DIMENSIONS OF INTRA- AND INTERGENERATIONAL JUSTICE IN THE DEBATES ABOUT SUSTAINABILITY

Edited by Silviya Serafimova

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TABLE OF CONTENTS

INTRODUCTION

Silviya Serafimova

In the era of the Anthropocene, the challenges deriving from the ideas behind the realization of sustainable development have a complex gist which requires rethinking numerous mutually connected economic, social, environmental and moral dilemmas. For instance, many researchers warn against giving priority to the examination of economic sustainability over environmental and social sustainability (Goodland 1996). In this context, the role of values guaranteeing the succession between current and future generations is important when clarifying the debates about the responsibility of social agents (Chiesura and De Groot 2003). Some researchers raise the hypothesis that so-called objective ecological criteria should be supplied when exploring the role of societal values and perceptions, ethics and attitude to the risk as being "crucial for grounding the critical boundary of natural capital" (Ekins et al. 2003). Consequently, there are researchers who emphasize the existence of separate domains (which include socio-cultural, ecological domains, that of sustainability, as well as the domains of ethical, economic and human survival) where natural capital and ecosystem services can be critical (Brand 2009), whilst others argue that it is the "normative values that underline our use of the natural capital" (Dedeurwaerdere 2014). Specifically, all the five principles of Haughton's classification of sustainable development regarding equity, namely, those of inter-generational equity (futurity), intra-generational equity (social justice), geographical equity (trans-frontier responsibility), open and fair treatment of people (procedural equity) and the importance of biodiversity (inter-species equity) (Haughton 1999) are addressed in one way or another within all the articles of the current volume.

All the contributions aim to outline different, but not mutually exclusive dimensions of sustainability whose crossing points are both the implicit and explicit embodiments of intra- and intergenerational justice, as evaluated within a comparative perspective. It is an interdisciplinary volume whose objective is to give the floor to authors with a different academic back-

ground for the purposes of reevaluating some debatable issues in the discussions about sustainability and thus, showing that the development of ecological reflexivity on a larger scale (Schlosberg 2007) is possible only as a commonly shared (both a personal and professional) endeavor.

The volume is divided into three main parts consisting of contributions which cover three main conceptual perspectives of investigation. The first part is devoted to revealing the theoretical framework, which necessitates the remapping of the diverse sustainability debates (with an intra- and intergenerational focus upon some ethical, hermeneutical and epistemological dimensions of the debates in question). In the second part, some practice-related issues regarding the role of different sustainability policies (such as those concerning biodiversity conservation, understood as being related to identity preservation, sustainable optimization of recycling and distribution of sustainable food) are tackled, whilst in the third part, some prospects for building new vocabularies of sustainability (by exploring future sustainability dimensions of technology and ecological justice) are displayed.

The necessity of examining sustainability as a complex phenomenon from both theoretical and practical perspectives requires the provision of differentiated approaches towards all the different agents involved, namely, it requires specifying the different groups of social, moral, political and economic agents during the process of their interaction. In addition, adopting such an approach necessitates the exploration of mutually related or mutually exclusive obligations and responsibilities of the aforementioned agents, which turns questions such as "Whose justice? Which rationality?" (MacIntyre 1988) into questions that cannot be answered here-and-now nor once and for all.

The attempts at (re)mapping the debates about sustainability are not a new phenomenon, since it is already sufficiently clear that the introduction of the concept of sustainable development has triggered a "growing awareness of the global links between mounting environmental problems, socio-economic issues" which have much "to do with poverty and inequality, and concerns about a healthy future for humanity" (Hopwood, Mellor and O'Brien 2005). Nowadays, this 'clarity' can be justified as having descriptive rather than normative implications by being taken for granted. We all know well that "everything is connected to everything else", as well as that Bacon's saying which states that "The world is made for man, not man for the world" (Ibid.) is questionable from a scientific point of view. However, for the purposes of knowing what to do next, we need another remapping of the debates which puts a special focus upon the normative implications of

the tackled problems and thus, clarifying why the remapping, as such, is closely tied with the necessity of rethinking the role of justice in both intra- and intergenerational perspectives.

In his thought-provoking contribution called "Human Dignity and the Vulnerability of Life. Man between Animal and Robot" ("Menschenwürde und die Verletzbarkeit des Lebens. Der Mensch zwischen Tier und Roboter"), which is the first chapter of the current volume, Skirbekk clarifies why the issue of vulnerability of life is a normative rather than a technological or strictly biological question. In this context, the normative implications of the aforementioned issue concerning the recognition of the future projects for super-humans as undesirable can be found in the following series of questions posed by Skirbekk: namely, how should humans, as being vulnerable and shaped by crises beings, make a deal with invulnerable and independent of crises future super-humans? As long as human fears and painful defeats would be something completely non-understandable for the super-humans, how could they collectively develop the ability for a perspective taking? Furthermore, how would it be possible to have conversations with such super-humans which would miss the ability of sharing fears, seeking for comfort, or having deep conversations about life? And most importantly: Do we, as humans, want to sacrifice our complex existential vulnerability, in order to become such super-humans?

Looking for answers to the aforementioned questions, Skirbekk begins his analysis by setting the question "What does human dignity mean in a modern world?" within the field of transcendental pragmatics. The line of arguments concerning human beings addresses the diverse implications of the argument of inclusion within the field of discourse ethics. Such an approach is adopted for the purposes of clarifying how depending upon their different morally relevant qualities and abilities, humans can be treated as moral agents, moral discussants or moral subjects. Extending the requirements for moral subjects, Skirbekk examines the status of non-human beings, as well as the circumstances under which they can be included within the group of moral subjects. In addition, the comparative analysis between humans and robots or biotechnologically modified humans is based upon the clarification of the assumption of bio-embodiment, as evaluated in moral terms.

Whilst exploring the different consequences, which derive from the methodological differences between the principles of discursive participation and advocatory representation, Skirbekk clarifies why moral subjects (being humans or other beings) are vulnerable in a moral sense, as well as why their 'moral' inclusion is possible by modifying the principle of advocatory

representation. In this context, he pays special attention to the role of ethical gradualism in expanding the boundaries of the moral world. Analyzing why the principle of inclusion is not a homogenous principle, but is closely tied with the determination of the normative status of the beings involved (due to the relation of the factual and potential morally relevant properties of the individuals and genus), Skirbekk outlines three main perspectives of inclusion and their consequences. The first perspective concerns the role of the external obstacles for current human generations. Specifically, he describes the overcoming of the obstacles to advocate these beings who cannot participate in social and moral interactions as being a Sisyphean task. In turn, the second perspective addresses the limitations of inclusion deriving from some (missing) individual skills, since not all moral subjects can become moral agents and/or moral discussants, whilst the third tackles the embodiment of the principle of inclusion depending upon the contradiction between individual versus generic properties.

In addition to the aforementioned clarifications concerning the reasons behind setting the distinction between human and person, the next circle of issues emphasizes the methodological pitfalls deriving from technological optimism which underlines trans-humanism. Skirbekk outlines the normative validity of bio-embodiment as a premise for having reasonable and discursively aware moral agents and moral discussants by clarifying why having reasonable agents is a necessary, but not sufficient condition for defining these agents as moral agents. Specifically, the bio-embodiment, with all the opportunities it brings to light such as having emotions, feelings, interacting with other beings etc., is interpreted as an argument in favor of the gradualized opportunity for socialization, moral learning and cultivation of sensitivity towards otherness. That is why Skirbekk draws the conclusion that the lack of bio-embodiment makes robots non-eligible for the group of co-discussants, although they could, theoretically speaking, have an ability for raising theoretical discussions.

Going back to the issue of vulnerability regarding human dignity versus the functioning of robots and trans-humans, Skirbekk provides a conclusive section in which he raises the issue of normative gradualism in moral terms. He clarifies why “a soul without a body” and consequently “a soul with a mechanical body” is not “good”. In this context, the defense of human dignity is grounded in the assumption that the vulnerability of human life is not an obstacle, but a crucial premise of arguing for fundamentally shared responsibility to future generations understood as a responsibility on the side of differentiated moral agents and moral discussants towards differentiated moral subjects.

The idea of goodness, but this time, extrapolated to the normative challenges of arguing for a "good Anthropocene", is an object of examination in Forrest Clingerman's inspiring contribution called "Humanity, Relationality and Justice in the Anthropocene". In his article, the author justifies the necessity of reconsidering the normative validity of the idea of the Anthropocene as being a hermeneutical horizon which requires the reevaluation of the role of environmental anthropology towards reimagining the narratives about human-nature relationships. For the purposes of reevaluating the impact of the aforementioned horizon, as well as paying attention to the way in which the Anthropocene now "symbolizes the conflict of interpretations" about our new political, economic, material and moral relationships with the world, Clingerman refers to the work of Martin Buber. Specifically, he aims to reveal the possible danger humans face, as well as what the qualities of anthropology in a "good Anthropocene" should look like.

Special attention is given to Clingerman's analysis of the origin of the aforementioned danger understood as a matter of ontological, existential and moral clash in the attempts at balancing the relation between human as a microcosm and the world as a macrocosm. Consequently, the clash leads to the pitfalls which derive from the microcosm's self-replication, as displayed within radical anthropocentrism. The author clarifies that the danger in question has some apparent, mutually related moral and tragic embodiments, since whilst undertaking the responsibility of redefining themselves, humans increase their hubris. As one of the most significant outcomes of this choice in hermeneutical terms, Clingerman points out the practice due to which the world is used to be named after the human and human social behaviors, viz. being coined Capitalocene, Technocene etc. The author argues that adopting such an approach leads to the reduction of understanding what a 'good' Anthropocene is to that of what is good for, and from a human perspective.

The reference to the epistemology of modernity as grounding one negative narrative of the relation between humans and nature is traced back to what Clingerman calls Buber's "first word pair into the story of the Anthropocene", namely, that of the I-It which reveals the ontology of the self-conscious objectification of nature. Furthermore, the author examines the reasons behind the extrapolation of Buber's "second word pair", the I-You, as well as extending its normative validity towards the way in which the category "You" can encompass all beings by being irreducible to the representatives of humanity. Thus, one can argue for a narrative of a "good Anthropocene", although deriving from a different moral grounding.

However, Clingerman also makes the important specification that the aforementioned two-word pairs do not exhaust the complexity of the relationships between humans and nature. He emphasizes the danger brought with the word pair I-I which triggers the negative narrative of the human self-replication as a microcosm by denying the requirement of complementarity on the side of the macrocosm. Clingerman also argues that contrary to the calls for a "good Anthropocene", as implied by the I-You, adopting the I-I does not "take on a position of environmental subject in meaningful relation alongside the human subject". Consequently, contrary to the world of modernity, as determined by the I-It, the I-I "does not simply objectify the other, but effaces it". In this context, Clingerman finds the strongest moral implications of the narratives based upon the I-I in the abdication of responsibility to the other which triggers both its existential and its moral annihilation.

