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Anthropologists Are Talking – About the Anthropocene

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Love it or hate it, the Anthropocene is emerging as an inescapable word for (and of) the current moment. Popularized by Eugene Stoermer and Paul Crutzen, Anthropocene names an age in which human industry has come to equal or even surpass the processes of geology, and in which humans in their attempt to conquer nature have inadvertently become a major force in its destruction (Crutzen & Stoermer 2000; Steffen *et al.* 2011). This is the tragedy of the Anthropocene. But this tragedy also holds an odd, even schizophrenic, promise; namely the promise of scientific renewal and insight. For in the Anthropocene, nature is no longer what conventional science imagined it to be. And if the notion of a pure nature-*an-Sich* has died in the Anthropocene and been replaced by natural worlds that are inextricable from the worlds of humans, then humans themselves can no longer be what classical anthropology and human sciences thought they were. Arguably, the Anthropocene challenges us all to radically rethink what nature, humans as well as the political and historical relationship between them might be at the end of the world, peppering its message of environmental doom with the promise of scientific renewal (and global survival) through trans-disciplinary collaboration. This bipolar message of a new science and a new politics amidst ruins is exhilarating for some, and seems to come at an opportune moment. Certainly, the notion that human lives and politics are producers of/produced by natural worlds gels with a growing attention within anthropology and neighbouring disciplines to the diverse multispecies worlds that humans and non-humans cohabit. And yet, the Anthropocene may still be, as Bruno Latour puts it in

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his Distinguished Lecture to the AAA in December 2014, 'a poisonous gift' to the world in general and to anthropology in particular (Latour 2014). The potential gift of the Anthropocene is its push radically to rethink the 'anthropos' that is the object of the discipline and thereby to force anthropology to become relevant, in a novel and crucial way, to understanding a world faced with unprecedented human-induced environmental disaster (Pimm *et al.* 2014; Ceballos *et al.* 2015). The potential poison of the Anthropocene is that it may end up either dissolving the human altogether or, perhaps even worse, fetishizing it (when others begin to take it too seriously).

This conversation was held in October 2014 in Aarhus to discuss the still inchoate concept of Anthropocene. Does the Anthropocene entail an important call for a new kind of politics and understanding or is it a political buzzword? Does Anthropocene scholarship signal the prospect of genuine cross-disciplinary collaboration or does it sustain conventional hierarchies of knowledge and power? What, in short, are the pitfalls and possibilities of the Anthropocene? Editor Nils Bubandt invited four scholars from different disciplines and backgrounds to discuss these questions.[1] The participants are:

ANNA L. TSING. Professor of Anthropology at the University of California, Santa Cruz as well as Niels Bohr Professor of Anthropology at Aarhus University where she directs the research project AURA (Aarhus University Research on the Anthropocene). Anna's diverse and exquisite analyses of the entanglement between forms of life and forms of power have resulted in a wealth of remarkable publications including *In the Realm of the Diamond Queen* (1994), *Nature in the Global South: Environmental Projects in South and Southeast Asia.* (co-edited with P. Greenough) (2003), and *Friction: An Ethnography of Global Connection* (2005). Anna has two forthcoming books about the Anthropocene: *The Mushroom at the End of the World* and *Arts of Living on a Damaged Planet: Stories from a More-than-Human Anthropocene* (co-edited with Nils Bubandt, Elaine Gan, and Heather Anne Swanson).

DONNA HARAWAY. Distinguished Professor Emerita of the History of Consciousness Department and the Feminist Studies Department at the University of California, Santa Cruz. A leading and highly influential scholar within the field of science and technology studies for several decades, Donna's work is suffused by a truly trans-disciplinary curiosity that spans feminism, primatology, ecology, science fiction, developmental biology, and literary theory. Donna's work is unique, in that it combines this broad-ranging curiosity with intellectual

acuity and a strong political commitment that encompasses humans and non-humans. Donna's publications include: *When Species Meet* (2008); *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (2003); *Modest_Witness@Second_Millennium.FemaleMan©_Meets_Oncomouse™* (1996); *Simians, Cyborgs, and Women: The Reinvention of Nature* (1991); *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (1989). Donna's new book in progress is titled *Staying with the Trouble: Making Kin in the Chthulucene.*

KENNETH OLWIG. A geographer and Professor Emeritus of Landscape Planning at the Swedish University of Agricultural Sciences in Alnarp, Kenneth has for decades studied the aesthetic, legal, literary and cultural geographical aspects of landscapes as political and physical manifestations. His books, which all link geography to political history in diverse and novel ways, include *Justice, Power and the Political Landscape* (edited with Don Mitchell) (2008); *Nordic Landscapes: Region and Belonging on the Northern Edge of Europe* (edited with Michael Jones) (2006); *Landscape, Nature and the Body Politic: From Britain's Renaissance to America's New World* (2002); *Nature's Ideological Landscape: A Literary and Geographic Perspective on its Development and Preservation on Denmark's Jutland Heath* (1984). Together with Donna Haraway, he was part of the University of California's Humanities Research Institute project that produced the book, edited by William Cronon: *Uncommon Ground: Toward Reinventing Nature* (1995).

NOBORU ISHIKAWA. Professor of Anthropology with the Center for Southeast Asian Studies at Kyoto University. Noboru has conducted fieldwork in Sarawak, Malaysian Borneo over the past two decades exploring the construction of national space in the borderland, highland–lowland relations, and commodification of natural resources. He is currently heading a trans-disciplinary project that examines connections and changing relations between nature and non-nature on oil palm plantations in northern Sarawak. His publications include *Between Frontiers: Nation and Identity in a Southeast Asian Borderland* (2010), and *Flows and Movements in Southeast Asia: New Approaches to Transnationalism* (2011). His forthcoming book *Anthropogenic Tropical Forests: Resilience of Post-Development Nature and Society* studies the transformation of a high biomass society in Sarawak (co-edited with R. Soda).

