainable development and their interlinkages in a balanced way” (FE Initial Design Report: 78). Following this, Future Earth’s two-year design process was launched (Lahsen 2016, Castree 2015) in order to create an organisation that should help implementing and monitoring the kind of research needed to achieve those goals.

Future Earth is sponsored by the Science and Technology Alliance for Global Sustainability (STAGS) that is at the same time present in the governing council of Future Earth. The governing council is supported by the Science Committee and the Engagement Committee, two advisory committees dealing with the quality and comprehensiveness of all research as well as overseeing the conducted research in order to make sure it follows Future Earth’s guidelines and research vision (Leemans 2016: 107). The STAGS includes important funding agencies such as the Belmont Forum of Funders, International Council for Science (ICSU), International Social Science Council (ISSC) and UN organisations

(Castree 2015: 307). This background information is important to note here, as Future Earth's governing council is not solely dominated by the natural sciences—Future Earth's Initial Design Report states: “the Science Committee will represent the wide range of global environmental change science from natural, social, engineering, human, government and industry science” (FE Initial Design Report: 80). With this, Future Earth not only aspires to integrate ESSH on the level of research but also on the level of decision-making related to its research agenda and projects.

The formation of a research platform uniting all previous research programmes that has come to be Future Earth was not a linear development. There were many different parties involved. Not only did reviews of existing research programmes suggest a change in research objectives so that they mirror current challenges, funding agencies as well as scholars and public partakers urged for only one, more overseeable research programme (Leemans 2016: 105).

Following reviews of the already existing programmes endorsed the need for new innovative modes of research and for a more integrative approach to Earth system science. This was picked up in discussions of key funding agencies and research councils that in return stressed the “need for a better integration of not only natural and social sciences, but also humanities, health and engineering disciplines” (ibid.). This call for interdisciplinarity and a more participatory approach to a science that better connects with societal needs—Leemans talks about an approach of “co-design and co-production of relevant research questions and research products” (ibid.)—resonates with Future Earth's agenda to “co-design and co-produce knowledge” (FE 2025 Vision, FE 2014 Strategic Research Agenda). Yet, the reviews failed to suggest a transition to a more integrative approach to the issues presented so that each global change programme and the ESSP⁴ “started to develop its own agenda, and these generally progressed the traditional natural-science dominated approaches and limited further interdisciplinary collaboration and integrations across programmes and projects” (Leemans 2016: 108).

Not everyone is enthusiastic about Future Earth's vision and research agenda, what is perhaps best expressed by noting that some scholars are cautious about the seemingly predetermined success of Future Earth. Concern has been expressed on two predominant levels: one that criticises the role that different disciplines and actors played in Future Earth's formation process, and one that comments on Future Earth's conceptualisation of research. The first stresses the fact that some concerns raised by the social sciences and

⁴ Earth System Science Partnership, uniting international interdisciplinary global-change research programmes such as the IGBP, IHDP and DIVERSITAS.

humanities were not adequately addressed, sometimes even superficially discarded (Lahsen 2016, Leemans 2016). To add, the process of thinking about how the aforementioned sciences could be integrated into current GCR was lacking consideration of how ESSH's methods and methodologies could contribute to Future Earth and neither were ESSH scholars doing current research engaged in formulating Future Earth's transdisciplinary international research agenda (Leemans 2016: 109).

The other level addresses the difficulties of working with such a large conceptual framework, as they have the tendency to flatten the multitude and depth of many Future Earth projects, or already established research projects that were merged under Future Earth. According to Rik Leemans⁵, the actual value and utility of such a conceptual framework still needs to be assessed with regard to how it works when put into practice (ibid.: 107). Moreover, such conceptual frameworks are difficult to create because all involved disciplines “must be able to understand and comprehensively apply each other's concepts” (ibid.: 106). As a result, such large-scale frameworks need to emphasise only the major common denominators of different disciplines and their research, which then in turn often ignore significant discussions about involved disciplines' methodologies or other more discipline-based challenges. This is why Leemans contends that in order to be a truly transdisciplinary international research platform, a participation of established as well as early career researchers has to be promoted and clear criteria for research projects developed (ibid.: 110).

In an increasingly Mode-2 shaped science⁶ with a growing diversity of research sites at which various kinds of knowledge(s) are produced (Gibbons et al. 1994), Future Earth attempts to harbour the produced knowledge and give those diverse sites a platform where researchers from all over the world can exchange and distribute the specific knowledge they generate. However, it is salient to consider how Future Earth actually wants to integrate ESSH's expertise into its vision of GCR. In order to do so, tracing the understanding of 'the social' and the implications this has for the research of ESSH on the level of research practices and objectives is imperative.

Hence, the following analysis of Future Earth's understanding of a 'social' builds on three documents published by Future Earth: the 'Future Earth Initial Design Report' published in 2013, the 'Future Earth 2025 Vision' and the 'Strategic Research Agenda

⁵ Rik Leemans chaired the ESSP Science Committee during the foundation of Future Earth; was “deeply involved in the discussions on the need for and how to plan, structure, govern and implement” this new research platform (Leeman 2016: 104).

⁶ Mode-2 science roughly describes the trend to bring together scientists from various disciplines for short research intervals to investigate current (global) issues (Gibbons et al. 1994), such as GCR.

2014 – Priorities for a global sustainability research strategy’, both published in 2014. Although the documents are heavily influenced by previous programmatic documents of other initiatives such as the ICSU’s Grand Challenge Report, I chose not to consider them as data for my thesis so that its focus remains on Future Earth’s research agenda. Moreover, I did not analyse other documents published by Future Earth because the three papers at hand are labelled “key documents” on Future Earth’s website, which stresses their centrality for its research agenda and thus, for my inquiry. On the Belmont Forum’s request for an overview and guide for how funding agencies and research communities can contribute to fulfilling Future Earth’s 2025 Vision, Future Earth published its 2014 Strategic Research Agenda. As this document is first and foremost a framework for external actors, it is the Initial Design Report and the 2025 Vision that captures Future Earth’s own research agenda the most (Lahsen 2016: 18). Thus, my focus complies with this observed relevance of the documents.