Regarding the outcomes of the aforementioned clarifications to the understanding of environmental justice as being grounded in the I-I, the author not only outlines the negative narrative of the Anthropocenic world "as a vaporous, calculative reflection of one's own personal humanness", but also points out how disenchanting the dangers the word pair in question brings to light can make room for grounding a "hopeful hermeneutics of the Anthropocene" which "reaches into the way we humans exist *with* (not merely on) the planet."

In conclusion, Clingerman emphasizes how environmental anthropology's objective should be to make possible the Anthropocene to tell its story using its own words, taking into account that human words are not more valuable than those of nature.

For their paper called "A Climate of Dialogue*"*, Andrea Saltelli and Paul-Marie Boulanger choose the well-known (since Plato's time) genre of a dialogue through which they address in a deep, discursive manner some of the burning epistemic challenges regarding climate change. The authors discuss the role of epistemic authority in shaping the public image of science and its different roles, the necessity of scientifically grounded actions based upon the idea of responsible engagement with climate change problems, the possibilities for the reduction of fossil fuel consumption, as being (in)dependent upon climate change. In addition, they analyze different aspects of research ethics and policies, which are related to the role of public intellectuals and politicians, as well as to that of future historians who should provide a diagnosis of the new context of climate change.

Saltelli and Boulanger share the view that "an impending climatic Armageddon science" has staked its epistemic authority upon climate and consequently, created a "virtuous image for itself" which requires the justification of a more proliferated image of the science in question. The authors also argue that public's fear concerning the climatic threat works as a trigger for "a convenient distraction" from a growing crisis which initiates new media representations, a loss of democratic representation, increasing inequality, populism and nativism.

However, Saltelli and Boulanger differ in their views about how epistemic authority gains its justification. Whilst Saltelli extrapolates Luhmann's distinction between an indicated and an unmarked zone, outlining that marking climate unmarks a host of other urgent issues and thus, highlights the "blind spot" of the climate activities which shift the focus from other "urgencies", Boulanger refers to the so-called "Grid-Group" theory. He suggests the maintenance of "the skeleton of the cultural theory", but substitutes to the grid-group axes those of short term/long term and society/environment.

The second circle of issues concerning the emergency of action, as well as whether or not there are reasons to argue for moving from concern to alarm, is examined by Saltelli as being related to the counterproductivity of intimidation which comes along with the idea of emergency. The latter is explored within the framework of Hans Jonas' conception of the hermeneutics of fear, which raises the necessity of reconsidering the role of some virtues such as prudence and phronesis. In response, Boulanger emphasizes the role of climate change debates as uniting all nations beyond some inter- and intra-national disagreements.

In turn, the third circle of problems regarding the justification of the causal relations between the climate change and the decrease of fossil fuel consumption tackles one more key issue, namely, that of the role of risk in its different embodiments. Specifically, the risk in question is evaluated as making causal relations irreducible to those between change and the aforementioned decrease.

Regarding the fourth and fifth circles of discussed issues, the authors shift the focus from epistemic and socio-political constituents of science regarding climate change to the role of social, political and scientifically responsible agents. Clarifying the impact of the politicians and scientists within climate change debates, Saltelli examines how public intellectuals mobilitate science and consequently, how their role can tacitly make room for a problematic vision of science in society. In addition, Boulanger argues that the

role of the public intellectual requires the latter to base her opinion only upon arguments, since such a position is strongly indebted to the fact that environmental justice is not an isolated phenomenon, but closely tied with social justice.

Consequently, the authors provide their mutually complementing visions of what future historians would say about climate change emphasizing that each epoch is paradoxical in its own way having its own unspoken metaphors and zeitgeist which will be studied later with puzzlement (Saltelli). However, the puzzlement in question may also derive from the discovery that humans have had all the information concerning the risks of climate change, but they have decided to let it go (Boulanger).

The second paper in the epistemological sub-section provides a different perspective upon a holist project which is grounded in the examination of the consequences of Commoner's first ecological law that "everything is connected to everything else". In his intriguing article "How to Make Peace with Nature", Ragnar Fjelland explores the dialectical stance of humans which, by being a simultaneous part of two contradicting spheres, namely, those of ecosphere and technosphere, are in a position of being at war with nature; nature, however, strikes back. In this context, extrapolating Commoner's theory of the four ecological laws, as displayed in his book called *Making Peace with the Planet* (1990), Fjelland outlines the necessity of a human corresponding responsibility for not striking back to nature, but making peace with it. In his contribution, he formulates four conditions which should be fulfilled if humans want to achieve the aforementioned peace.

Beginning with an analysis of the origin of the first law "everything is connected to everything else", which breaks with the ideal of scientific knowledge adopted by Descartes and Galileo, Fjelland clarifies how it turns into the most important method for developing technology. Extrapolating the role of the law in question to the field of environmental problems, whilst giving some examples such as these of nuclear power plants and electric cars, Fjelland emphasizes that unforeseen negative consequences take place as a result from the state of mutual connectivity of the things. On the other hand, the positive outcome of imposing the law "everything is connected to everything else" is that one should give up the idea of technological fix of environmental crisis.

As a second condition which encourages the transformation to making peace with nature, Fjelland points out that Commoner's third ecological law could be summarized as follows: "nature knows best". Fjelland outlines the

role of uncertainty, which is considered as the most important weapon of climate sceptics. In turn, the ethical implications of the aforementioned uncertainty concern not only the probability that human action which, as being inorganic from the perspective of nature, may cause harm, but that the bigger danger comes from those who insist that something is harmless.

The third condition regards the disenchantment of the technological optimism as an optimism based upon progress, which is a more or less continuous process. Fjelland finds the origin of this disenchantment in the possibility for recognizing that we, as humans should be more concerned about our ungrounded neomania, namely, for believing that new is always better than the old.

As a last and probably most important condition, Fjelland points out the reduction of the gap between rich and poor by elaborating upon Percy Snow's theory of the two cultures — that of science and technology and the "culture" of humanities and social sciences. Specifically, he examines how the gap between the two cultures is extrapolated towards the gap between rich and poor, as underlined by the gap between benefits and prices which the different social actors should pay.

In turn, the second part of the current volume is devoted to the investigation of some practice-related problems and the role of corresponding policies which concern (un)just sustainable regulations. The idea of just sustainability, which is defined as "The need to ensure a better quality of life for all, now and into the future, in a just and equitable manner, whilst living within the limits of supporting ecosystems" (Agyeman et al. 2003), is relevantly elaborated upon as a matter of arguing for sustainabilities in the plural form. The singular form of sustainability is questioned as providing only "one prescription, one template or model for sustainability that can be universalized", whilst the plural form emphasizes "the relative, place- and culturally bound nature of the concept" and thus, encourages the establishment of a scale based upon four essential conditions for just and sustainable communities (Agyeman et al. 2012). To a significant extent, the papers included in the second part address (although discussing different case studies) all four criteria of just sustainabilities, namely, these of improving the quality of our life and well-being, meeting the needs of both present and future generations (intra- and intergenerational equity), tracing the impact of justice and equity in respect to recognition (Schlosberg 1999), process, procedure and outcome, as well as living within ecosystem limits ("our planet living") (Agyeman et al. 2012) .

In their stimulating paper "From Fish Management to Fish Rewilding: A Finnish Case Analysis", Oksanen, Ratamäki and Haapasalo analyze the application of the concept of rewilding, as being referred to fish, fisheries and fishing policies. Exploring the novelty of the term of rewilding in Finland, as well as how the conceptualization of the novelty in question affects its understanding and implementation in respect to fish populations and their habitats, the authors aim at justifying the role of some fishing activities within the limits of sustainability. For this purpose, they adopt the methods of critical discourse analysis, transdisciplinary research and the exploration of unsustainable outcomes supported and produced by the law, as laid out in the Finnish Fishing Act of 1982 and that of 2015.

By relying upon such an interdisciplinary instrumentarium, Oksanen, Ratamäki and Haapasalo provide some important clarifications regarding the role of ecological rewilding which underlines the relation between rewilding and restoration. The clarifications in question also address the relationship between environmental legislation and ecological knowledge, as playing a crucial role in revealing the complex impact of values in science. Specifically, the detailed analysis of some conceptual specifications concerning the Finnish discourse, which are evaluated from the perspectives of so-called farmer discourse and rationality discourse, contributes to clarifying how the use of natural key terms in the Fishing Act of 1982 (e.g. 'fishing,' 'fishery,' 'waters,' 'fish stock,' and 'productivity') is extrapolated into that of ideologically loaded concepts (e.g. 'rationality,' 'management,' 'expansion,' 'harmful' and 'balance of nature'). Correspondingly, the specificities of the Finnish discourse of rewilding in respect to fishing, as shown in the Finnish Act of 2015, are refracted through the lens of so-called knowledge discourse (with a special emphasis upon the use of the Finnish word of knowledge) and naturalness/nativity discourse (whose justification derives from the broader meaning of the Finnish term 'luontaisuus', used in the Act). Shifting the debate about rewilding to ecological sustainability discourse, Oksanen, Ratamäki and Haapasalo examine why the objective section of the Act can be described as a good example of a legal norm. It results from a political compromise, but also reflects the human condition in both intra- and intergenerational perspectives – as affecting the responsibility of meeting the needs of current generations without compromising those of future generations.

Whilst discussing the management of Finnish fisheries and aquatic ecosystems, the authors point out that it involves some behavioral issues which can be traced back to examining the role of some extant species, specifically, the behavior of predatory, migratory fish, although not the top preda-

tors. In this context, the authors argue that policy change, as being implemented through a legislation is only a necessary, but not sufficient condition, for achieving the objectives of rewilding. This is unless the change is explored in practical terms concerning the habitats of fish populations. In addition, Oksanen, Ratamäki and Haapasalo clarify why having (re)wild(ed) fish populations sheds light upon the fictitious character of the distinction between rewilding and conservation. By comparing and contrasting the old discourse on fishing (based upon the extrapolation of the management of agriculture to that of fisheries) and the new discourse (which is underlined by the account of ecological knowledge that brings to light the concerns about the loss of biodiversity in a new voice), the authors reach the conclusion that fish also have an intrinsic value and "form an instrumental aspect of cultural and recreational activities."