SCOTT GILBERT. Howard A. Schneiderman Professor Emeritus of Biology at Swarthmore College and a Finland Distinguished Professor at the University

of Helsinki, Scott is a leading scientific figure within the field of ecological developmental biology and epigenetics, a position Scott combines with a broad-ranging interest in the ethics, philosophy and politics of science. Scott is the author of numerous scientific papers and his books include: *Ecological Developmental Biology: Integrating Epigenetics, Medicine, and Evolution* (with David Epel) (2008); *Bioethics and the New Embryology: Springboards for Debate* (with Anna Tyler and Emily Zackin) (2005); and *Developmental Biology* (a textbook, now in its 10th edition).

Nils
Thank you all for coming. 'Anthropologists are Talking' is somewhat of a misnomer for this particular conversation. You represent a diverse group of disciplinary backgrounds that range from anthropology to geography, area studies, biology, primatology, feminist studies and science studies. I have invited you out of a sense that anthropology needs help, so to speak, with the Anthropocene. Anthropology may share as first three syllables with the word Anthropocene, but Anthropocene is a concept that appears to encourage cross-disciplinary research as an urgent response to contemporary challenges in the world and in science. It therefore also requires a broad cross-disciplinary discussion. So, I would like to begin by asking each of you to say a bit about the concept of the Anthropocene as it looks from your discipline, perspective, or field of interest.

Donna
Could I compare the Anthropocene for a moment to 'ecosystem services'? I remember when Jane Lubchenco, who was at that time the head of the Ecological Society of America, introduced ecosystem services into the apparatus of the Ecological Society of America to describe the costing out of everything that Earth's living worlds do in order to make it possible to make it visible (see *Issues in Ecology*, No. 2, 1997). And I remember how depressed I was. On the one hand, I understood, what she was doing. She had been a freshman at Saint Mary's Academy when I was a senior, and I knew her Russian Catholic family very well. I knew that she was really committed to marine conservation and that she was profoundly worried about the ruination of the Earth. At the same time, 'ecosystem services' became an indispensable term for monetarizing all matters. It, too, promised to break down nature and culture, but at the cost of turning everything into circuits of monetarization and accounting. I think Anthropocene is similar. I do not think that it was intended to be similar.

Eugene Stoermer, after all, was a student of fresh water diatoms and in love with water, with the ways of living on the Earth that are tied to waters, and terribly worried about the warming and acidification of the oceans. It is the destruction of the coral worlds, which are primary in his heart and mind, and he enlisted the atmospheric chemist friend of his, Paul Crutzen. Crutzen, also a Nobel Prize winner, who was equally deeply concerned. Together, they proposed a term for situated human impact on the Earth of a global scale. And this is where I get worried. Anna, you once wrote so eloquently that the scale is global because the models are global. And this is where part of the problem with 'Anthropocene' lies for me. We know how something like the globe has had many morphs throughout what we call 'modernity'. The Anthropocene is another instance of a kind of Earth that can only exist post-space race and post-Cold War. It is a particular model: a view from space of how the chemical cycles of the Earth are influenced in really profound ways by something called, you know, *Homo sapiens* or anthropos. The Anthropocene is thereby produced as a human species act. And here is a second problem. Because the contemporary world is not a human species act. Rather, it is a situated highly complex systematicity of situated peoples and their apparatuses, including their agricultural critters and other critters. It is not just a human species act. But the term Anthropocene, by emphasizing the 'anthropos' and etymologically ignoring other species, portrays itself as the result of a human species act; in the same manner that ecosystem services represent the Earth is if it were an accounting system and thereby became a tool for the capitalization of the planet.

If you propose to call the present time Capitalocene, as I and others have done to highlight these processes (Haraway 2014; Moore 2014a; 2014b), you will be accused of being political. Propose Anthropocene and you are simply talking about the human impact on the planet that is now of a geological scale. So, I find myself furious at the term Anthropocene in exactly the same way I am furious about the term 'ecosystem services'. At the same time, I also understand that I need to use this term, and that others will use this term. The Stratigraphic Commission of the Geological Society of London will give its decision in 2016, I believe, as to whether Anthropocene will become a term to replace the Holocene as a geological epoch, and my guess is that they will say 'yes'. And I am sort of for it, because I do not see any alternative now, but what if they had proposed the Capitalocene? Would it really be taken seriously? The Anthropocene is now inescapable, and is doing good work, but it makes me seriously angry at the same time.

Scott
I agree. Anthropocene is full of problems. One is its global pretensions. We should not talk about Earth as a globe, because it is not a unified space.

Donna
It is not a globe!

Kenneth
I quite agree: the earth is not a globe. As I pointed out in my lecture yesterday, the fact that many think and act as if it were a globe has had a deleterious effect on the debate over something that should be called climate change rather than 'global warming'. This is because the effects of climate change (such as temperature change) are not experienced uniformly over the anisotropic surface of the earth, as would be the case if the earth was characterized by the isotropic Euclidean space of a globe, and people in areas where this is not being experienced are therefore disinclined to believe that climate change is occurring (Olwig 2011a).