4. Methods

As my main focus in this thesis lies on Future Earth’s conceptualisation of research and its understanding of a ‘social’ that is ingrained in its vision of future GCR, taking a closer look at its declared research agenda seems as imperative to determining its understanding of the ‘social’ as is perhaps conducting interviews or doing participant observation. Within the limited time frame as well as volume given for this thesis and given the suspected difficulty of gaining access to those shaping Future Earth’s research agendas and policies, I did not pursue other possibilities of gathering data further.

Nonetheless, I stress that combining the analysis of the Future Earth papers at hand with interviews or participant observation of Future Earth’s project’s research practices would be key in working on a more integral understanding and critical inquiry of Future Earth and its suggested GCR. In order to analyse Future Earth’s agenda for GCR, both oral and written forms of information are relevant on different levels: While researchers invested in global environmental change research can offer insights into their daily research practices and collaboration with scientists from other disciplines, stakeholders and civil society, the texts that Future Earth publishes can offer insights into its conceptual framework, the ideas and presumptions that drive the kind of global change research they (want to) do.

Although I solely analyse text documents in this work, I do not embed my approach in methodological approaches of linguistic anthropology or contextualise it within the

linguistic turn⁷—I merely see it as a part of the holistic approach of anthropological methodology that I am unable to follow in this thesis. Text documents can only ever offer a one-sided account of the subject matter, which can make them an unreliable source for data⁸, and yet, a qualitative content analysis can manage to analyse the (large bodies of) material thoroughly without quantifying the findings too quickly due to the reflexivity that ethnography entails (Mayring 2000: 2).

The establishment of a more widely spreading qualitative content analysis has led to calls for context-sensitive and ethnographic approaches to the study of academic texts and official documents (Lillis 2008)⁹. Some scholars think that ethnography is best equipped to put this into practice in what is termed ‘Ethnographic Content Analysis (ECA)’ (Lillis 2008, Altheide 1987). With ECA, scholars want to make ethnography methodologically suitable for academic writing research in two ways: first, through engagement of ethnographers in academic writing worlds (for example by studying the practice of writing scientific papers and producing scientific (text) knowledge) and second, through the holistic approach that ethnography offers in collecting a wide range of types of data. (Lillis 2008: 362) ECA can highlight pre-structured, implicit categories in (academic) writing and is particularly suited to illuminate and analyse images, meanings and nuances of categories and the language and communications patterns used (Altheide 1987: 67f).

My approach does not trace patterns of communication as most types of qualitative content analysis, (sociolinguistic) Critical Discourse Analysis (Wodak/Meyer 2008) or ECA do, as it is simply not possible given the kind of data I analyse. The text documents by Future Earth are, above all, marked by their programmatic character of suggesting and conceptualising research, whereas communication flows are not explicated. Rather, I read the text documents as ‘data set’ (Emerson 1995) and try to work out and differentiate emerging patterns and themes (Altheide 1987: 65). Skipping open coding in my approach to the documents, I started with focused coding (Emerson 1995) where I looked for direct references to ‘social’ and ‘social sciences’ as well as references to ‘knowledge’, presupposing that one part of the ‘social’-references would be about the social sciences and their role in GCR and the knowledge production that Future Earth envisions, being mindful of the item’s relevance for several aspects (Altheide 1987: 69). Taking the lead from sociologist Altheide, I summarised the references for each document and subsequently, in

⁷ For a discussion and critique of the linguistic turn, see Pálsson 1995: 7, 89.

⁸ For a demonstration of methodological strains and arising challenges when equalling text documents to scientific reports of the same matter, see Garfinkel 1967.

a second step, compared them on levels of frequency of references to a particular phrasing taking into account the different qualities and significance of the document they appear in.

5. Zooming in: ‘the Social’ in Global Change Research

The references to ‘social’ in the text documents can be broadly differentiated into two categories: on the one hand, ‘the social’ is part of ‘social sciences’ that refer to the role of the social sciences within Future Earth’s research vision and agenda as well as aspects that are attributed to social scientists. In this category, I summarise the codes ‘social science/s’ and ‘social scientists’. The other category summarises ‘the social’ that is referred to as part of Future Earth’s subject matter. Before discussing the data, I will describe and summarise the most relevant references¹⁰ to the social within the two established categories, starting with the ‘social’ as in ‘social science(s)/scientists’. While I mostly focus on the Initial Design Report, everything I summarise resonates in the other two texts as well.

The Initial Design Report refers to the social sciences on multiple occasions in order to demonstrate Future Earth’s transdisciplinarity and integrative approach to GCR as it stresses that under Future Earth’s monitoring, the social sciences will work together with natural sciences, humanities, international organisations, research funders and businesses (19, 26, 37) because social sciences “should be integrated into a new kind of global environmental science” (19). The authors understand the social sciences “as part of a broad community of researches that co-designs the research” (12) and see the need to assess “the interaction of social and natural sciences [...] in order to improve GEC [global environmental change; D.H.] research” (19). Moreover, they acknowledge that in the past, social science initiatives were rarely integrated into global environmental change research and programmes although many of those programmes addressed societal challenges induced by GEC (62) and that social scientists “have knowledge essential to understanding changing patterns of vulnerability and options for reducing it” (35). Furthermore, Future Earth wants to draw on the “expertise” (22) of social sciences (without further elaborating what specific expertise that is). While theoretical developments from natural and social sciences as well as the humanities will enter into many of the research themes, “crosscutting workshops on topics such as social or ecological theory may be helpful to the

¹⁰ Whenever I cite or refer to content of the Future Earth documents in this analysis, I will do so following citation guides of Literary Studies that do not cite examined texts like scientific papers. Rather, they only indicate the page number, presupposing the understanding that their primary texts are referred to. If not indicated otherwise, I refer to the Future Earth Initial Design Report.

themes and to entraining a broader group of researchers to work on global environmental change” (41f).