In their thought-provoking article called **"**Hydropower Reservoirs and Impacts to the Transmission of Sámi Knowledge in Sweden and Finland", Mustonen and Mikaelsson demonstrate how one (at first sight, strictly related to environmental sustainability) issue such as hydropower development in the Arctic turned out to be a matter of a "seemingly green energy production", with severe social and cultural impacts. This is due to the fact that the production in question has also negatively affected the communities of Sámi Indigenous people, specifically, Sámi communities in Finland and Sweden, by destroying the Indigenous land-based life.

In his analysis, Mustonen questions some crucial aspects of environmental, 'cultural' and 'social' sustainability regarding the "green energy discourse" by outlining the role of two important indicators, viz. the influence of the hydropower development upon Sámi Indigenous knowledge transmission, which is recognized as affecting identity preservation, including the maintenance of age-old connections with the Sámi homeland and language, as well as that of the accumulation of mercury. The responses to the latter are examined by Mustonen as being an illuminative indicator of the way in which Sámi evaluated the changes mercury brings to their life: changes which caused different types of losses such as these of submerged lands, waters and wetlands, Indigenous camp sites etc.

For the purposes of exemplifying the different aspects of the changes regarding the Sámi Knowledge and their way of living, two case studies are examined in a comparative perspective, namely, those of the Finnish Sámi, with a specific focus upon the Lokka and Porttipahta reservoirs, which were built in late 1960s and early 1970s (Mustonen) and the Swedish Sámi, which focuses upon the hydropower dams in River Lule first of which were

built in 1915 (Mikaelsson). The methods used for the Finnish case study include a geographical and CBM analysis of the role of mercury in the Sámi and other local peoples' life, snapshot style, in the post-reservoir era, as well as a full CBM study on the impacts of the reservoir, which was released in 2011. In turn, the methods adopted in the Swedish case include a literature review, community-based monitoring work (conducted mainly between 2003 and 2013), additional interviews and knowledge collection (during the Spring 2020 AMAP study of Arctic mercury problems), as well as cartographic summaries. An important contribution to the assessment of the Sámi leaders' responses to the negative impact of mercury is Mikaelsson's personal contribution as being a long-time member of Sámi parliament's Plenary Assembly and a board member of the Udtjá Forest Sámi community.

Mustonen and Mikaelsson provide a three-level evaluation, deriving from the empirical data and then they set questions for discussion which necessitate important conclusion about the implementation of national policies, namely, conclusions addressing the urgent justification of Sámi land rights. Regarding the discussion part, the Finnish and Swedish cases show sad similarities concerning the way in which the negative effects triggered by the hydropower development and the accumulation of mercury led not only to the destruction of the clean and healthy habitat and traditional food production of Sámi communities, but also to the gradual and dangerously irreversible assimilation of the Sámi peoples' identity. In this context, special attention deserves Mustonen's analysis of the Finnish Sámi anecdotes about "how to remove a mercury," which demonstrate local people's high awareness of the tragic triggered by the urge for developing new mechanisms of adaptation.

In conclusion, the two authors emphasize the necessity of encouraging Sámi broader political representation that can guarantee the uniqueness of their communities to be preserved on both intra- and intergroup levels.

Some other sustainability practices, which also take place in the area of Finnish Lapland, are an object of investigation in Valkonen and Loikkanen's inspiring contribution called "Waste Citizenship in Circular Economy: Case Study of Waste Governance in Finnish Lapland". Whilst examining the role of circular economy, the authors aim at clarifying not only its practical implementations, but also provide a genealogical analysis of the types of agents and corresponding agency involved. In particular, Valkonen and Loikkanen put a special focus upon the reasons behind building the normative image of "the good waste citizen" as a responsible moral agent.

The reconstruction of the image of the (good) waste citizen is conducted by the adoption of the theory of environmental citizenship, as being refracted through the lens of the idea of citizenship which is produced in and through circular economy. Specifically, the extrapolation of some conceptual clarifications of the theory of environmental citizenship towards waste management in the context of circular economy is examined as having triggered the issue of personal responsibility. The latter is recognized as a matter of choice which requires the development of virtues, ethics of care and understanding of justice.

For the purposes of revealing the dialectical methodological relations between the waste citizen and the agenda of waste citizenship, Valkonen and Loikkanen conduct a theoretical content analysis of the answers provided by twenty respondents who represent different voices such as these of the municipalities, the state, the private sector and non-governmental organizations.

Special attention is afforded to Valkonen and Loikkanen's investigation of what they call "the throw-away ethos characterizing our consumer society". Understanding the latter is of crucial importance for revealing the negative symbolic capital ascribed to the necessity of making waste invisible. By tracing the transformation of traditional waste management to the waste management of circular economy, Valkonen and Loikkanen reach the well-grounded conclusion that a waste citizen's responsibility concerns both personal waste and the ecologically sustainable future of society having crucial political implications.

Practically speaking, the dimensions of waste citizenship are explored in terms of outlining the duties and the responsibilities of waste citizens, with a special focus upon the awareness of personal citizen's responsibility which is considered as having concluded with the delivery of the sorted waste to the recycling facility. The second group of answers addresses the image of a waste citizen's virtues by examining what the image of the waste citizen as an active consumer should look like. In this context, one of the methodological contributions is related to the finding that the respondents from Finnish Lapland outline the aware citizen's responsible role in enriching the awareness of waste generation and thus, making room for a more sustainable society by planning the process of consumption. In turn, the third group of answers concerns the internalization of the idea of waste citizen's rights. An interesting outcome reached by the authors is that only a few of the respondents mention the rights of the waste citizen, namely, the rights of the waste citizen are defined in rather contradictory terms, as being

rights to responsibility. Regarding the last group of questions which affect the political sphere of waste citizenship, the respondents consider waste as being a raw material or resource rather than being directly evaluated from the perspective of the potential decrease of ecological footprint.

In conclusion, Valkonen and Loikkanen emphasize how the cultivation of different types of duties, responsibilities and a sense of justice regarding the position of the waste citizen points towards a new type of 'active' waste citizenship that is irreducible to the traditional way of understanding citizens' 'passive' disposal to waste. Tracing the hierarchical relations between the reduction of waste generation and recycling, the authors clarify why the waste hierarchy of the circular economy in Finland has not achieved its goals yet.

In turn, the irreversible abundance of Indigenous communities' traditional way of living, specifically, the Māori people's way of living, is explored as being gradually changed by the introduction of different practices of segregation. This is a topic broadly discussed in Heather M. Tribe's thought-provoking article called "He Waka Eke Noa: Food Insecurity in the Waitākere Area". In the first part of her title, Tribe quotes a Māori proverb translated as "a canoe which we are all in with no exceptions," which is used as a theoretical 'thin red line' in demonstrating how critical analysis of food insecurity requires the cultivation of a commonly shared responsibility on behalf of all agents involved. By borrowing some methods from the fields of feminist and peace studies, Tribe explores the relation between gender and food insecurity, as well as the vulnerabilities threatened with climate change, which are recognizable from a document analysis regarding a case study in Waitākere, Aotearoa (New Zealand).

Specifically, Tribe's case study concerns the evaluation of the data provided by the most recent census of the Statistics New Zealand (2018). Comparing and contrasting the findings of the statistics in question, she examines the role of unequitable distribution of unpaid work in the Waitākere area. The unpaid work as such is considered as an indicator of the disproportion of obligations and responsibilities concerning paid and unpaid work, as evaluated form both gender and socio-economic perspectives. In this context, Tribe outlines the necessity of providing a complex approach which is not limited to tracing the dependence of food insecurity upon circumstantial finances alone. Otherwise, the other three aspects of food security (accessibility, utilisation, and stability) will be left unspecified in respect to some crucial factors for the life in Waitākere area such as gender violence, gender inequality and the potential relations between climate change and increased

domestic violence, which, according to Tribe, are issues that require further investigation.

In conclusion, Tribe outlines that although the food system in Waitākere is not less vulnerable than in any other developed community due to the challenges posed by the globalised capitalist economy and "humanity's ability to change the capacity of our planetary boundaries," bringing climate change debate into consideration, as well as taking into account the specificities of the area, can positively affect the prevention of the future vulnerabilities women face.

Exploring the diverse dimensions of sustainability and the responsibilities of the different agents involved requires making an attempt at building what the challenges raised by the future projects for sustainability should look like. Adopting such an approach is triggered by the fact that sustainability is not a static phenomenon, but rather a phenomenon which is dependent upon its own self-development. That is why as one of the main methodological challenges in this context, I would point out the challenge of not only providing a diagnosis, but also clarifying how one can make a prognosis for the elaboration of sustainability towards just rather than unjust sustainabilities. The furthest prognosis one tries to make, the more complex and interdisciplinary it should look like. This is due to the fact that one should predict the potential problems and outcomes for human and non-human beings, whilst avoiding utopian and dystopian scenarios at once. Furthermore, the challenge is not only in predicting, but also in systematizing, complex knowledge, where the risk is whether or not one will manage to prevent the process of hypothesizing from being tacitly submerged with that of speculations. Revealing some pitfalls in respect to the aforementioned considerations, the third part of the current volume consists of two articles, which, if I may extrapolate Schlosberg's terminology, try to provide two prospects for new vocabularies for sustainability, namely, 'technological' and 'ethical' prospects for sustainability vocabularies.

One of the examples demonstrating why the concept of sustainability requires further elaboration can be found in Boris D. Grozdanoff's intriguing contribution called "Sustainability Dimensions of Blockchain Technology". Amongst the conditions which would make blockchain sustainable through the future, he mentions that the guaranteed history of inscriptions, security of structured data, speed and functionality of service combined can provide an "original social functionality" of the technologies in question. Grozdanoff contextualizes the background necessitating the development of blockchain technologies by going back to the vulnerability of history as a

phenomenon which should ideally be comprised of ordered true statements. In turn, the main methodological advantage of applying blockchain technology is found in the possibility that it can guarantee that a written history remains as it was written, being unsubjectable to potential "malevolent mutations".

By clarifying the mechanisms of building blockchains, as well as illustrating what blockchain code written in the programming language SWIFT looks like, Grozdanoff analyses the security advantage of the blockchain, specifically, why the advantage in question consists in the fact that blockchain's paradigm of security is "*purely mathematical and technological"* and thus, remains untouched by the biases affecting the field of social power. However, he takes into account the disadvantage that implementing security is inevitably dependent upon the biases of the implementer by providing a division between two types of implementation, viz. good implementation (giving the example with *one-time pads*) and bad implementation (which is very much breakable).

Judging by the aforementioned specifications, Grozdanoff clarifies why blockchain can be considered as one of the most eligible candidates of "modern digital society to deliver security of data and history of data", as well as encouraging ethical and social impartiality. In this context, he examines how the shift in power fields from mere politics to technology changes the profile of the agents. Such a change is exemplified with the image of the technology expert whose interaction with the politician raises two issues in terms of building trust: there might be trust without exerting power over the expert on the side of the politician, or trust in power over an expert (which inflicts fear into the latter).