Scott
My second problem with the Anthropocene is a general problem with geological ages. The Anthropocene is coded into this long history of ages, which is biblical, too. The Fire Next Time sort of thing, the ages of Chaos, Eden, the Fallen Present, Apocalypse, Earthly Paradise, and Judgment. Thomas Burnet (1635–1715) called it 'the sacred theory of the Earth' (see Gould 1988). I should say that I use the Anthropocene in some of my work (Gilbert & Epel 2009). But when I first saw the term, I did not like it at all as a biologist because it seemed to reintroduce the great chain of being (Lovejoy 1964): we had the age of fish, we had the age of reptiles, we had the age of mammals, and guess what is next on the great chain of being? The Anthropocene! The age of the human!

Donna
Which ends in the destruction of the Earth.

Scott
Which ends in destruction! Talk about sacred theory. The other thing that I did not like about the term, is that it is a term of a geological epoch. Okay, I think what we are calling the Anthropocene is a short geological *event* rather than an

epoch. It is more like the K–T event, (or, more properly, the K–Pg event) , the Cretaceous–Tertiary boundary 66 million years ago that saw the extinction of the non-avian dinosaurs, or perhaps more aptly like the even bigger Permian–Triassic extinction event 252 million years ago in which more than 90% of all species went extinct. The Anthropocene is like the Great Permian extinction (Kolbert 2014). The Anthropocene is, you know, 'The Great Dying', which is not an epoch, it is a transition time. And so, I do not think we are in a new epoch, I think we might be in a transition to who knows what. But it is not a geological epoch. I think that we are elevating ourselves by thinking that humans are making a geological epoch. I think we are rather making a transition to something.

Anna

I agree with everything that has been said, but I will also argue for the usefulness of the term Anthropocene. For me, the term Anthropocene maintains a productive distance to 'Man', the modern human conceit. 'Man' does not mean humans, but a particular kind of being invented by Enlightenment thought and brought into operation by modernization and state regulation and other related things. It is this 'Man' who can be said to have made the mess of the contemporary world. It was 'Man' who was supposed to conquer nature. Building that recognition into the name Anthropocene could potentially – at least at this moment when the term has not yet been used so much – bring some thought to the contradiction of asking for solutions from the very creature that caused all the problems in the first place. I share your concerns about the Anthropocene as a form of conceit, Donna, a conceit that suggests the current world is the product of a species act. At the same time, Anthropocene also contains an interesting contradiction that perhaps can be played with. It is precisely because the Anthropocene is still so multiple and inchoate that it maintains potential (Swanson *et al.* 2015). And part of its potential is what I am seeing right here: we have a geographer, a biologist, a science studies scholar, and three anthropologists sitting down at a table together to talk about the environmental dilemmas that we are in right now. This is, I think, the promise of the Anthropocene: having critical thinking going on across some of the divisions that existed before.

Nils

Noboru, I know you are educated in the States, but you teach and have spent most of your academic career in Japan. Japan has a very different history of

science, when it comes to understanding the relationship between nature and culture. How does the Anthropocene look from where you stand?

Noboru
Currently, we have been working on a research project, in which we use the term 'Humanosphere'. We started this research titled 'In Search of Sustainable Humanosphere in Asia and Africa' in 2007 (Lopez *et al.* 2013) before we learned about the discussions concerning 'the Anthropocene' in the West. We imagine three spheres on a global temporal–spatial scale: the Geosphere, the Biosphere and the Humanosphere. The Geosphere appeared about 4.5 billion years ago, the Biosphere 4 billion years ago. What we call the Humanosphere is only around 200,000 years old but it is now the dominant force of change on a global scale since the advent of the agricultural and industrial revolutions. There is a lot of contention about when the Anthropocene began (e.g. Ruddiman 2013; Zalasiewics *et al.* 2014; Lewis & Maslin 2015), but at a glance, the Anthropocene and *Humanosphere* seem quite similar. Our conceptualization, however, is more sensitive, I believe, to the non-unified nature of the globe that Scott just pointed to. We also place less weight on the positionality of humans vis-à-vis other agents in the spheres. Can I explain how the two concepts differ?

Donna
Yes, of course.

Noboru
The Humanosphere is governed by a working that underpins other spheres. The Humanosphere is therefore conceptualized as incorporating geosphere, biosphere, and human society. The geosphere emerged first, followed by the appearance of the biosphere, and finally human society in a narrow sense and the Humanosphere in a broader sense. This sequence is very important, as human society is much dependent on the existence of the preceding spheres. In other words, the structure of the Humanosphere is defined by such factors as material and water flows, biological activities in common lands, rivers and seas as well as their complex interactions. In addition, we pay particular attention to tropical zones where material flows and biomass regeneration are most active. The flows and regeneration there are a driving force for the sustainable existence of multispecies including humans, if not for land-based, productivity-driven capitalism. Attention to the history and the state of articulations among

geosphere, biosphere and human society in Asia and Africa, led us to paradigm shifts, or particular shifts in of our focus: from temperate zone to tropical zone, from production to sustainable livelihood, and from the land surface to sphere. We argue that in the Asian and African Humanosphere, many societies pursue their own paths of endogenous development, rather than the growth of per capita income or population. That was actually a norm for most human societies until a few centuries ago. The Humanosphere is not two-dimensional or surface-bound. It is not only the ground surface on which to cultivate, but also other agents that support the livelihoods of multispecies and environmental sustainability. Our 'spheric' perspective, I think, is a product of a Japanese perspective. In Japanese, *shinra bansho* (森羅万象) refers to 'all things in the universe' or 'all the creation between heaven and earth', of which we humans occupy only a small part.