Additionally, Future Earth wants to accelerate an integration of the social sciences by primarily supporting global environmental change projects that also integrate the social sciences (51). Summarising the aspects of its GCR, Future Earth maps out the following research agenda for the social sciences; they should

- satisfy the “critical need [to] understand and forecast phenomena of particular regional concern” (32)
- observe and model a dynamic planet, more specifically, contribute to an understanding of oceanic environments and ocean systems because of the human’s impacts on them (33)
- collaborate closely with the other disciplines in order to understand human responses to Earth system processes and governance (for example, projecting the impacts of energy policy or ecosystem management) (37)

Social sciences were not explicitly referred to in relation to specific research questions although the report states that some research questions identified by the Future Earth Transition Team should be assessed with regard to what social science’s insights and innovations are “most important to the environmental bases of sustainable development” (34). However, there is one research question regarding establishing new evaluation criteria for research projects where the participation of the social sciences is implied, namely “how socially and environmentally effective, efficient and equitable are alternative approaches for conceiving, measuring and implementing development projects and initiatives?” (34).

In a word count study of, the three Future Earth programmatic papers, among others, cultural anthropologist and STS scholar Myanna Lahsen identified an important change in the focus of international GCR research agendas from modelling and preventative aspects towards a progressively more inclusive approach. While references to meteorology and modelling have disappeared, the need for social transformation emerges as part of the programme’s objectives. Increasingly, references are made to ‘social (sciences)’ and ‘sustainability’ as well as to ‘transformation’—‘sustainability’, for example, is mentioned nearly six times more than ‘climate’ (Lahsen 2016: 13).

Although Lahsen asserts that the primary focus of a GCR as outlined by Future Earth is on ‘sustainability’ and questions regarding environmental equity and justice as well as

transformation, the idea of developing models to work on predicting and dealing with future challenges has not vanished completely. Interestingly, studying scenarios and how people would react to them would not only contribute to studying alternative ‘pathways to sustainability’ but also to take into account behavioural patterns and integrating them into already existing models of environmental change, if not even create separate behavioural models for responding to climate change in the first place. In the Initial Design Report, the Transition Team declares that “social data is the only type of data that is important for Future Earth” (87). In their description of what ‘social data’ is, they particularly highlight the fact that “social scientists are able to ascertain *behavioural patterns*, regional and economic differences in behaviour” (86f, *emph. D.H.*). Moreover, the 2014 Strategic Research Agenda suggests social sciences should study “the nature and role of narratives (...) in driving *human behaviour* and social change” (24, *emph. D.H.*) and, more importantly, “what new aspects need to be developed, integrating [among other disciplines, *D.H.*] anthropology, in order to look at how computational models of human individual and collective behaviour be integrated into Earth system models of global environmental change” (16).

My reading of the references to the social sciences in relation to studying behavioural patterns and integrating them into existing and developing models is marked by two observations: first, merging aspects of people’s behaviour (on an individual as well as collective level) confirms the change Lahsen sees in Future Earth’s research agenda, namely, that the social dimensions of the Earth system are not ignored anymore. Second, I nuance this observation by arguing that the quest for (more) models does not cease (as indicated by the word count) but that models just now also encompass behaviour and social practices, adding the ‘human dimension’ GCR calls for. Thus, there has not been a shift *from* modelling towards sustainability, but a shift *within* modelling to include sustainability. This differentiation may seem redundant in the face of the importance of sustainability being included in the programmatic suggestions of GCR. However, the implications of this observation for actual research practices are salient to what Future Earth argues is the role of social sciences. Thus, I illustrate how keeping on the notion of modelling is reminiscent of old dichotomies such as natural (sciences) versus social (sciences), which reveals the ambiguity of Future Earth’s ‘integrative’ research programme.

5.1. The Role of Social Sciences: Studying Individual Communities

As I will outline in the following, Future Earth understands the role of ESSH as contributing studies of individual communities above all other contributions that ESSH or anthropology¹¹ can offer. The anthropological knowledge that is expected by Future Earth is perhaps best described by the term ‘case studies’ that offer understanding of (social) phenomena, processes and dynamics of and responses to global environmental changes (33) or data about individual or collective lifestyles, trade, production and consumption practices (38). Furthermore, the call for studying dynamics or effects of global change is not marked by conceptual work of anthropology such as taking into account the global connections, issues of scaling and assemblages as well as infrastructures embedded in specific practices, but rather characterised by a study of distinct groups in a specific society, such as “Indigenous people, women, children, subsistence farmers, business, the poor or the elderly” (34). Despite my objection that examining these social categories separately, as implied by the enumeration, may be too short-sighted and homogenising rather than conceptualising social practices as heterogeneous as they are; the task bestowed upon anthropology as part of ESSH by Future Earth does not consider global scales, assemblages as well as infrastructures that shape and produce new forms of interactions, and spatial implications as well as temporal horizons (Tsing 2005). Yet, these aspects in turn influence the patterns of economic and political dynamics that Future Earth wants to focus on and therefore would be essential to the GCR Future Earth envisions.

Such insights into the dynamics of social practices and analytical frameworks that can be used as resourceful tools for describing and conceptualising impacts of global environmental change is another aspect that anthropologists can contribute to GCR, next to studying distinct communities which have been prominent in anthropological studies. In fact, anthropology has a long tradition of producing such case studies¹², from Boas’ studies of Inuit in Alaska (Boas 1884) and Malinowski’s studies on the Trobriand Isles (Malinowski 1979 [1922]) to more recent studies on the implications of expeditions and narratives around biodiversity (Helmreich 2009), or showcasing how human-environment relations can be re-conceptualised and understood beyond the dichotomy of nature and culture (Kohn 2013, Harris 2005). Moreover, anthropology has been invested in how

¹¹ Although Future Earth seldomly directly mentions anthropology in their text documents, I will mostly use ‘anthropology’ in the following section in order to make my following argument more precise. Nevertheless, I am mindful of the fact that it is never singled out of ESSH by Future Earth.