Consequently, future sustainability of building blockchains or what Grozdanoff calls the growth of novel-functionality is traced back to the components of the blockchain's well-devised structure, in addition to the integrity of its code and the security of its functionality. On a macro-methodological level, Grozdanoff examines the potential contributions of introducing blockchains into the field of ethics arguing that the possibility for misuse in moral terms comes out not from the way in which the blockchains are built, but rather from that of being "malevolently devised". That is why Grozdanoff coins the ethical dimension of blockchain technology as a "double edge sword" which necessitates the responsibility for overcoming ethical challenges to be delegated not to the blockchain engineers, but to ethicists and software system architects.

In conclusion, he sees the 'moral' sustainability of the blockchain technology, as being embodied into two main aspects – into that of perpetuating the technology due to the fact that it is "so effectively malevolent" or into that of perpetuating it because it is "so effectively good."

In turn, Silviya Serafimova's paper called "The Role of 'Strong' Ethical Gradualism in Building Intra- and Intergenerational Justice. Some Prospects for a Common Vocabulary of Ecological Justice" 'closes the loop' of the investigations regarding the way in which ethical gradualism can benefit the provision of some new opportunities for a moral treatment of human and non-human beings in both short- and long-term perspectives. The main objective of the paper is to clarify how developing Skirbekk's theory of ethical gradualism into what Serafimova calls 'strong' ethical gradualism can contribute to justifying "an overlapping sense of discourses" in Schlosberg's sense, as well as guaranteeing the normative validity of a broader concept of ecological reflexivity. Applying 'strong' ethical gradualism is examined as giving hints as to how some humans, being moral agents and moral discussants, can oblige themselves to act morally on behalf of other beings for their own sake, taking into account the implications of intra- and intergenerational justice to both human and non-human generations, as much as possible.

Having examined why the feature of recognition in Schlosberg's sense could be addressed to building environmental justice rather than ecological justice, as well as why the grounding of the feature of participation faces similar difficulties due to the fact that both recognition and participation can be successfully applied to particular sentient beings alone, Serafimova aims at revising the role of the third feature, namely, that of capabilities. Specifically, she looks for such a moral ability which can contribute not only to the moral self-transformation of the heterogeneous group of moral subjects, but also to that of moral agents.

Serafimova reveals the reasons behind her choice of two types of empathy, namely, that of mature empathy whose mechanisms of building conflict sensitivity can be extrapolated towards non-human beings which do not share similar features with humans, as well as that of proto-sympathetic empathy, which may provide some clues in building intra- and intergenerational justice for sentient animals, at least.

On a macro-methodological level, Serafimova examines the reasons behind the preference for the methods of discourse ethics over those of utilitarian ethics, taking into account how adopting the perspective of discourse ethics

encourages the moral transformation of both moral agents and moral subjects.

In conclusion, she aims at composing a basic scheme whose completion can lead to increasing ecological reflexivity on a larger scale by introducing three main levels – a ground level encouraging the adoption of specific empirical gradualism, a meso-level which concerns the evaluation of the empirical gradualism by borrowing methods from the field of social sciences and a meta-level. The latter addresses the elaboration of a particular type of evaluation, as recognized from the perspectives of intra- and intergenerational justice to both humans and non-humans, which should work as a diagnosis. According to the diagnosis in question, the normative validity of the processes of recognition and participation should be elaborated upon by going beyond the principle of simplified human-non-human moral and political replications.

What did we witness in the process of un-mapping and then, re-mapping the space of the Anthropocene in our attempts as humans to give more room for sustainability in all its embodiments? Certainly, narrow disciplinary research which focused upon one or two forms of sustainability such as economic and/or environmental sustainability alone is recognized as being insufficient if not even counterproductive. This is due to the fact that the idea of relating time to space, as being refracted through the lens of sustainability has already been in a process of transition. For instance, instead of arguing for Anthropocene, researchers began to argue for Capitalocene, Chthulucene (Haraway 2014) and even for Plantationocene (Haraway 2015) (Davis et al. 2019). Did it change somehow the way in which the questions "Whose justice? Which rationality?" are raised?

There are no doubts that we no longer operate with one vision of justice which is guided by one vision of rationality, unless we are radical anthropocentrists or eco-centrists. The change in the discourse of sustainability is apparent in the way in which researchers make the transition from just sustainability to just sustainabilities (in plural), where more attention is paid to the differentiated agents and subjects of justice sometime called claim holders and claim addressees of justice (Stumpf et al. 2015). As long as sustainability relations concern those of humans with contemporaries, future humans and nature (Ibid.), it is logical (in the sense of being both ontologically and morally grounded) for one to argue for "an integrative concept" of sustainability justice, since sustainability itself is such a concept as well. Consequently, shifting the focus to the sustainability relations including intra- and intergenerational justice between humans, and justice towards na-

ture (Ibid.) requires the replacement of the mechanistic approach (considering the aforementioned relations as a sum) with a holistic approach (due to which the relations are examined as a matter of synthesis).

Returning to the questions "Whose justice? Which rationality?", it would mean that they cannot be answered by one agent on behalf of another, unless they are answered for the sake of this other. Modifying Haraway's vision of reworlding (Haraway 2014) into the context of just sustainabilities, one can argue that adopting such an approach would result in remapping the world from within for these others whose becoming matters. Furthermore, developing the approach in question can culminate into a protest against silencing the other voices as *flatus voci*, whilst emphasizing that they are suppressed just because they cannot speak any other language except the language of their own nature.

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Part I

REMAPPING THE DEBATES

MENSCHENWÜRDE UND DIE VERLETZBARKEIT DES LEBENS. DER MENSCH ZWISCHEN TIER UND ROBOTER[1]

Gunnar Skirbekk

Hintergrund[2]

«Die Würde des Menschen ist unantastbar.« So liest man im deutschen Grundgesetz, erster Paragraph. In der Resolution der Generalversammlung der Vereinten Nationen über die Menschenrechte von 1948 liest man Ähn-

[1] Gunnar Skirbekk. *Menschenwürde und die Verletzbarkeit des Lebens. Der Mensch zwischen Tier und Roboter*. In: »Philosophie der Moderne«.

[2] Die Frage des ethischen Gradualismus ist von mir mehrmals diskutiert worden, auf Deutsch zuerst unter dem Titel »Ethischer Gradualismus, jenseits von Anthropozentrismus und Biozentrismus?« *Deutsche Zeitschrift für Philosophie* (43), 1995, S. 419–434, später unter anderem in *Praxeologie der Moderne. Universalität und Kontextualität*, Weilerswist: Velbrück Wissenschaft 2002 (englische Originalversion 1993, französische Version 1999). Eine frühere Version des vorliegenden Textes erschien unter dem Titel »Verantwortungspflichten – wem gegenüber? Die Inklusionsfrage nicht-diskursfähiger Lebewesen und der Begriff Menschenwürde« in der Festschrift für Dietrich Böhler, *Philosophieren aus dem Diskurs. Beiträge zur Diskurspragmatik*, hrsg. von Holger Burckhart und Horst Gronke, Würzburg: Königshausen & Neumann 2002, S. 407–424. Übersetzung von Ina-Maria Gumbel. Die vorliegende Version ist weitgehend neu geschrieben, u. a. wurde die Thematik des Transhumanismus und der Roboter vorher nicht behandelt.

liches (im ersten Paragraphen): »Alle Menschen sind frei und gleich an Würde und Rechten geboren.«[3]

Dann, in der Nachkriegszeit, durch politische Beschlüsse, ist Menschenwürde nicht nur ein moralisches, sondern allmählich ein zentrales juridisches Prinzip geworden, wenn auch mit regionalen Unterschieden und variierenden Interpretationen.[4]

Auch in den religiösen und theologischen Diskursen wurde häufig von Menschenwürde gesprochen – im Christentum paradigmatisch begründet im Glauben an die Gottesähnlichkeit des Menschen: Als Menschen sind wir im Bild Gottes geschaffen.

Mehr noch: In der Nachkriegszeit hat ein allgemeines Gedankenmodel sich gefestigt, demzufolge die historische Entwicklung die Überlegenheit der liberalen Demokratie und ihren Menschenrechten klar und eindeutig bewiesen habe. Der Zusammenbruch der Sowjetunion wäre dafür der endgültige Beweis: »the End of History«.[5] Die liberale Demokratie, inklusive Menschenrechte und Markwirtschaft, ist die einzige Alternative – und sogleich das erstrebenswerte Ziel aller Völker.

Insofern schien zur Jahrtausendwende das Prinzip Menschenwürde regelrecht unumstößlich zu sein, sowohl politisch als auch juridisch. Doch seit Beginn des Einundzwanzigsten Jahrhunderts hat sich vieles verändert. Krisen und soziopolitische Spannungen gaben autoritären Reaktionen Vorschub: lieber Sicherheit und Tradition als liberale Demokratie und Menschenrechte! Das unilineare und optimistische Gedankenmodel steht unter Druck. Die Geschichte scheint nicht mehr in die erwartete Richtung zu ge-

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[3] Zweiter Satz des ersten Paragraphen: »Sie sind mit Vernunft und Gewissen begabt und sollen einander im Geiste der Brüderlichkeit begegnen«. In der Präambel, erster Satz: »Da die Anerkennung der angeborenen Würde und der gleichen und unveräußerlichen Rechte aller Mitglieder der Gemeinschaft der Menschen die Grundlage von Freiheit, Gerechtigkeit und Frieden in der Welt bildet, […]« (Hervorhebung von G.S.)

[4] Siehe Jürgen Habermas: »Das Konzept der Menschenwürde und die realistische Utopie der Menschenrechte«, *Deutsche Zeitschrift für Philosophie* 3/2010, S. 343–357. Dazu Georg Lohmann und Stefan Gosepath (Hrsg.): *Philosophie der Menschenrechte*, Frankfurt am Main: Suhrkamp 1998. Onora O'Neill: »The dark side of human rights«, *International Affairs* 2/2005, S. 427–439. Außerdem die Beiträge und Diskussionen in *Zeitschrift für Menschenrechte*, (4) 2010, Nr. 1: »Philosophie der Menschenwürde«.

[5] Vgl. den frühen Francis Fukuyama: »The End of History«, *The National Interest* (16), Summer 1989, S. 3–18.

hen.[6] Starke Kräfte wünschen dies auch nicht. Die Welt ist vielfältiger und unsicherer geworden.