Anna
May I try to tease this out? Please correct me when I am wrong. When we spoke before, you moved your concept away from the 'sphere' to something like 'an encompassment of many disparate things'. This sphere in your terms is not really a sphere. It is a bag of everything; it is the world of living things; it is all the mass and the matter, and the interconnection of everything on the surface of the Earth and in the water. What is interesting about this approach to me is that, on the one hand, it reaches out to make a connection with Western science. On the other hand, it is doing something entirely different. It is this concept of undifferentiated mass that is important to think with. This is the rich mix of roots and rhizomes, a mess of biomass. This works against the familiar distinctions of Western science; it forces us to consider entanglement as a whole.

Donna
And that the very notion of sphere makes difficult.

Anna
Yes. So I do not think that any of the spheres you discuss are exactly spheres. The 'Biosphere' you mention might be, instead, 'the world of living things'. When we talked about this the other day, I introduced the Meratus Dayak notion of *bulu gumi*, which literally means 'the body hair of the earth' (Tsing 2005). It is all the living things, in the water, in the air, and on the surface of the earth. It is all those things: they are the body hair of the earth.

Noboru
Yes, indeed.

Kenneth
This reminds me of the Greek concept of 'choros'. For Plato, who spelled it *chora*, it was an enclosed space, like a jug, from which everything wells up. And it was identified by him as a kind of female principle, but from the perspective of the citizenry of the Greek polis, it was a notion of the 'where things take place', not within a sphere, but as they take place in a complex entangled relationship. Choros thus defines a place from within, rather than from without, as with boundaries drawn on a map or globe, but as, for example, a common pasture is defined by grazing animals from within (Olwig 2011b).

Donna
Think also of the chorion, the mammalian membrane, in embryology.

Kenneth
Yes! I think Plato's concept of 'chora' is important, precisely because Plato does not understand its embryonic implications! Plato is a disciple of a utopian idea of Euclidian space. In his universe, there are two important things. One is the 'idea' and the other is 'chora'. The chora is a bastard concept, he feels. It is a dream concept that he does not understand. But then he still goes on to describe it as a kind of feminized vessel, in which women are reduced to jugs that give birth to everything. Plato thus saw the chora as a sphere, an enclosed Euclidean spatial vessel, out of which everything emerges. The notion of choros upon which the Greeks founded their polity, however, was closer to the eastern concept of nothingness. By virtue of the entangled relations between people and the material of life more generally, an unbounded nothing becomes a someplace, a choros, that nourishes life (something like a placenta).

Scott
I think Ursula Le Guin comes in really interestingly with her carrier-bag theory of knowledge (Le Guin 1996). A sphere connotes completeness, not only wholeness, but everything is there. This is a denial of creation, a denial of creativity, a denial of new things coming into the world. The bag, on the other hand, is open, full of holes.

Donna
Especially if it is made of nets!

Kenneth
Bag lady! God is a bag lady!

Donna
A pretty good approximation! See, I think people like us have an obligation to propose these words for naming our urgent conjuncture, and not to be dazzled and tame in the face of the proposal of these other terms that are maybe useful in ways. What if we were truly interested in not the sphere, but the old lady's net bag that collects up, a gathering, a collecting up? I think folks like us, who are really over-educated have an obligation not to let elites get away with another simplification, that I think is part of the problem with the Anthropocene in the first place . . . Please tell me that you share my anger, that in this moment of trans-disciplinarity and multispecies everything, in this moment of beginning to get a glimmer of how truly richly complex the world is and always has been, someone has the unmitigated arrogance to name it the Anthropocene. [Laughter] Tell me you share my anger!

Nils
I share it, but I want to play with it at the same time.

Donna
And I do, too.

Nils
Because, for these people, the story of the Anthropocene is not a story of human mastery at all, it is a story of unintended consequences and decay.

Donna
Of course, but then it is of course the old tragic story – look there is the noble project of barely secularized Man, acting like God, which will of course fail. And you will come down in a freaked-out ecosystem, where the jellyfish and the slime will sting you to oblivion. Because it will all end in slimy ruin with a lot of stingers in it.

Scott
Right.

Donna
And that is what the Anthropocene story does.

Anna
I think you are wrong about that. Take, for instance, the Gifford Lectures by Bruno Latour (2013), in which Latour makes a masterful defence of apocalypticism, and he does so through the concept of the Anthropocene. I thought it was really brilliant.

Donna
Those lectures are fun!

Anna
He answers the charge of being apocalyptic: 'Why not use it? We know it is a trope. We know it can get us in trouble. But it also enables a kind of serious play that allows us to think things that we would have never been able to think without that trope'. So I found myself drawn in. Meanwhile, that does not mean all is well with the term Anthropocene. My fears and angers are about another set of people, the 'good Anthropocene people' . . .

Kenneth
Yes, we know that the apocalypse is a trope, but, for example, do the fundamentalists who have begun to dominate American politics, or the 'good Anthropocene people', know this?

Donna
The 'fix-it' people.

Anna
Yes, the 'fix-it' Anthropocene people, those people have a plan for us, but they are going to fail in a really destructive way.

Donna
I agree with you, and I am afraid of those people, too. Big time! Because they actually believe their sacred secular story, they believe in a 'techno-fix'. And

they practise it, and they teach it, and they get a lot of money to do it. And I do not mean that you cannot research to fix things, I am perfectly for research that seeks to fix things …

Anna
Right, but their conception of the epoch is a modernist, a perfection-yet-to-come.

Donna
'Techno-optimism' is way scarier than 'techno-pessimism'.

Anna
Right.