¹² The following enumeration of studies about specific communities is by no way complete and does not claim to be a genealogy of anthropological research about human-environment relations.

various communities observe environmental changes such as the weather, climate, and landscapes as well as how they respond to those changes (Barnes et al. 2013). Additionally, anthropological research interests investigates how “local observations of changes in the climate and local mechanisms developed to deal with those changes can lead to contextualized understandings of climate change impacts” (ibid.: 541) and therefore impact decisions regarding policies around adaptation of society. Hence, the lack of concepts denoting and describing processes, driving forces and the social consequences of the implied anthropogenic changes can be, at least partly, remedied by ESSH that can offer concepts and challenge mainstream narratives (Pálsson et al. 2013: 7).

One consequence of conceptualising research that is mainly based on such case studies within GCR is that it puts a considerable limit to the possible research sites. However, given the long tradition of studying specific communities in anthropological research, it is safe to assume that a significant part of anthropologists will most likely comply with this idea about their work. Additionally, being based on clear categories of the research’s extent—whether it takes place at a local or regional level, urban or rural areas—the generated knowledge can be integrated in the fixed models of the natural scientists in the sense that either the scale of the research or the research matter (water distribution, land use change, and so on) is their lowest common denominator.

Another aspect underpinning my observation that Future Earth is first and foremost interested in anthropology’s methods to study individual communities as implied homogenous categories is the fact that at the level of frequency, the combination ‘social system’ is by far used most often in Future Earth’s key documents when referring to something ‘social’ as subject matter. In frequency, it is followed by the phrasing ‘social data’. A variety of terms of which none are used more distinctively than the others remains: social transformation, social contract, social changes, social media/networks, social consequences, social elements/components, social development, social-environmental interactions and crises, social vulnerabilities and resiliencies, social dynamics, social foundations of sustainable development, social driving forces, social processes, social practices, social attitude, social context(s), social behaviour and social sustainability.

Future Earth first uses ‘social system¹³’ to declare that it wants to gain insights into the interaction of social systems and environmental changes¹⁴ (32, 33). Part of this research

¹³ For the following section, I decided to mainly focus on the term ‘social system’, by which no means I want to forfeit all other listed aspects of a ‘social’ research object above. Rather, although I describe how Future Earth conceptualises a ‘social system’, I see those aspects as features of ‘social systems’ in the sense that

objective is to study the dynamics of social systems and examine their likely responses to predicted scenarios of future global environmental change and crises (30). The only time that ‘social system’ is used in a research question is also a specific example of the aforementioned objective: “How can the Earth and social system adapt to environmental changes that could include warming of more than 4°C over the next century?” (38). Here, as in other instances, the distinction between ‘social system’ and ‘Earth system’ plays into the dichotomy of separating ‘nature’ from ‘culture’.

Furthermore, Future Earth suggests that Future Earth-external projects studying the dynamics of social systems should collaborate in initiatives to exchange their findings (32). To add, Future Earth’s understanding of ‘social system’ is

underpinned by basic theories of how natural and social systems function and often differing views on the fundamental explanations of social, economic and political behaviour and institutions. These theories draw on a wide range of disciplines, from physics, chemistry and biology to anthropology, economics or philosophy and new ideas from these fields often have significant impact on explanations of global environmental change. (41f)

Much to my chagrin, the report does not offer more insight into what specific theories were key or to which extent they shaped Future Earth’s interpretation of ‘social system’.

On the one hand, Future Earth is considered a symbol of progress because it acknowledges the importance of social sciences in GCR, especially in dealing with responses to global environmental change. On the other hand, suggesting ‘social systems’ as research objects hints to an underlying assumption that the ‘social world’ is viewed as autonomous, “with inputs and outputs, whose causal mechanisms can be understood from outside, much as the natural sciences might represent natural systems” (Pálsson et al. 2013: 6). In this sense, equalling social sciences with natural sciences in GCR programmes might still frame social sciences as “subordinate research partners by separating the social and natural worlds” (ibid.). They further elaborate that this kind of integration of ESSH into GCR

fails to recognize the important role that the humanities and social sciences can play in understanding the character and status of the natural

they are inseparably tied to each other (admittedly, some more than others, for example ‘social dynamics’ or ‘social changes’).

¹⁴ The report suggests a historical analysis could offer those insights.

scientific knowledge of nature. Global environmental research, the (implicit) assumptions and approaches embedded in it, as well as the formulation of problems and solutions, should be more important social and humanities research topics. (ibid.)

With this, an essential issue to the study of global environmental change from an anthropological perspective is addressed, namely that the current trend of GCR is negligent of the rich anthropological and sociological traditions of studying knowledge as done by STS-scholars. Moreover, it also ignores the shift in anthropology away from producing case studies towards directing their questions to research practices of GCR itself, asking “how we know what we know about climate change” (Barnes et al. 2013: 542), an approach that coined social studies of scientific knowledge since the 1970s (Hess 1997). Although anthropology can conduct and contribute studies about individual communities, anthropologists can use their strong conceptual work in order to take such case studies one step further, as I will shortly show in the following.

One example of conceptual work that can contribute to making local observations useful for the global and spatial implications of anthropological in-depth fieldwork is anthropologist Kirsten Hastrup’s conceptualisation of ‘climate worlds’ (Hastrup 2015). Climate worlds denote lived social spaces as sites of theorising climate in their own right, which at the same time can be considered knowledge spaces and constituents of knowledge production, as they have the “capacity for storing, sharing and moving knowledge about and using it for puzzle solutions beyond the particular instance” (ibid.: 150), as Hastrup explains referring to Turnbull’s ‘knowledge spaces’. This mobility of knowledge could enable knowledge to be a part of a larger knowledge system (ibid.), which can be linked globally by comparing climate worlds that can be equalled to case studies.