Wegen politischer Turbulenz können scheinbar feste Überzeugungen bröckeln. Wir können deshalb nicht ausschließen, dass frühere Mehrheitsentscheidungen durch neue Mehrheitsentscheidungen rückgängig gemacht werden. Deswegen ist eine universale Begründung des rechtlichen und moralischen Schutzes der Menschenwürde eine dringende Frage geworden.

Die Frage nach einer *Begründung* universaler Prinzipien, dabei auch die der Menschenwürde, ist grundsätzlich eine *philosophische* Herausforderung. Welche Philosophie kann heutzutage auf diese Herausforderung die zuverlässigste Antwort geben? Meines Erachtens werden grundlegende normative Geltungsfragen am besten durch eine revidierte Transzendentalpragmatik erörtert und gegen skeptische Gegenargumente verteidigt – wie ich es in den zwei ersten Aufsätzen in *Philosophie der Moderne* dargelegt habe.[7]

Doch, Begründung und Interpretation gehören zusammen. Deshalb geht es hier auch um *sorgfältige Interpretationen* der klassischen Frage: Was beziehungsweise wer ist er Mensch? Denn in der modernen Welt weiß man bereits von zahlreichen Übergänge zwischen Menschen und anderen Lebewesen, außerdem wird das Menschenleben weitgehend von der technologischen Entwicklung beeinflusst und verändert. Was heißt Menschenwürde in einer modernen Welt? Dafür sind *begriffliche und empirische Fragen* zu berücksichtigen, sowohl über das Menschenleben in seiner Vielfalt als auch über die Verhältnisse zwischen Menschen und anderen Lebewesen; und in dieser Hinsicht sind auch die technologischen und biotechnologischen Herausforderungen ernst zu nehmen. Kurzum; wie steht es in diesem modernen Szenario mit der Menschenwürde?

Auf diesem Hintergrund werde ich eine gegliederte Version der Menschenwürde verteidigen,[8] grundsätzlich als die Würde verletzbaren Menschenle-

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[6] Vgl. den späten Francis Fukuyama: *Political Order and Political Decay*, New York: Farrar, Straus, Giroux 2014.

[7] Gunnar Skirbekk: *Philosophie der Moderne*, Weilerswist: Velbrück Wissenschaft 2017, S. 47-68. Zur Begründung der Meinungsfreiheit, eines entscheidenden Menschenrechts, siehe den letzten Aufsatz im selben Buch.

[8] Angesichts der scharfen Trennung zwischen ethischem Anthropozentrismus, etwa bei Gro Harlem Brundtland, und Biozentrismus, etwa bei Arne Næss (»deep ecology« bzw. »ecosophy«), vertrete ich einen mittleren, graduellen Standpunkt. Siehe Gunnar Skirbekk: *Praxeologie der Moderne. Universalität und Kontextualität der diskursiven Vernunft*, Weilerswist: Velbrück Wissenschaft 2002, S. 153–181.

bens, und dann, graduell, auch gegenüber anderen Lebewesen – doch kritisch gegenüber Robotern und technologischen Utopien zukünftiger Supermenschen.

Diese Thematik hat drei Hauptpunkte: (i) die Frage, wie *Menschen*, je nach ihren verschiedenen, moralisch relevanten Eigenschaften und Fähigkeiten, als Diskursteilnehmer einbezogen oder in praktischen Diskursen von anderen Menschen vertreten werden; (ii) die Frage nach der Art und Weise, wie *nicht-menschliche Lebewesen*, die in einem moralisch relevanten Sinne verletzt werden können, in praktischen Diskursen graduell berücksichtigt werden dürfen; (iii) die Frage nach dem Verhältnis zwischen Menschen und *Robotern* beziehungsweise *biotechnologisch veränderten Menschen*[9] *und technologisch veränderten Lebensbedingungen.*[10]

Vorbemerkungen zur Inklusionsfrage

In der Moderne stehen die Menschen nun vor folgenden Fragen: Sind wir nur Menschen gegenüber ethisch verantwortlich oder auch gegenüber uns nahestehenden Tieren? Wie verhält es sich mit den *hard cases* in der Biomedizin? Wie sollen wir uns zu eugenetischer Biotechnologie und *human enhancement* verhalten und wie zu menschenähnlichen Robotern? In der transzendentalpragmatischen *Diskursethik*, die eine universalistische Moralphilosophie ist, sollen grundsätzlich alle Stimmen gehört und alle Betroffene berücksichtigt werden. Gerade deshalb darf keine Exklusion stattfinden. Da aber Diskursfähigkeit unter Menschen eine in unterschiedlichem Maße realisierte Eigenschaft ist, umfasst die Inklusionsproblematik nicht nur die Einbeziehung diskursfähiger Personen, als Teilnehmer im Diskurs, sondern auch die Berücksichtigung derer, die nicht diskursfähig sind und die deshalb von diskursfähigen Personen vertreten werden. Das gilt unter anderem für die schwierigen Fälle der Biomedizin, die sogenannten *hard cases*. Ihre Würde und ihre Interessen werden von anderen berücksichtigt. Diejenigen, die diskussionsfähig sind, vertreten sie *advokatorisch*.

In diesem Sinne sind sie indirekt einbezogen, je nach ihren verschiedenen moralisch relevanten Eigenschaften und Zuständen. Als Diskussionsteilnehmer/innen sind sie aber, wegen des Standes ihrer Eigenschaften und Fähig-

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[9] Befürwortet u.a. von Raymond Kurzweil. Siehe unten den Abschnitt »Naturwüchsige Menschen versus *Transhumans*«.

[10] Unter anderem durch Digitalisierung, einschließlich Veränderungen im Arbeitsleben und sozio-politischen Spannungen.

keiten, ausgeschlossen. Aus diesem Grund, wegen des unvermeidlichen Unterschieds zwischen diskursiver Teilnahme und advokatorischer Vertretung, und wegen des Bedarfs einer angemessenen Vertretung je nach den verschiedenen Zuständen dürfen wir in jedem Fall die faktischen, moralisch relevanten Eigenschaften und Fähigkeiten berücksichtigen.[11] Dies ist umso wichtiger, als sich in diesen Fällen Konflikte ergeben können. Es geht unter anderem um Ressourcenverteilungen (im weitesten Sinne).

Hier begegnen wir nicht nur Konflikten betreffs der advokatorischen Vertretung der verschiedenen Mitglieder des *homo sapiens*, sondern auch zwischen diesen und verschiedenen nicht-menschlichen Lebewesen. Die Lebensbedingungen der Tiere in einer kostenorientierten Fleischindustrie, Experimente mit Tieren wie auch die ständige Beschränkung der Lebensräume mancher Gattungen – all dies sind Konfliktgebiete zwischen Menschen und anderen Lebewesen, wo entgegengesetzte moralische und zum Teil auch juridische Ansichten vorliegen. Für eine zuverlässige Abwägung sind unter anderem wissenschaftlich fundierte Kenntnisse der Eigenschaften und Bedürfnisse der verschiedenen menschlichen und nicht- menschlichen Lebewesen vonnöten.

Letztlich besteht hier das Problem, dass nicht-menschliche Lebewesen in einigen Fällen höher entwickelte Eigenschaften und Fähigkeiten aufweisen als einige Mitglieder der Menschengattung. Wenn wir das moralische Prinzip »Ähnliches soll ähnlich behandelt werden« zugrunde legen, sollten wir in solchen Fällen den Interessen von Tieren gegenüber den Interessen einiger Menschen Priorität zuerkennen.[12] Diese Schlussfolgerung mag provozierend sein. Wenn aber die faktischen, individuellen Eigenschaften und Fähigkeiten ähnlich sind, wie kann man dann die Behauptung verteidigen, es gäbe einen moralischen Unterschied zwischen diesen Menschen und Tieren?

Mensch versus Person

Diejenigen, die wir in Diskussionen als Mitdiskutierende einbeziehen sollen, sind alle – der Transzendentalpragmatik gemäß, aus pragmatischen

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[11] Solche moralisch relevante Eigenschaften und Fähigkeiten sind nicht *facta bruta*, die einfach »vorliegen«; sie bedürfen häufig diskursiver Interpretationen. Außerdem sind diese Eigenschaften in einigen Fällen *relationaler* Art, etwa in den Beziehungen zwischen Eltern und Kindern.

[12] Vgl. z.B. Onora O'Neill: »Scope: Agents and Subjects: Who Counts?«, in: dies., *Toward Justice and Virtue*, Cambridge: Cambridge University Press 1996, S. 91–121. Sie verweist auf »capacities, capabilities and vulnerabilities«.

Selbstbezüglichkeitsgründen – grundsätzlich diskussionsfähige Lebewesen. Das sind alle die, die ich hier, in diesem Sinne, *Personen* nenne.

In unserer Welt sind alle Personen (in diesem normativen Sinne) auch *Menschen*. Aber die Zugehörigkeit zu einer bestimmten biologischen Gattung, hier *homo sapiens*, wird von der Transzendentalpragmatik nicht gefordert. In diesem Sinne ist die Transzendentalpragmatik »personenbezogen« und nicht exklusiv »menschenbezogen«.[13]

Falls wir eines Tages Marsbewohnern begegnen, die genetisch keine Menschen, aber in allen relevanten und entscheidenden Hinsichten uns ähnlich sind, dann sollten wir (aus pragmatischen Selbstbezüglichkeitsgründen) diese nicht-menschlichen Lebewesen als Personen anerkennen und damit als gleichberechtigte Diskussionsteilnehmer in unsere Diskussionen einbeziehen.