Nils
Your discomfort with the simplifications of both time and space that go into the concept of the Anthropocene is reminiscent of the discomfort that drove a recent conference organized by Bruno Latour, Déborah Danowski and Eduardo Viveiros de Castro, called the 'Thousand Names of Gaia'. They suggested at the conference that the Anthropocene is predominantly temporal. The suffix 'cene', after all, is Greek for 'recent' or 'new'. The Anthropocene grew, they noted (as you have also just highlighted), out of a particular view of the world that is hegemonically Western (Danowski *et al.* 2014). The Anthropocene, in other words, had a Western legacy and a Western logic. Meanwhile, the notion of Gaia, proposed by chemist James Lovelock and microbiologist Lynn Margulis (Lovelock & Margulis 1974), was, so the conference organizers suggested, a spatial phenomenon, an autopoetic sphere that created its own stabilities and instabilities. As a spatial concept, Gaia seemed to open up to other ontologies and other worldviews and perhaps also to other potential solutions to the world's problems. Gaia was, so they felt, a better anthropological alternative.

Donna
I am thinking about the 'Thousand Names of Gaia' conference, and how it originated. Because the idea came from Eduardo Viveiros de Castro and me in the train coming back from the *gestes spéculatifs* (speculative gestures) colloquium in summer 2013 at Cerisy in France organized by Isabelle Stengers, where we were both angry at the absence of any other peoples from imagining the world other

than essentially Western Europeans. The sense of the absence of thinking the world out of other languages, and other ways of doing life. Nobody was against the understanding that Western Europeans and Euro-Americans are not the world, but none of us made the Thousand Names, the Thousand Worlds, actively present either. This is not about cultural pluralism or epistemological relativism, but about decolonial work with consequences for and in the world. You do not have to look very far these days in order not to be quite as ignorant as we are. Our ignorance is culpable, and it is unnecessary. It is not merely that other terminologies open up a kind of pleasure in the philology of it all, which is true, but other words and worldings help us reimagine our current urgencies, and perhaps open up a possibility of collaboration and of research. It opens up, I think, the possibility of working otherwise. I feel like we quickly give up on naming our urgencies with more situated precision and diversity. If we as highly educated people do not do this work, who is going to do it? We need to get literate!

Nils

I think, we can agree, that the Anthropocene is a polluted concept, it is a contested concept, it is a problematic concept for all kinds of reasons. At the same time, it might still be utilized to do useful work, to galvanize already emergent forms of thinking and acting in academia. For instance, one could claim that it disrupts the global hierarchy of sciences. After all, it comes as an invitation to collaboration from the 'hard sciences', from the apex of the hierarchy of sciences, to the human and social sciences. The invitation is also a declaration of the failure of the conventional natural sciences and sounds something like this: 'something is happening to the natural world and in order to understand this, we need to bring the activities of those beings called "humans" into the picture. To properly understand "nature" we need the social and human sciences.' This invitation comes, it seems to me, at an auspicious moment, namely a moment that you represent, Scott! It is a moment of fundamental ferment in genetics and molecular science in which symbiosis, co-evolution, and epigenetics emphasize the social and co-species nature of evolution. This type of approach, in turn, gels really well with what is happening in anthropology (and other social sciences) where there is also considerable interest in co-species symbiosis. So, my question is this: Does the Anthropocene, in spite of its polluted nature, not still represent an opportunity to break the two cultures of science (Snow 1961)?

Donna
Well, I think that Scott's biological argument that 'we have never been individuals' (Gilbert *et al.* 2012) is different from that of the anthropologists, because there is a crowd of critters in Scott's argument that are only now beginning to find their way into anthropology. The radicalism of 'we are all lichens' is way more interesting than the radicalism of anti-humanist anthropologists.

Anna
I agree that your work, Scott, presents a really interesting challenge for all humanists, not just anthropologists, who think it is off-limits to study anything except humans, that we do not have the kind of right to ask about any other organisms, except for humans. Just yesterday, one of my colleagues said: 'As an anthropologist, how can we ask about a fungus?' You challenge us to say we can.

Donna
The answer is 'how not?' [Laughter]

Scott
How not? Yes!

Kenneth
We are fungi?

Donna
Hopefully, we are delaying that! [Laughter] Well, some of us-

Scott
We will become! [Laughter]

Donna
It is in our near future!

Nils
Well, in no small measure inspired by your work, Donna, anthropology is already being populated by many critters, and there is a lot of research into more-than-human worlds and multispecies relationships. So, something is clearly happening in anthropology. The same is the case in geography, I believe.

Kenneth
I think that the goal of breaking down the two cultures is wonderful. George Perkins Marsh (1801–1882), the American geographer and conservationist, is part of a whole tradition in geography and environmental history that tries to do that. Interestingly, he was also an early promoter of a version of the idea we now call Anthropocene. He thus used the epigram: 'Not all the winds, and storms, and earthquakes, and seas, and seasons of the world, have done so much to revolutionize the earth as Man ...' to preface his 1864 conservation classic *Man and Nature* (Marsh 1965). And it is also interesting, in light of our conversation today, that he subsequently dropped 'man', changing the title to*: Physical Geography as Modified by Human Action.* The problem is that within geography, at least, this tradition has been sidetracked by the modernist discourse of 'spatial science', which has split apart the humanities and the natural sciences (Lowenthal 2000).

Donna
The big challenge is pragmatically how to study it. What is a good ethnography under these circumstances? Truly how does one practise? It is all well and good to understand this as a pleasure, a philosophical invitation, an invitation to both play and work, fine, but how do you really work in a finite lifetime, and how do students get trained, so that they might possibly be able to write something! I mean truly, I think the pragmatics of this are extremely challenging for all of us.