Another advantage of employing analytics such as climate worlds is that they can, if carefully applied, produce and advance equality among various kinds of knowledge spaces (ibid.). Many scholars have emphasised the imbalance regarding the divergence between impacts global environmental changes have geographically alongside trajectories of responsibility for those changes as well as the unequal relations between stakeholders, in all of which the Global South is on the downside (Moran/Lopez 2016, Pálsson et al. 2013). Anthropologist Gísli Pálsson, among others, calls for ESSH that not only provide the knowledge that research programmes like Future Earth need for an integral study of global environmental change, but that also work together with movements from the Global South

(Pálsson et al. 2013: 7). He further elaborates that “together they can develop frameworks for thinking about ways of ensuring that humanity lives within natural limits that do not implicitly reproduce notions of human-nature-relations that we already know are harmful to nature of humans, or perpetuate structural and historical global inequalities” (ibid.). This approach resonates with Future Earth’s research agenda in that it wants to “accelerate the transformation to sustainability” (FE 2025 Vision, FE 2014 Research Agenda). For this agenda, it is essential to trace social dynamics that result in changes of water delivery, food and energy distribution (2014 Strategic Research Agenda: 6), rapid urbanisation, degradation of soil and changing land use (FE Initial Design Report: 32). Some of those research domains, for example land use change, are already studied in transdisciplinary research constellations (Niewöhner et al. 2016), which integrate perspectives from geography and anthropology, among others. It also showcases anthropology’s value for studying dynamics of global environmental change through mapping out possible forms and modes of research, which range from on-site fieldwork to theoretical work. In this particular example, the authors discuss how the concept of ‘competition’ can be made useful in studying and understanding patterns of land use change (ibid.).

Combining fieldwork with theoretical and conceptual work in order to gather local knowledge(s) about global environmental change, as well as to study practices that produce scientific knowledge about climate change should be considered a quintessential part of GCR. This is why I will illustrate how anthropological STS can contribute to these dimensions to GCR in the following section.

6. Further Contributions of Anthropology to Global Change Research: Studying Research Practices and the Production of (Scientific) Knowledge

In my understanding, anthropology can contribute two more dimensions to GCR. On the one hand, it can study how disciplinary boundaries shift and re-materialise in the cross-disciplinary research teams that add up to GCR; on the other hand, it can study the impacts scientific knowledge has when communicated and made accessible to society and in a second step, how this knowledge influences daily livelihoods and living strategies of people. (Beck 2008: 195) Although both dimensions are equally salient to GCR, the latter seems slightly more pressing, considering the distributive agency that is based on how knowledge about global environmental change is accessed, distributed and shapes local practices (Pálsson et al. 2013: 8). Given that “it is impossible to experience global change directly and without the help of global climate science” (Niewöhner et al. 2016: 34),

examining the scientific knowledge that influences the way we understand global change and in return informs our responses to those changes, this approach should be an integral part of GCR.

An anthropological lens on knowledge suggests that it should not be understood as cumulative commodity but as a conglomerate negotiated in various social practices (Beck et al. 2012). This perspective on the production of knowledge takes into account that everything happening under the umbrella term ‘science’ is always embedded in layers of material-semiotic contexts (Haraway 1988) and only manifests itself in scientific research practices (Pickering 1992). Through examining who participates in the production of knowledge on global environmental change – on the level of those shaping and creating GCR (institutions, governments, decision- and policy-makers) as well as on a level studying localised knowledge(s) in a similar fashion to Hastrup’s climate worlds – and taking a closer look at how this knowledge is distributed and circulates, anthropology can provide insights as to how these practices can inform policy- and decision-making (Barnes et al. 2013).

As “traditions of Western thought are repeatedly confronted with their internal limits and intellectual tipping points” (Pálsson et al. 2013: 9), it is important to anthropologically comprehend how knowledge practices can contribute to accommodating a more flexible approach to dealing with deeply rooted dichotomies of nature and culture to enhance research in and of the Anthropocene. This approach would also contribute to understanding the dynamics of knowledge flows and hierarchies as well as how they are mediated in research fields (Barth et al. 2002). Another salient aspect that anthropological STS could contribute to GCR is an understanding of how people and organisations handle incomplete and uncertain scientific information, and in turn produce and act upon their own knowledge (Lahsen 2016).

Future Earth’s papers stress the centrality of investigating and evaluating different ‘pathways to sustainability’ and ‘transformation to sustainable systems’ – yet it is dangerous to assume that after such research is done, the decision of which path to take is based on grounded, empirical data. More important, the outcome of researching possible pathways as well as the choice of which research question to pursue is always based on values and ideologies. Particularly in a GCR that is explicitly charged with shaping the future, it is imperative to explicate such values and ideologies that foreground important research decisions and assess them in their consequences (Niewöhner et al. 2016: 5), and

to expose underlying and implied discourses, for example by investigating how the idea of a ‘transformation to a sustainable world’ is linked to ideas of progress.

Anthropology can gain insights into current research practices of GCR scholars in order to provide an interpretation of what happens in such research groups, on a scale of disciplinary exchange as well as the social spaces inherent in such cross-disciplinary research. Although there have been calls for more transdisciplinarity and an integrated approach to complex environmental and societal changes, these kinds of research practices, their potentials and constraints have not been studied elaborately (Felt et al. 2016). Studying dynamics of the ‘Anthropocene’, Castree foresees studies about the ‘social life’ of concepts such as the Anthropocene “as they are infused with specific meanings, and exert a certain influence, within and beyond universities” (Castree 2015: 309).