Ich möchte hier auf einige begriffliche Distinktionen hinweisen: Auf der analytischen Ebene ist es nützlich zwischen »moralisch Diskutierenden« (*moral discussants*), »moralisch Handelnden« (*moral agents*) und »moralischen Lebewesen« (*moral subjects*) zu unterscheiden.[14] Die Letzter-

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[13] Vgl. Karl-Otto Apel: »The Ecological Crisis as a Problem for Discourse Ethics«, in: Audun Øfsti (Hrsg.), *Ecology and Ethics*, Trondheim: Tapir Trykk, S. 219–257. Später auf Deutsch in Dietrich Böhler (Hrsg.), *Ethik für die Zukunft. Im Diskurs mit Hans Jonas*, München: C.H. Beck 1994; Zitat hier von Seite 256 der deutschen Ausgabe: »Nach den vorhin gemachten Andeutungen über eine mögliche analogische Ausdehnung unserer Pflichten zur advokatorischen Interessenvertretung auf die *Interessen nichtmenschlicher Wesen* erhebt sich die Frage: Wer gehört zu den möglichen Mitgliedern der ursprünglichen Argumentationsgemeinschaft, denen in einem strikten Sinne gleiche Rechte zukommen – in dem Sinne nämlich, dass sie a priori nicht als Objekte, sondern als mögliche *Kosubjekte* in jedem möglichen Diskurs über jeden möglichen Gegenstand angesehen werden müssen? Zumindest zwei alternative Explikationen scheinen hier einschlägig: die eine wäre orientiert an der *Zugehörigkeit zur Spezies Mensch* im biologischen, d. h. genetischen Sinne; die andere wäre orientiert an der *pragmatischen Argumentationskompetenz*. Ich denke, dass eine korrekte Entfaltung der Implikationen der transzendentalpragmatischen Begründung auf der ersten Ebene nur mit der zweiten Alternative vereinbar ist. Doch dies bedeutet, dass meine Rede von ›Menschen‹ in den vorhergehenden Abschnitten ungenau und provisorisch war; denn wir müssten *Marsbewohner*, die fähig wären, mit uns in einen argumentativen Diskurs zu treten, als Kosubjekte im ursprünglichen Sinne behandeln.« Im englischen Originaltext gibt es hier die Fußnote 48 mit Hinweis auf meinen Beitrag im gleichen Band, S. 91–107: »›The Beauty and the Beast‹. Eco-ethical reflections on the borderline between humankind and beasthood«.

[14] Siehe Gunnar Skirbekk: »Ethischer Gradualismus, jenseits von Anthropozentrismus und Biozentrismus?«, *Deutsche Zeitschrift für Philosophie* (43), 1995, S. 419–434 (besonders S. 427).

wähnten sind die Verletzbaren in einem moralisch relevanten Sinne.[15] Verschiedene Lebewesen haben ihren je eigenen moralischen Status in dem Sinne, dass einige als moralisch Diskutierende anerkannt werden können, während andere nur als *moral subjects* anerkannt werden können. Die ersteren sind als Mitdiskutierende (und als *moral subject*) einzubeziehen; die Letzteren sind nur durch advokatorische Vertretung einzubeziehen, nämlich als verletzbare Lebewesen in einem moralisch relevanten Sinne.[16]

Wenn man an dem Prinzip »Ähnliches soll in ähnlicher Weise behandelt werden« festhält, und wenn man die verschiedenen Fälle von Menschen und Tieren reflexiv durchspielt,[17] wird sich erstens zeigen, dass die moralische Welt aus Konsistenzgründen über die Grenzen des *homo sapiens* in den Bereich anderer empfindlicher Lebewesen ausgedehnt werden muss, und zweitens, dass sich auf der Grundlage von individuell gegebenen, moralisch relevanten Eigenschaften keine scharfe ethische Grenze zwischen Menschen und Tieren aufrechterhalten lässt.[18] Dies gilt *unabhängig davon*, welche individuellen Eigenschaften als »moralisch signifikant« gewählt werden (wie etwa Bewusstsein, Intention, Fähigkeit zu verantwortlichem Handeln, etc.). In dieser Hinsicht bietet sich ein *ethischer* Gradualismus zwischen Menschen und Tieren an und nicht nur ein empirischer Gradualismus.[19]

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[15] Außerdem gibt es Personen, die zwar gewisse Formen von Dialog führen können, die aber nicht fähig sind, Argumentationen zu führen; deshalb wird ebenfalls eine (graduelle!) Distinktion zwischen Diskussionsfähigen und Dialogfähigen benötigt.

[16] Man muss *a moral subject* sein, um *a moral discussant* zu sein, also um Teilnehmer einer praktischen Diskussion sein zu können. Jeder *moral discussant* ist a *moral subject*, aber nicht jedes moral subject ist a moral discussant (oder a *moral agent*). Moralisch relevante Handlungen umfassen sowohl kommunikative als auch instrumentelle (zweckrationale) Handlungen.

[17] Vgl. die Diskussion der verschiedenen Beispiele in Gunnar Skirbekk: »Ethischer Gradualismus und Diskursethik«, in: ders., *Herausforderungen der Moderne aus wissenschaftsphilosophischer Sicht*, Berlin: Logos 2012, S. 57–72.

[18] Für relationale Eigenschaften gilt dieses Prinzip nicht ohne Anpassung; man hat z.B. besondere Verpflichtungen den eigenen Kindern gegenüber.

[19] *Theologisch* kann man eine ethische Grenze zwischen Menschen und Tieren verteidigen. (Zum Beispiel mit dem Argument, dass Gott allen Menschen, und nur den Menschen, eine ewige Seele gegeben hat.) Doch heutzutage, in pluralistischen Gesellschaften, gibt es keinen Konsensus über solchen theologischen Fragen, unter Monotheisten auch nicht. (Dazu existiert das Problem des Bösen: Wenn Gott allen Menschen eine ewige Seele geben kann, warum hat er nicht das irdische Leben für die *hard cases* der Menschheit verbessern können?)

In realen und ernsthaften Diskussionen berücksichtigt man vorgelegte Argumente hinsichtlich ihrer Geltungsansprüche und steht den anderen gegenwärtigen Diskussionsteilnehmern grundsätzlich in einem Verhältnis wechselseitiger, gleichberechtigter Anerkennung gegenüber. Als Argumentierender ist man, aus pragmatischen Selbstbezüglichkeitsgründen, offen für Argumente und bemüht sich um noch bessere Argumente, prinzipiell um alle möglichen für die Sache relevanten Argumente. Aus ähnlichen Gründen ist man auch prinzipiell für alle möglichen Mitdiskutierenden offen und erkennt sie als Ko-Subjekte an, sowohl wegen ihrer möglichen Beiträge zur Diskussion als auch wegen ihrer möglichen Betroffenheit.[20] Aus pragmatischen Selbstbezüglichkeitsgründen gibt es deswegen ein *dynamisches* Element, ein Überschreiten: für bessere Gründe (und gegen weniger gute Gründe) und für die angemessenere Einbeziehung möglicher Mitdiskutierender und möglicher Betroffener.[21]

Hier verfolge ich nicht primär die Geltungsfrage, sondern der *Inklusions- und Exklusionsfrage*. Der Punkt ist der folgende: Bezüglich dieser Frage gibt es einen Unterschied zwischen der Ebene der faktischen und möglichen moralisch relevanten Eigenschaften eines *Individuums* und der Ebene der moralisch relevanten Eigenschaften einer *Gattung*. Dementsprechend dürfen wir mit zwei verschiedenen Einbeziehungs- und Potentialitätsbegriffen arbeiten.

Einbeziehung und Menschenwürde

Wie bereits erwähnt sollten alle möglichen Mitdiskutierende und Betroffene einbezogen werden, gemäß ihrem je unterschiedlichen normativen Status. Aber einbezogen in welchem Sinne? Ich werde diese Fragestellungen einige Schritte weiter verfolgen.

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[20] Letzteres verweist auf ihre doppelte Rolle als *moral discussants* und als *moral subjects*: Erstens sind Personen als Mitdiskutierende prinzipiell in die Diskussion einzubeziehen, zweitens sind sie als Lebewesen, die in einem moralisch relevanten Sinn verletzt werden können, einzubeziehen.

[21] Insofern ein *Meliorismus* (siehe den zweiten Aufsatz des Buches *Philosophie der Moderne*). Ob oder in welchem Sinne dieses pragmatische Transzendieren auch die Idee eines idealen Ziels – einer idealen Kommunikationsgemeinschaft oder eines finalen Konsenses – erfordert, ist eine andere Frage. Siehe die zwei ersten Aufsätze dieses Buches. Auch Harald Grimen: »Consensus and Normative Validity «, *Inquiry*, 40, 1997: S. 47–61, und Albrecht Wellmer: *Ethik und Dialog*, Frankfurt am Main: Suhrkamp 1986, S. 51ff.

(a) Äußere Hindernisse für jetzt lebende Personen

Prinzipiell sollten alle jetzt lebenden Personen einbezogen werden, was aber wegen einer Vielzahl praktischer Probleme nicht möglich ist, auch wenn technologische, institutionelle und ökonomische Ressourcen optimal mobilisiert würden.

Einige Diskussionen berühren aber direkt und unmittelbar nur eine begrenzte Anzahl von Betroffenen, und die diskutierten Geltungsfragen können in solchen Fällen von einer begrenzten Auswahl von Experten und Laien diskutiert und tentativ entschieden werden. Doch sollten in keinem Fall betroffene Personen oder Gruppen von Personen aktiv ausgeschlossen werden. Außerdem sollte die Fehlbarkeit aller realen Diskussionen und diskursiv erreichten Auffassungen erkannt und anerkannt werden. Kurzum, man darf mögliche Verbesserungen der jeweiligen Diskussionssituationen nicht verhindern, sondern, wenn möglich, verwirklichen. Insofern stehen wir praktisch gesehen vor der Sisyphus-Aufgabe einer ständigen Anstrengung, konkrete äußere Hindernisse zu beseitigen, und diejenigen, die aus praktischen Gründen nicht teilnehmen können, sollten wir – so gut wie möglich – advokatorisch vertreten.

(b) Beschränkung wegen (fehlender) individueller Fähigkeiten

Einige Hindernisse für die Einbeziehung liegen aber primär in den Individuen selber. Weder sind alle im moralischen Sinne verletzbaren Lebewesen (*moral subjects*) Akteure (*moral agents*), noch sind sie sprach und gesprächsfähig (das heißt imstande verbal zu kommunizieren), noch diskussionsfähig (*moral discussants*). Dementsprechend sollte die advokatorische Vertretung variieren, je nach den individuellen Bedürfnissen und Fähigkeiten.

Man vertritt in diesen Fällen nicht *Personen* in einem starken Sinne, das heißt *moral subjects*, die zugleich *moral agents* und *moral discussants* sind, sondern verschiedenartige Lebewesen (*moral subjects*), die entweder permanent oder temporär Fähigkeitsbeschränkungen unterliegen, weshalb die Vertretung in unterschiedlicher Weise graduell und paternalistisch sein muss.

In diesem Bereich begegnen wir der Frage des normativen Verhältnisses zwischen Menschen und Tieren, einer Frage, die eine reflexive und beispielorientierte Diskussion erforderlich macht.[22] Doch, wie schon er-

[22] Für eine ausführlichere Diskussion siehe erneut Gunnar Skirbekk: »Ethischer Gradualismus und Diskursethik«, in ders., *Herausforderungen der Moderne aus wissenschaftsphilosophischer Sicht*, Berlin: Logos 2012, S. 57–72.

wähnt, unabhängig davon, was als moralisch relevante Eigenschaften oder Fähigkeiten angesehen wird, scheint folgende Konklusion unabweisbar zu sein: Auf der Grundlage *aktueller, individueller, moralisch relevanter Eigenschaften oder Fähigkeiten* lässt sich ein klarer und scharfer Unterschied zwischen Menschen und Tieren nicht verteidigen. Entweder werden einige Mitglieder des *homo sapiens* ausgeschlossen oder einige nicht-menschliche Lebewesen werden einbezogen. Dies könnte als *positiv* beurteilt werden: als eine *Erweiterung* der moralischen Welt. Diese Konklusion bedeutet aber gleichzeitig eine Herausforderung bezüglich der Idee einer *exklusiven Würde*, für alle Menschen und nur für Menschen.