Anna
Science studies is an interesting case here. The kind of science studies that just followed scientists around proved easy for humanists. But the kind of science studies that Donna does where you actually have to get involved with what the scientists are studying as well as who they are is much more challenging.

Noboru
Right.

Scott
We are actually trying to do something at Swarthmore College. We have been asking ourselves what we at the liberal arts colleges can do better than those in the established research universities. What we do better is simply that we can

talk with our colleagues. Because you cannot easily do that at a research university.

Donna
And you are not buffered by your graduate students-

Scott
We are not buffered by graduate students, and we are not focused by the graduate students and their training, which is incredibly important. What we can do is banal but important: we can walk across the hall and be in a different department. Here is the possibility of new start-ups, new sorts of foundations! What new knowledge can we make in this way? We can make inter-disciplinary knowledge, and do it better than at a prestigious research university.

Anna
I think that is an important insight, and important particularly for someone like me, who is social scientist, but who has wanted natural scientists as playmates for some time. But in the USA, I have had a very hard time finding anyone in the sciences who would even have lunch with me in a serious way.

Kenneth
I think that US universities in general are better at doing that than here in Europe and Scandinavia, where we tend to focus education within one discipline, and where we do not have the multi-disciplinary educational programmes that you find in the USA, especially at the Bachelor level.

Anna
I would say the opposite: more is possible in Denmark!

Kenneth
Well, okay, but in geography, as inspired by thinkers like Marsh, the idea was that we were to have physical and cultural geography in one department and that we would therefore begin talk to each other and be inter-disciplinary. But a lot of Scandinavian departments have ended up splitting up . . .

Donna
That is happening in the USA, too.

Nils
Can I go back to the challenges of inter-disciplinary practice? I do not see the practice of inter-disciplinary work as an obstacle but rather as an opportunity. I have in mind here not the practice of publications and merits, but the actual practice of research. I think – and it is in the main thanks to Anna – that in AURA, a trans-disciplinary project about the Anthropocene at Aarhus University that involves both anthropologists and biologists, some of the most fruitful moments have come, not when we have epistemological discussions, but when we are in the field together talking about concrete findings. I remember, for instance, the fascination we all had – and the trans-disciplinary discussion about the challenges of understanding truly alien life forms that developed – when Peter Funch, a colleague and freshwater biologist, showed us weird and wonderful live images of the rotifers or wheel animals he had just collected in a nearby lake. Our best inter-disciplinary moments are when we are most practical, as it were, being led by a shared curiosity about the world.

Anna
Let me expand, too, on what Nils is saying. I think that rather than trying to start with these great differences of knowledge practices, we might put those aside for a while. Instead, we might get interested in some common puzzles together and see if it works.

Scott
And again, the metaphor I like to use for this kind of endeavour is an *alliance*. Disciplines do not have to take over the other in order to work together. Collaboration does not mean you need to fuse the disciplines to make some new hybrid. No, you are allies! You can keep your disciplinarity, in fact, you should in a way, because you only get a creation of something new, when you have differences to begin with, to interact with.

Donna
Do not give up all your skills!

Scott
Right, so when I talk about alliances between even science and religion (Gilbert 2013), religion is not going to take over science, science is not going to take over religion. But they can work together to a common end such as ending habitat

destruction. The phrase that I sometime use is the 'Grand Alliance' of the Second World War. This was also called 'the Strange Alliance', which becomes apparent when you think of the characters. England, the USA, and the Soviet Union each had totally different politics and economics, but still allied together! And then they went their separate ways afterwards.

Donna
Something of an understatement! [Laughter]

Scott
Yes, but the thing is that one can say: 'okay, we are going to get together to understand this. But that does not mean that I have to give up my disciplinary identity, and I should not fear that you are going to try to remake me.'

Anna
What I have been thinking disciplines through right now is *genre*. Instead of thinking of each discipline as a mode of knowledge, we might think of each as offering the difference between a mystery novel and a science fiction. There is no reason why you could not construct a science fiction mystery novel. If you think about these differences as genre differences, it allows a lot more play.

Donna
You know, I think it has been a long time since C. P. Snow's 'two cultures' (1961) described very much. But I do think there are questions of trust involved. I know this is not a project for everybody, but, for me, the question is 'how did trust get destroyed?' I am interested in rethinking what happened in the period of the so-called science wars of the 1990s that allowed a kind of devastation of trust in a way that has had consequences. How, against this background, do we now build trust around problems and situations that you care about, such as, let us say, the question of the destruction of the remaining native grasslands in the US Midwest? How do people get involved in habitat restoration and maintenance around grasslands and water tables? Bible Christians and scientists in places like Kansas really do need to work together. And they turn out to be able to work together around certain kinds of storytelling, certain kinds of terminologies, and not others, backgrounding certain kinds of terminologies, in this case both evolution and climate change (see http://njconservation.org/blog/?p=36). Science studies scholars can be positive forces in such difficult collaborations.

Scott
I think, trust often comes down to a matter of personal relationship, eating of the same rice bowl, drinking at the same bars-

Donna
Having lunch together.

Scott
Having lunch together. It cannot be done on a theoretical basis; it is not that type of thing. That it has to be done out of person-to-person-

Anna
I am going to speak for more than trust, but for the kind of imagination that every person in this room has added to what counts as scholarship. Sitting down together is not enough. Social scientists have had many, many experiments in working with scientists, most of which are examples of things not to copy, it seems to me. Particularly those forms of experiments in which social scientists naively adopt the scientific form, reducing questions to tautologies that you can test a hypothesis and quantify everything. You end up with a trivial kind of social science; social scientists become PR persons for science. In these unhelpful endeavours, social scientists and natural scientists have also trusted each other and worked together. But still they come up bankrupt. We began this conversation by saying that maybe the term Anthropocene is not enough, and that the concept itself will not do the work. But a change in imagination is also part of the kind of new relationships that are evolving.