Studying research clusters where anthropologists “participate in the expertness of others through the *co-construction of knowledge space or knowledge scapes*” (Beck 2015: 11, emphasis in original) can help understanding the negotiations of expertise. This hints at an ambiguity of anthropology’s role in GCR that can be understood as such a ‘knowledge space’. On the one hand, it is important for anthropology to be part of GCR to provide knowledge on human dimensions of global environmental change, on the other hand, it can use this access to the key producers of scientific knowledge about climate change to study their knowledge production.

Indeed, Future Earth’s own emphasis on ‘co-designing and co-producing knowledge’ seems so ubiquitous that it leaves open the question why the three papers foundational of Future Earth’s research and science agenda are missing a suggestion to integrate not only ESSH’s ability to conduct case studies, but also to examine research practices and how a co-production of knowledge could be enhanced.

In any way, studying scientific research practices and knowledge production challenges anthropology and ethnography with their methodologies and the modes of research they have been used to so far, whether in inter-, multi-, or transdisciplinary; collaborative or participatory research groups.

Moran and Lopez cautiously note that in order to study their scientific practice, social scientists are confronted with the task to understand other discipline’s methodology and concepts, which entails Earth system and climate models (Moran/Lopez 2016: 6), or what Boyer calls “second professionalization” (Boyer 2015: 591). Paired with difficulties of gaining access to such research sites and considering the time it takes to build a

relationship to those that could enable such research (Niewöhner 2016), an anthropology of expertise indeed sounds like a challenging enterprise.

Nevertheless, it seems as though an anthropology of experts or expertise is and will continue to be an essential part of STS and should develop to be paramount for GCR (Castree 2015: 309, Boyer 2015), whether within GCR programmes such as Future Earth or within the discipline, whether collaborative or even co-laborative (Niewöhner 2016). Boyer forecasts that an anthropology of expertise will consist of a much more sharpened focus on theoretical as well as conceptual work on expertise (Boyer 2015: 591). This is met by the task of a conceptual work on the side of anthropology in GCR research in general (see for example Niewöhner et al. 2016: 18 for a discussion of how notions of scale will challenge anthropology theoretically).

The integration of anthropology or anthropological STS into GCR can produce three major advantages: first, as part of GCR programmes like Future Earth, anthropology can offer empirical data on case studies while advancing this idea of anthropological knowledge production through conceptual work which, second, can enhance anthropology's theoretical work and promotes a re-thinking of its methodologies. In other terms, while GCR programmes and natural sciences can learn from the knowledge that anthropologists produce, anthropology can learn something, too; for example through challenges posed by acknowledging and working with knowledge produced by other disciplines. Third, being a part of GCR programmes and teams, anthropologists might gain insight into the actual research practices and sites of knowledge production and offer a critical view on the knowledge hierarchies (re-)produced in GCR. Shedding light on how and under what circumstances specific kinds of expertise are mobilised could help improving GCR, in a particularly optimistic outlook perhaps even to the extent that it influences current hierarchies and dynamics of disciplinary contributions to this kind of research. This is how studying the dynamics of knowledge production in the Anthropocene and underlying driving forces can advance transformations not only of society, but also of science.

7. Conclusion

Future Earth is indisputably one of the first major research programmes to get funding agencies to acknowledge the importance of integrating ESSH into Global Change Research. In the international research landscape, this is an important basis for shaping future research on global environmental change (Castree 2015: 310, Moran/Lopez 2016:

5). Integrating different methodologies into one single research programme bears its challenges; and yet, Future Earth seems to have overcome them. However, it has overcome them with a certain understanding of ‘the social’ still intact. Future Earth envisions research by social sciences as portraying how people respond to a rapidly changing environment and how their way of organising lives in specific communities is affected by those changes. This implies that ‘the social’—in Future Earth’s interpretation—only ever denotes aspects where a changing nature overlaps with a changing ‘social system’, reinforcing the dichotomy of nature and culture. In this case, ‘the social’ is merely a residual category that cannot be examined by natural sciences and therefore, must be studied by ESSH like anthropology.

Although Future Earth advertises integrating the social sciences, a more ESSH-infused research agenda that goes beyond such case studies did not convince senior leaders of the atmospheric sciences (Lahsen 2016: 8), so that anthropological research as outlined by Future Earth’s key documents so far remains on the level of doing fieldwork to compensate for the ‘social data’ natural sciences cannot reach. Considering the fact that models of the environment, albeit integrating ‘social data’, are still predominantly shaping the outcomes of Global Change Research. Giving anthropological knowledge a frame even before sending ethnographers off to their research-sites, it seems to me that old disciplinary boundaries and hierarchies are still at work, however implicit they may be.

Anthropology can comply with this vision of how ESSH should be integrated into Global Change Research, yet it has the potential of contributing significant insights into manifestations of dynamics and processes of global environmental change through integrating conceptual work. At the same time, anthropological perspectives on knowledge production and regimes can contribute not only to a better understanding of responses to global environmental change but also of those scientific practices that will influence future adaptation policies to such changes.