Vor diesem Hintergrund werde ich auf einige Sonderfälle unter Mitgliedern der menschlichen Gattung eingehen, nämlich auf diejenigen Menschen, (i) die *nicht länger* Personen (im angegebenen starken Sinne) sind, (ii) die es *noch nicht* sind und (iii) die es *nie werden können.*

(i) Wegen seiner Sterblichkeit und Verletzbarkeit ist für jeden Menschen mit einem biologischen Körper der Status als Person (in genannten Sinne) eine temporäre und prekäre Sache. Zufällige Schäden und terminale Lebensnotwendigkeiten verursachen zuerst eine Schwächung und am Ende einen Verlust des Personenstatus. Mitglieder der Menschengattung, die *nicht länger* Personen im angegebenen Sinne sind, sollten dennoch auf verschiedene Weise advokatorisch vertreten werden, in modernen Staaten zum Beispiel durch Wohlfahrtspolitik und Gesundheitswesen. »Wir«, die an solchen advokatorischen Diskussionen und Entscheidungen teilnehmen, können uns mit diesen Menschen identifizieren in dem Sinne, dass »wir« auch verletzbar und sterblich sind. Unsere Maßnahmen sind aber paternalistisch in dem Sinne, dass diese Betroffenen nicht selber Mitdiskutierende sind und sein können.

(ii) Menschliche Individuen, die *noch nicht* Personen (in zureichendem Grad, im angegebenen Sinne) geworden sind – von Föten und Neugeborenen bis zu heranwachsenden Kindern auf verschiedenen Entwicklungsstufen – können ebenfalls nur advokatorisch einbezoge und vertreten werden, wenngleich graduell angepasst an den jeweiligen Entwicklungsstand. Wir, die diskutieren und entscheiden, waren auch einmal wie sie; und somit handeln wir gemäß unserer kulturell beeinflussten Erfahrungen und bestmöglich etablierten Einsichten ihnen gegenüber, anfangs paternalistisch und asymmetrisch, am Ende des Reifungsprozesses aber symmetrisch.

(iii) Für Menschen, die schon früh so stark geschädigt worden sind, dass sie *nie* Personen (in zureichendem Grad, im angegebenen Sinne) *werden können*, gibt es auch eine advokatorische Vertretung. Auch in solchen Fällen können »wir«

uns mit ihnen identifizieren, weshalb man sagt: »So etwas könnte auch uns passiert sein!« Für uns als Gattungswesen stimmt das, nicht aber für uns als denkende Personen, nicht in pragmatischer Sicht. Wir, die diskutieren und entscheiden, gehören notwendigerweise zu den Befähigten. Insofern ist die kontrafaktische Behauptung in diesen Fällen problematisch: »Ich könnte auch als schwer hirngeschädigt geboren sein«. Korrekt, aber nur als menschliches Gattungswesen, nicht als das Individuum, als die Person, die dies sagt oder denkt.[23]

Wenn man über solche Hindernisse und Beschränkungen redet, geht es natürlich um individuell unterschiedliche und grundsätzlich graduelle Fälle. Außerdem darf man nicht vergessen, dass wir manchmal behinderte Individuen als sympathischer und menschlicher erleben als manche von denen, die medizinisch gesehen normal und gesund sind.[24] Manchmal haben wir wohl auch stärkere moralische Empfindungen für Verletzte und Verletzbare als für diejenige, die perfekt und selbstgenügsam sind.

(c) Gattungseigenschaften versus individuelle Eigenschaften

Darüber hinaus gibt es die Distinktion zwischen dem, was für ein Individuum möglich ist, und dem, was für eine Gattung möglich ist. Ein schwer hirngeschädigtes Kind kann als Individuum nie eine Person im oben angegebenen Sinne werden, aber die Menschengattung, der das Kind angehört, hat diese Möglichkeit. Man könnte sagen: Als Mitglied der Menschengattung hatte auch dieses hirngeschädigte Kind die Möglichkeit, eine Person im angegebenen Sinne zu sein. Auf diesen Umstand stützt sich das *Potentialitätsargument zweiter Stufe* – also Potentialitätsargumente, die gattungsbezogen sind. Aufgrund dieses Umstandes ist es ein tragisches Unglück, wenn jemand eine schwere pränatale Gehirnschädigung erleidet; für Affenkinder ist aber die Unmöglichkeit, eine Person im angegebenen Sinne zu werden, das Normale und Natürliche und eben kein Unglück.

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[23] »Auch ich könnte ein Zombie sein!« Ja, und zwar in dem Sinne, dass »Ich« *als Lebewesen* sehr wohl ein Zombie sein könnte und werden kann, aber »Ich« *als Denkender* nicht als ein Zombie geboren worden sein kann. Können wir denn auch sagen: »Ich könne ein Affe sein«? Für reinkarnationsgläubige Buddhisten ist das vielleicht möglich – aber mit welchem Ich-Begriff? Jedenfalls können Menschen psychologisch sich auch mit Tieren, nicht nur mit schwergeschädigten Menschen, identifizieren – nicht nur durch spontanes Mitgefühl mit leidenden Tieren. Wie stark und wie weit? Das ist vor allem eine empirische Frage.

[24] Hinsichtlich der Möglichkeit und positiven Bedeutung einer Identifikation (und eines *role taking*) mit mental behinderten Menschen vgl. den Roman von Tarjei Vesaas, *Die Vögel* (*Fuglane*), 1961.

Man kann diesen Gedanken weiter variieren: Entsprechend ihrer Gattungszugehörigkeit können Pferde sehen, nicht aber fliegen, Adler können sowohl sehen als auch fliegen, während Maulwürfe weder fliegen noch gut sehen können. Ein nicht-sehendes Pferd ist in diesem Sinne »ein Unglück«. Auch ein nicht-fliegender (oder nicht flugfähiger) Adler. Aber als Lebewesen mit biologischem Körper wird jeder Adler eines Tages ein nicht-fliegender Adler sein, entweder wegen seiner Verletzlichkeit oder wegen seiner Sterblichkeit. Einige Adler sind aber früh im Leben schwer behindert und können deshalb niemals ein fliegender Adler werden. Ein Unglück? Etwas zu bedauern? Wenn es um eine von Menschen verursachte Behinderung geht, ist die Antwort wohl bejahend. (Wir sollten nicht Tiere verletzen.) Handelt es sich aber um eine naturverursachte Behinderung, verhält es sich anders. Und naturgeschichtlich gesehen gehört es eben zum Gattungsbegriff, dass einige Individuen ab und zu ihre Gattungsmöglichkeiten verfehlen, zum Beispiel wegen entwicklungsnotwendiger Mutationen. Stärker noch: Ohne zufällige Mutationen, und dadurch auch mögliche Schädigungen, hätten die verschiedenen Gattungen nicht entstehen können. Die Möglichkeit neuer und höherer Gattungen – wie Adler oder Menschen – ist in diesem entwicklungstheoretischen Sinne durch mögliche Schädigungen für einige Individuen mitbestimmt.[25]

Nun gibt es zwei Gattungsbegriffe: einen aristotelischen Begriff, an permanenten Essenzen orientiert, und einen entwicklungstheoretischen Begriff, demzufolge sich die Gattungen entwickelt haben und im Prinzip sich noch weiter entwickeln werden. Potentialitätsargumente zweiter Stufe sind unmittelbar plausibler im Rahmen der aristotelischen Auffassung als im Rahmen der entwicklungstheoretischen. In einer aristotelischen (oder begriffsrealistischen) Perspektive können wir sagen, dass jedes Individuum an derselben Gattungsessenz teilnimmt. Wenn wir in diesem Sinne die Frage nach dem moralischen Status eines Individuums mit dem der Gattungsessenz verbinden, können wir auch sagen, dass alle Individuen einer Gattung grundsätzlich denselben moralischen Status besitzen. Alle Individuen einer Gattung haben grundsätzlich dieselbe Möglichkeit qua Gattungswesen, dasselbe gattungsspezifische *Telos*. Einige Individuen sind jedoch, leider, faktisch behindert; sie können diese Möglichkeiten nicht verwirklichen. Diese Behinderung reduziert aber nicht ihren grundsätzlichen normativen Status – weil sie ihrer Gattung angehören.

Lässt sich aber eine solche aristotelische, essenzbasierte Grundauffassung heute noch verteidigen, zum Beispiel gegenüber einer darwinistischen

[25] In diesem Sinne gehört es, paradoxal gesagt, zum Gattungsbegriff, dass nicht alle Individuen einer Gattung ihre Gattungsmöglichkeiten verwirklichen können.

Entwicklungstheorie? Meines Erachtens ist eine essenzbezogene Gattungsauffassung als normatives Prinzip ernst zu nehmen. Wenn man die Intuition hat, dass alle Menschen denselben grundlegenden Wert besitzen, dann ist es naheliegend, die Frage zu stellen, ob wir diesen gemeinsamen Wert als gattungsbezogen oder als eigenschaftsbezogen auffassen dürfen.[26]

Noch ein Punkt, der sich auf die Frage der normativen Bedeutung von Gattungseigenschaften bezieht: In einer entwicklungstheoretischen Perspektive wird die *Zufälligkeit* existierender Gattungen, auch die des Menschen, häufig diskutiert. Hier gibt es Fürsprecher für *Kontingenzen*. Die Entwicklung könnte anders gewesen sein, die Gegenwart könnte anders sein. Es könnte zum Beispiel so sein, dass die Neandertaler noch mit uns leben würden. Dann folgt die normative Frage: Wenn es so wäre, würden dann solche alternativen Sachverhalte unsere normativen Auffassungen des Menschseins beeinflussen?