Donna
Speculative fabulation is a phrase that I am very attracted to. All the SF terms: Science Facts, Speculative Fabulation, String Figure, etc. You know, 'cat's cradle terms' (Haraway 2012). Speculative fabulation is something everybody sitting around this table does. Taking fabulation seriously entails proposing possible worlds, inhabiting them with different sorts of work practices, or disciplinary skills, or whatever. Such proposals are not made up. It is a speculative proposal, a 'what-if'. It is a practice of imagination, as a deliberate and cultivated practice. And it is a deliberate and cultivated practice that we know a little bit about how

to do. It is not a 'set-up', and you do not really know if anything is going to come out of it, or not. People may decide to work together on something, or not. But it will grow out of somehow having affected each other's imaginations.

Kenneth
I agree. The idea of play is important here . . . and perhaps also more generally. I am thinking of Huizinga's (1970) classical concept of *homo ludens*.

Donna
Yes, *ludens* is a good enough species name! A better species name than *sapiens*!

Scott
There is more evidence for it! [Laughter]

Noboru
I would like to hear a little more about what distinguishes the concept of Capitalocene from Anthropocene. When I got together with natural scientists for the first time for my research on plantations in Southeast Asia, I explained to them how the social scientists in the group liked to think about flows of capital and money to enquire into how the capitalist system is articulated with flows of nitrogen and material cycles. The natural scientists found this interesting because it allowed them to think about circulation and articulation between nature and societies.

Donna
Andreas Malm, who was graduate student at Lund, first proposed the concept of the Capitalocene (Malm & Hornborg 2014), and Jason Moore, who was there when it happened, picked it up, and used it to reread Marx in a multispecies kind of way (Moore 2014a; 2014b). What I think the term Capitalocene does that the term Anthropocene does not do, and cannot do, is to insist that it is an historically situated complex of metabolisms and assemblages. The people that I know who use Anthropocene tend to emphasize the history from the mid-eighteenth century forward, and tend to take the use of fossil fuel as the key historical moment. The Capitalocene suggests a longer history. I think we are looking at slave agriculture, not coal, frankly, as a key transition.

Noboru
I see.

Anna
The concept of Capitalocene intersects with your work, Noboru, because it asks the question of what makes a plantation, and what kinds of long-distance simplification of landscapes all over the world were made possible by it (Ishikawa 2013).

Donna
And the transportation of genomes. I think the transportation of genomes, the transportation of breeding plants and animals, including people, is crucial to the plantation.

Anna
What thinking through capital means for knowing the Anthropocene might be to consider the importance of long- distance investors in creating an abstract relationship between investment and property. This new relationship makes it possible to turn ecologies into something completely different, even if their sites are very far away. This move, which I think of as alienation, changes the plants, the animals, and the organisms that become part of the plantation.

Donna
And the people!

Anna
The people, too, become alienated resources, and it is that move that has allowed the spread of the plantation system.

Donna
Maybe we should propose a different word to signal this? The Plantationocene? Maybe that is a better, more descriptive, term? [Laughter] Capitalism is a late development!

Anna
We need to understand the dynamics through which plants and animals are abstracted in order to become resources that can be used for investment. Plantations and feedlots are places where this happens.

Noboru
To me, plantations are just the slavery of plants.

Anna
I agree.

Donna
And microbes.

Noboru
Yes.

Donna
When Anna and I taught our last geofeminism seminar at UCSC, we spent a lot of time on plantations, around just these arguments. And, the plantation system predates both the terms Anthropocene and Capitalocene. The Plantationocene makes one pay attention to the historical relocations of the substances of living and dying around the Earth as a necessary prerequisite to their extraction (see also Lewis & Maslin 2015). It is no accident that labour is brought in from elsewhere, even if, in principle, there is local labour available. Because it is more efficient in the logic of the plantation system to exterminate the local labour and bring in labour from elsewhere. The plantation system depends on the relocation of the generative units: plants, animals, microbes, people. The systematic practice of relocation for extraction is necessary to the plantation system. This began prior to the mid-eighteenth century story of fossil fuels and steam engines and industrial revolution and so on and so forth. All of which is terribly important, God knows! And unfortunately so. But I think that the fundamental revolutions in wording are consequential – so we need to call it the Plantationocene, forget the Capitalocene! [Laughter]

Everyone
[Laughter]

Kenneth
Your point about bringing in people from outside relates directly to the slaves themselves in the West Indies because they were not allowed to reproduce. As a result, plantation owners had to keep bringing in new supplies of slaves. The debates about slave rights began with reformers who initially just wanted to allow them to have children, because they were not even allowed to reproduce.

Donna
It is like the USA becoming energy sufficient through fracking. Self-sufficient slave production becomes a reformer's goal because so many slaves are dying under conditions of extreme extraction.

Kenneth
But the Capitalocene, or whatever you call it, is the Obscene maybe.

Donna
The Obscene! [Laughter]

Kenneth
Think about enclosure. Enclosure is essentially a way of putting a Euclidian grid on the world. If you think about Euclidian geometry, the line has no width, the dot has no depth, no space, it does not exist. It was a mind construction.

Donna
Which was part of its beauty.