8. References

- ALTHEIDE, David L. (1987): Ethnographic Content Analysis. In: *Qualitative Sociology*, Vol. 10 (1): 65-77.
- BARNES, Jessica, Michael Dove, Myanna Lahsen, Andrew Mathews, Pamela McElwee, Roderick McIntosh, Frances Moore, Jessica O'Reilly, Ben Orlove, Rajindra Puri, Harvey Weiss and Karina Yager (2013): Contribution of anthropology to the study of climate change. In: *Nature Climate Change*, Vol. 3: 541-544.
- BARTH, Fredrik, ChiYue Chiu, Lars Rodseth, John Robb, Alan Rumsey, Bob Simpson, James F Weiner (2002): An Anthropology of Knowledge 1. In: *Current anthropology* 43.1: 1-18.
- BARRY, Andrew/Born, Georgina (2013): *Interdisciplinarity. Reconfigurations of the Social and Natural Sciences*. Routledge, Oxon.
- BECK, Stefan (2008): Natur | Kultur: Überlegungen zu einer relationalen Anthropologie. In: *Zeitschrift für Volkskunde* 104 (2): 161–199.
- BECK, Stefan, Jörg Niewöhner, Estrid Sørensen (2012): *Science and Technology Studies aus sozial- und kulturanthropologischer Perspektive*. Transcript Verlag, Bielefeld.
- BECK, Stefan (2015): The Problem of Expertise: From Experience to Skilful Practices to Expertise. Ecological and Pragmatist Perspectives. In: *European Journal of Pragmatism and American Philosophy* VII, 1. Associazione Pragma: 8-23.
- BOAS, Franz (02.11.1884): Die Eskimos des Cumberland-Sundes und der Davisstraße. *Berliner Tagblatt*.
- BOYER, Dominic (2015): Expertise, Anthropological Approaches to. In: *International Encyclopedia of the Social & Behavioral Sciences*, Vol. 8: 588-592.
- BROMHAM, Lindell, Russell Dinnage, Xia Hua (2016): Interdisciplinary research has consistently lower funding success. In: *Nature* Vol. 534, Macmillan Publishers Limited: 684-692.
- CALLARD, Felicity, Des Fitzgerald (2015): *Rethinking Interdisciplinarity Across the Social and Neurosciences*. Palgrave Macmillan (Pivot series).
- CASTREE, Noel (2015): Changing the Anthro(s)cene: Geographers, global environmental change and the politics of knowledge. In: *Dialogues in Human Geography* Vol. 5(3), Sage: 301-316.
- EMERSON, Robert M., Fretz, Rachel, Shaw, Linda (1995): Processing Fieldnotes: Coding and Memoing. In: *Writing Ethnographic Fieldnotes*, Chicago. S. 142-168.
- ENDLICHER, Wilfried (2012): *Einführung in die Stadtökologie*. Stuttgart: Ulmer (UTB)
- FELT, Ulrike, Igelsböck, J., Schikowitz, A., & Völker, T. (2016): *Transdisciplinary Sustainability Research in Practice Between Imaginaries of Collective*

- Experimentation and Entrenched Academic Value Orders. *Science, Technology & Human Values*.
- FUTURE EARTH TRANSITION TEAM (2012): *Future Earth: Research for Global Sustainability - A Framework Document*. Paris: International Council for Science (ICSU).
- FUTURE EARTH (2013) *Future Earth Initial Design: Report of the Transition Team* Paris: International Council for Science (ICSU)
- FUTURE EARTH (2014): *Future Earth Initial Design Report*. Paris: International Council for Science.
- GARFINKEL, Harold (1967): *Studies in Ethnomethodology*. Prentice Hall.
- GIBBONS, Michael, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott, and Martin Trow (1994): *The new production of knowledge: the dynamics of science and research in contemporary societies*. London: Sage.
- HARAWAY, Donna (1988). *Situated knowledges: The science question in feminism and the privilege of partial perspective*. *Feminist studies*, 14(3), 575-599.
- HARRIS, Mark (2005) *Riding a wave: Embodied skills and colonial history on the Amazon floodplain*, *Ethnos*, 70:2, 197-219
- HASTRUP, Kirsten (2015). *Comparing Climate Worlds: Theorising across Ethnographic Fields*. In: H. Greschke/J. Tischler (Hrsg.): *Grounding Global Climate Change*. Springer Science+Business Media, Dordrecht: 139-154.
- HELMREICH, Stefan (2009). *Alien Ocean. Anthropological Voyages in Microbial Seas*. University of California Press.
- HESS, David J. (1997). *Science studies: An advanced introduction*. NYU press.
- KNECHT, Michi (2012): *Ethnographische Praxis im Feld der Wissenschafts-, Medizin- und Technikanthropologie*. In: Stefan Beck, Jörg Niewöhner und Estrid Sörensen (Eds.): *STS– eine sozialanthropologische Einführung*. Bielefeld: Transkript Verlag: 245-273.
- KNORR-CETINA, Karin (1999): *Epistemic Cultures. How the Sciences Make Knowledge*. Harvard University Press, Cambridge/London.
- KOHN, Eduardo (2013): *How Forests Think: Toward an Anthropology Beyond the Human*. Berkeley and Los Angeles, California u. a.: University of California Press.
- LAHSEN, Myanna (2013): *Anatomy of Dissent: A Cultural Analysis of Climate Skepticism*. In: *American Behavioral Scientist* 57 (6): 732-53.
- LAHSEN, Myanna (2016): *Towards a Sustainable Future Earth. Challenges for a Research Agenda*. In: *Science, Technology, & Human Values*, Vol.41(5). Sage: 876-898
- LATOUR, Bruno, Steve Woolgar (1986): *Laboratory Life: The Construction of Scientific Facts*. Princeton, New Jersey.

- LATOUR, Bruno (1993): *We have never been modern*. Cambridge, Massachusetts: Harvard University Press.
- LATOUR, Bruno (2005): *Reassembling the social: an introduction to actor-network-theory*. Oxford New York: Oxford University Press.
- LEEMANS, Rik (2016): The lessons learned from shifting from global-change research programmes to transdisciplinary sustainability. In: *current Opinion in Environmental Sustainability*, 19, Elsevier B.V.: 103-110.
- LÉLÉ Sachandra/Norgaard R. (1996): Sustainability and the scientist's burden. In: *Conservation Biology* 10: 354–365.
- LILLIS, Theresa (2008): *Ethnography as Method, Methodology, and “Deep Theorizing”*. Closing the Gap Between Text and Context in Academic Writing Research. In: *Written Communication*, Vol. 25 (3). Sage: 353-388.
- MALINOWSKI, Bronislaw (1979 [1922]): *Argonauten des Westlichen Pazifik*. Frankfurt a.M.: Syndikat.
- MANSILLA, Veronica, Michèle Lamont, Kyoto Sato(2015): *Shared Cognitive-Emotional Interactional Platforms: Markers and Conditions for Successful Interdisciplinary Collaborations*. In: *Science, Technology, & Human Values*. Sage: 1-42.
- MAYRING, Philipp (2000): *Qualitative Inhaltsanalyse [28 Absätze]*. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research [On-line Journal]*, 1(2). Accessed: <http://qualitative-research.net/fqs/fqs-d/2-00inhalt-d.htm> [Zugriff: 12.12.2016].
- MORAN, E.F./Lopez, M.C. (2015): Future directions in human-environment research. In: *Environmental Research* 144, Elsevier B.V.: 1-7.
- NIEWÖHNER, Jörg (2016): “Co-laborative anthropology. Crafting reflexivities experimentally”. In: *Etnologinen tulkinta ja analyysi. Kohti avoimempaa tutkimusprosessia*. Edited by Jukka Jouhki and Tytti Steel. Tallinn: Ethnos: 81–125. (Translation of the title of the original Finnish title).
- NIEWÖHNER, Jörg, Antje Bruns, Helmut Haberl, Patrick Hostert, Tobias Krueger, Christian Lauk, Juliana Lutz, Daniel Müller, and Jonas Ø. Nielsen (2016): “Land Use Competition. Ecological, Economic and Social Perspectives”. In: *Land Use Competition. Ecological, Economic and Social Perspectives*. Edited by Jörg Niewöhner, Antje Bruns, Patrick Hostert, Tobias Krueger, Jonas Ø. Nielsen, Helmut Haberl, Christian Lauk, Juliana Lutz, and Daniel Müller. *Human-Environment Interactions* 6. Springer: 1–17.
- NIEWÖHNER, Jörg, Jonas Ø. Nielsen, Ignacio Gasparri, Yaqing Gou, Mads Hauge, Neha Joshi, Anke Schaffartzik, Frank Sejersen, Karen C. Seto, and Chris Shugrue (2016): “Conceptualizing Distal Drivers in Land Use Competition”. In: *Land Use Competition. Ecological, Economic and Social Perspectives*. Edited by Jörg Niewöhner, Antje Bruns, Patrick Hostert, Tobias Krueger, Jonas Ø. Nielsen, Helmut Haberl, Christian Lauk, Juliana Lutz, and Daniel Müller. *Human-Environment Interactions* 6. Springer: 21–40

- ORLOVE, Benjamin (1980): Ecological Anthropology. In: Annual Review of Anthropology, Vol. 9: 235-273
- PÁLSSON, Gísli, Bronislaw Szerszynski, Sverker Sörlin, John Marks, Bernard Avril, Carole Crumley, Heide Hackmann (2013): Reconceptualizing the “Anthropos” in the Anthropocene: Integrating the social sciences and humanities in global environmental change research. In: Environmental Science and Policy 28, Elsevier: 3-13.
- PÁLSSON, Gísli (1995): The textual life of savants: Ethnography, Iceland, and the linguistic turn. Psychology Press, Vol. 18.
- PASSOTH, Jan-Hendrick (2010): Diskurse, Eisbären, Eisberge: Material-Semiotische Verwicklungen und der Klimawandel. In: Martin Voss (Hrsg.): Der Klimawandel: Sozialwissenschaftliche Perspektiven. Wiesbaden: VS Verlag für Sozialwissenschaften: 49–59.
- PICKERING, Andrew (1992): From Science as Knowledge to Science as Practice. In: Science as practice and culture. The University Chicago Press: 1-26.
- TSING, Anna (2005): Friction. An Ethnography of Global Connection. Princeton University Press.
- VAN DER TUIN, Iris, Rick Dolphijn (2012): New materialism: Interviews & cartographies. Open Humanities Press.
- WODAK, Ruth, Michael Meyer (2008): Critical Discourse Analysis: History, Agenda, Theory, and Methodology. London: Sage.



Humboldt-Universität zu Berlin
Institut für Europäische Ethnologie

Name: Vorname:
Matrikelnummer:.....

Selbstständigkeitserklärung zur

Bachelorarbeit

Masterarbeit

Ich erkläre ausdrücklich, dass es sich bei der von mir eingereichten schriftlichen Arbeit mit dem Titel

.....
.....

um eine von mir selbstständig verfasste Arbeit handelt und diese nicht bereits für andere Prüfungen eingereicht wurde.

Ich erkläre ausdrücklich, dass ich *sämtliche* in der oben genannten Arbeit verwendeten fremden Quellen, auch aus dem Internet (einschließlich Tabellen, Grafiken u. Ä.), als solche kenntlich gemacht habe. Insbesondere bestätige ich, dass ich ausnahmslos sowohl bei wörtlich übernommenen Aussagen bzw. unverändert übernommenen Tabellen, Grafiken u. Ä. (Zitaten) als auch bei in eigenen Worten wiedergegebenen Aussagen bzw. von mir abgewandelten Tabellen, Grafiken u. Ä. anderer Autorinnen und Autoren (Paraphrasen) die Quelle angegeben habe.

Mir ist bewusst, dass Verstöße gegen die Grundsätze der Selbstständigkeit als Täuschung betrachtet und entsprechend der Prüfungsordnung und/oder der je nach Jahr meiner Immatrikulation gültigen Fächerübergreifenden Satzung zur Regelung von Zulassung, Studium und Prüfung (ZSP-HU) bzw. Allgemeinen Satzung für Studien- und Prüfungsangelegenheiten (ASSP) geahndet werden.

Datum Unterschrift

Optionale Abschlussangaben

Ich stimme zu, dass meine Abschlussarbeit für Forschungszwecke von Dritten eingesehen werden darf.

Ich möchte mit folgender E-Mail-Adresse ins Alumni-Netzwerk des Instituts für Europäische Ethnologie der Humboldt-Universität zu Berlin aufgenommen werden:

.....

Datum Unterschrift