Kenneth
Which was its beauty. Then you take this mind construction and put in on the Earth, and you turn it into the basis of enclosure and property. It is interesting, in this respect, that the German (Nazi) legal thinker Carl Schmitt, in his currently influential book *Nomos* (2006; original 1950), sees a new Eurocentric global order, a variant of the Anthropocene, dating from the discovery of the New World and its spatial enclosure of that world, for example by plantations. *Nomos* is the measure by which the land in a particular order is divided and situated; it is also the form of political, social, and religious order determined by this process. It is a kind of precursor of the Capitalocene, but cast in a positive modernist light. What is property from this perspective? It is a space, which is uniform in its own economic context, but does not really exist in the greater scheme of earthly life. The next step is to try to manipulate this new reality, through drainage, for example, so that you get crops that grow evenly in spatially uniform squares of property. The problem you face, however, is that earthly life processes cannot exist for long within uniform squares, and in times of increased rainfall, turbulence

leads to disastrous flooding. You are manipulating the world to make it fit a utopian Euclidian grid that maybe is good to think with, and good to construct property relations with, but which does not fit the utopian world. But in doing so, you are creating property that you can then sell and circulate according to its exchange value, and when it is carried away in a flood, you can blame it on global warming, rather than global Capital (which one might then blame for global warming).

Nils
The Euclidocene?

Kenneth
[Laughter]. You have got it! That is what it is!

Donna
No, but hang on. You are giving us a story of the invention of certain cognitive technologies that are terribly important in the history of philosophy, and the history of art and many other things. Cognitive technologies that are rooted back in the Greeks-

Kenneth
Yes.

Donna
This weird group of highly fictional people, called the Greeks! [Laughter]

Donna
Anyway, cognitive technologies have a history. And they were repurposed in the Plantationocene. Okay? And Cartesian cognitive technologies proved to be very apt for repurposing in the Plantationocene.

Anna
Right.

Kenneth
Yes.

Donna
We need to remember that these conceptual apparatuses like Euclidian geometry became useful in the hands of a Galileo, who employed it to theorize about gunnery problems in the cities states of Italy. Galileo was faced with the problem of the trajectory of a cannonball. Euclidian geometry allowed him and others to make some headway in this problem in the Italian cities states. This is a cognitive technology that then gets inherited, partly because of the history of schools, as if they are disembodied ideas. So, they are deliberately disembodied as part of the way the technology works. I do not mean to suggest that Galileo was nothing but a gunnery planner, but . . .

Everyone
[Laughter]

Kenneth
I agree that the Euclidian thing was not just an idea. The point is that when this was applied initially both to enclosures and to the development of both gunnery and perspectival representation in Venice and elsewhere, it formed the basis for an expansion, a global expansion that ended with overseas plantations. And this happened through a related idea of the nature of the garden, of this garden as the epitome of the natural. At the seminar yesterday, I showed pictures of people making gardens, 'English landscape gardens' they are called, but they were really British. The point is that these people at the same time were starting plantations in the West Indies and other places. All over the world, you have these English landscape gardens showing up; universalizing a scenic spatial idea of landscape, in which the exchange value of the estate is not just a question of its enclosed property, but also the cultural capital represented by the extensive view, from the estate's garden, of infinite global perspectives. So it is an application of a global ideal (Olwig 2002).

Scott
On the Plantationocene idea, I read a very interesting review in the *New York Times* on Edward Baptist's book *The Half Has Never Been Told* (2014), which basically said that slavery in the USA was the basis for the economy, because you could sell the slaves as collateral, and that bonds were being sold on slaves – and that gives a whole new notion of bonds – and that the slavery

was not only the basis of the Southern economy, it was also the basis of the burgeoning US economy.

Donna
The structure of the whole economy.

Scott
And that is the 'half not told'.

Donna
So partly, you know, partly what happens is we proliferate these stories. Jim Clifford talks about needing a big enough story (Clifford 2013:86). And that is a story that does not close down. All of our stories, whether it is the Anthropocene, or the Capitalocene, or the Plantationocene or my current new lover, the Chthulucene, with whom I am now in bed . . . in tentacular embrace. Never mind!

Everyone
[Laughter]

Donna
All of these stories threaten to become too big very fast. They threaten to collect up everything. We have the habit of mind of going for a theory of everything very fast, and we need to uncultivate that habit. It should therefore be the job of all of our stories to remind us of how terribly contingent each one of them is. Things did not have to be that way, but they were that way. And they may yet be otherwise. I think one of the habits of mine that emerges from serious storytelling is remembering mortality and contingency, and that the world might yet be otherwise, but it is not. It is that Marxist premise, that critical theoretical Marxist premise that the established disorder is not necessary, but it sure as hell is! The implicit question for me is always the counterfactual; again, it is a science fiction practice. It is like Kim Stanley Robinson's wonderful alternate history novel *The Years of Rice and Salt* (2003). What if the great plagues had destroyed Europe? What if? What if this tiny little thing had been a little bit different? What might have been the consequences? And I think that helps us. Not so much to be optimists, which I am not interested in, but the 'what if' that helps to keep things in play. It helps us to be not quite so hoodwinked

by the notion of necessity. Including the necessity of tragic domination of the secular project of phallic man, which I think the Anthropocene is a name for.

Everyone
[Laughter]

Anna
True, you need to have a sense of humour.

Nils
Humour, mixed with concern, anger, curiosity, and the imaginative insertion, every so often, of a 'what if'. I think that is a perfect place to end, for now at least, our conversation about the promises and dangers of the Anthropocene. Thank you so much for agreeing to play.

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Note

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