Naturwüchsige Menschen versus *Transhumans*

Mit der Entwicklung der Biotechnologie öffnet sich die Möglichkeit neuer »*Kontingenzen*«, nämlich die Möglichkeit, durch technologische und biotechnologische Fortschritte *radikale Änderungen des biologischen Menschseins* zu fördern. Vieles was früher als *science fiction* galt, ist heute schon verwirklicht, und zukünftig werden wir wahrscheinlich, wegen der technologischen Entwicklung, noch mehr verändern können. Vor diesem Hintergrund sind verschiedene Versionen eines technologieoptimistischen »Transhumanismus« laut geworden, demzufolge die menschlichen Lebens-

[26] Die Transzendentalpragmatik denkt grundsätzlich anders als die Entwicklungstheorie; sie reflektiert von einem Hier und Jetzt aus: Wir, die denkend hier und jetzt sind, unter anderem mit unseren verletzbaren und sterblichen Körpern, sind der Ausgangspunkt. Diese selbstbezügliche Reflexion, und auch die grundlegende Sozialisierung durch *role taking*, haben das Hier und Jetzt als ihren Ausgangspunkt. Insoweit ist ihre Gedankenrichtung anders als die der Entwicklungstheorie; es wird pragmatisch selbstbezüglich gedacht, vom Hier und Jetzt, vom »höchsten Punkt« aus. Doch gerade mit Bezug auf das *role taking* gibt es Ähnlichkeiten und Verwandtschaften zwischen dem entwicklungstheoretischen Denken und der Transzendentalpragmatik bzw. Diskursethik. Auf diesem Punkt, via »Einstellungsübernahme«, »*taking the attitude of the other*«, verweist Habermas (in: *Theorie des kommunikativen Handelns*, II, Frankfurt am Main: Suhrkamp 1981, S. 21) auf Georg Herbert Mead, der diese Begriffe entwicklungstheoretisch entfaltet hat. Dazu Habermas (ebd., S. 24): »Dabei sind diejenigen Interaktionsteilnehmer im Vorteil, die lernen, nicht nur die Gesten eines anderen im Lichte der eigenen instinktiv verankerten Reaktionen zu deuten, sondern schon die Bedeutung der eigenen Gesten im Lichte der zu erwartenden Reaktionen des anderen zu verstehen.«

bedingungen zukünftig durch die technologische und bio-technologische Entwicklung radikal verbessert und verändert werden können und sollten.[27] Es geht grundsätzlich um eine radikale Verlängerung der Lebenszeit und um ein radikal intelligenteres und in vielerlei Hinsicht perfekteres Menschsein. Solche Ideen kursieren nicht nur im Silicon Valley, sie werden auch andernorts von einflussreichen Personen aktiv vertreten und unterstützt.[28] Unter einigen, beispielsweise Raymond Kurzweil, der auf der einen Seite erfolgreich mit neuen Technologien arbeitet und auf der anderen Seite eine Art technologiebasierter Erlösung verspricht, findet sich sogar eine bemerkenswerte Mischung von technologischem Optimismus und quasi-religiösen Zukunftsvisionen.[29]

Charakteristisch für einige dieser Technologieoptimisten, die das menschliche Leben fundamental verändern und die Lebenszeit radikal verlängern möchten (idealiter bis der Tod als eine freiwillige Wahl erscheint), ist ein relativer Mangel an sozio-politischen Begriffen – kurz gesagt an Begriffen für Macht und Konflikt und für sozio-politische Institutionen und sozialis-

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[27] Vgl. zum Beispiel die zwei Philosophen Nick Bostrom und David Pearce, die 1998 die *World Transhumanist Association* gegründet haben.

[28] Etwa bei den Gründern von *Google*, Larry Page und Sergey Brin, die die biotechnologische Gesellschaft *California Life Company* (Calico) mit dem Hauptziel, Alterungsprozesse zu bremsen und zu verhindern, gegründet haben; bei Priscilla Chan und Mark Zuckerberg, dem Gründer von *Facebook*, die qua Unterstützung des *Breakthrough* Preises biotechnologische Forschung für Lebensverlängerung mitfinanzieren; bei Paul Allen, Mitgründer von Microsoft, der über das *Allen Institute for Cell Science* Forschung über Alterungskrankheiten fördert; und bei Multimilliardären wie Peter Thiel und Larry Ellison, die radikale Forschungsprojekte unterstützen, die gegen Alterungsprozesse gerichtet sind.

[29] Schon die Titel seiner Bücher weisen darauf hin: *Transcend: Nine Steps to Living Well Forever* (2009), *Fantastic Voyage: Live Long Enough to Live Forever* (2004), *The Age of Spiritual Machines. When Computers Exceed Human Intelligence* (2005). Seine utopische Vision beruht auf dem Glauben an ein dynamisches Zusammenwirken von Genetik (*to reprogram our own biology*), Nanotechnologie (*to manipulate matter at the molecular and atomic scale*) und Robotern (*to create a greater than human non-biological intelligence*). Vgl. auch *The Age of Intelligent Machines* (1990) und *The Singularity Is Near* (2005). Kurzum, es geht um höhere Intelligenz, ein ewiges und gesundes Leben, Überwindung der Sterblichkeit und Verletzbarkeit des Menschseins, Transzendenz und Erlösung hier auf Erden (bzw. auf anderen Planeten) durch Biotechnologie und artifizielle Intelligenz – ein *transhumanism* durch *human enhancement*.

ierende Lernprozesse. Begrifflich operiert man grundsätzlich mit technologischen Herausforderungen und technologischen Lösungen.[30]

Doch auch unter den langelebenden und biotechnologisch fast perfekten Menschen sind Interessenkonflikte denkbar; zum Beispiel im Hinblick auf Übervölkerungsfragen – zugespitzt: wer soll die Erde verlassen, um anderswo zu leben,[31] und wer soll auf der Erde bleiben? Außerdem könnten, falls einige Menschen auf dieser Weise radikal verändert werden und andere nicht, scharfe Spannungen und eine Vielzahl von Konflikten zwischen den biologisch veränderten Menschen und den Naturwüchsigen entstehen. Es gibt darüber hinaus die Möglichkeit, dass die Mächtigen in einer solchen Zukunftsgesellschaft nicht altruistisch und moralisch sind, sondern diverse »Untermenschen« (als nützliche Diener und Arbeiter) biotechnologisch erzeugen würden.[32]

Die Begriffe der radikalen Transhumanisten sind also grundsätzlich technologisch, aber ihren weitgehenden Visionen zufolge würde es in der Zukunft unterschiedlichste sozio-kulturelle, politische und institutionelle Herausforderungen geben. Doch dafür scheinen die radikalen Transhumanisten, wie der genannte Raymond Kurzweil, wenig empfindlich zu sein.

Überdies würde unter den biologisch veränderten Menschen, also in einer Gesellschaft, die überwiegend aus älteren (langelebenden) und grundsätzlich selbstversorgten Personen besteht, etwas Wichtiges für das Menschenleben, wie wir es kennen, *fehlen* – nämlich Empathie durch sozialisierendes *role taking* mit bedürftigen Mitmenschen wie auch mit Kindern.

Nun stellt sich die Frage, welche normative Bedeutung diese biotechnologischen Interventionen, sollten sie jemals durchgeführt werden, für unser Menschenbild, für die Menschenwürde hätten. Wie könnte dadurch unser

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[30] Kritische Gegenargumente sind wohl bekannt: erstens die Gefahr unvorhersehbarer negativer Konsequenzen genetischer und technologischer Interventionen (etwa das Frankensteinmonster und Machtübernahme bei den Robotern) und zweitens das aktive Züchten von nützlichen »Dienern« (z. B. perfekten Soldaten) oder gefährlichen Mikroorganismen (für biologische Kriegsführung bzw. Terrorismus).

[31] Ideen eines solchen zukünftigen Exodus werden ja unter Transhumanisten diskutiert.

[32] Ein anderes denkbares Szenario bestünde darin, dass ein autoritäres Regime seine Gegner zwänge, unter ständiger Qual »ewig« zu existieren – eine Art Hölle auf Erden. Vgl. dazu den Theologen Atle Ottesen Søvik: »Vitenskapens Satan og helvetet« (Satan der Wissenschaft und die Hölle), *Morgenbladet*, 5. Mai 2017.

Menschenbild beeinflusst werden? Das ist hier die Frage. Ich werde kurz auf die folgenden mehr oder weniger realistischen Szenarien hinweisen:

Wir haben neuerdings die Möglichkeit mit CRISPR-Methoden[33] in einen individuellen Körper zu intervenieren, gegen spezifische Krankheiten und zur weiteren Manipulation des Erbmaterials. Dadurch werden künftige Generationen beeinflusst und die Konsequenzen sind schwer zu übersehen. Außerdem könnten diese biotechnologischen Möglichkeiten auch, im Sinne positiver Eugenik, für die Verwirklichung eines idealen Menschenbildes benutzt werden und nicht nur zur Verhinderung von Defekten und Krankheiten.[34] Daneben existiert bereits die Frage des Klonens, auch von Menschen, als reales Problem; weiterhin die Frage einer möglichen Entwicklung gattungsüberschreitender Inseminationstechniken durch genetische Neutralisierung der gattungsspezifischen Abstoßungsmechanismen. Gelänge dies, würden zum Beispiel Schimpansenmütter implantierte Menschenkinder gebären können und Menschenmütter implantierte Schimpansenkinder. Außerdem wird die Weiterentwicklung der biotechnologischen Möglichkeiten einer Mischung von Organismen durch das Verschmelzen von frühen Embryonen diskutiert, wie etwa beim sogenannten chimärischen Ziegenschaf: Werden wir eines Tages sozusagen Zentauren kreieren können oder Schimpansen und Löwen mit einem genetisch gesehen menschlichen Gehirn? Wo sind hier die Grenzen des biotechnologisch Machbaren?[35]

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[33] CRISPR; Verkürzung für *Clustered regularly interspaced short palindromic repeats*.

[34] In dieser Hinsicht könnten sich privatrechtliche Verfahren und Marktkräfte als entscheidend erweisen. Denkbar ist zum Beispiel, dass Eltern sich wünschen könnten, qua Genmodifikation idealere Kinder zu bekommen, und dass Kinder, die sich nicht ideal genug fühlen, ihre Eltern wegen mangelnder Genmodifikation moralisch tadeln oder gar rechtlich beim Gericht verklagen könnten. Dazu kommt der Wettbewerb zwischen den Weltregionen: Würde eine Marktökonomie mit einer aktiven Biologiepolitik (genetisch und pharmazeutisch) sich als konkurrenzfähiger erweisen als eine Marktökonomie mit hohen Sozialkosten? Für solche Szenarien siehe Silver Lee: *Remaking Eden: Cloning and Beyond in a Brave New World*, London: Phoenix 1997; revidierte Version: *How Genetic Engineering and Cloning Will Transform the American Family*, New York: Avon Books 1998. Für Argument gegen eine liberale Eugenik vgl. z.B. Jürgen Habermas: *Die Zukunft der menschlichen Natur: Auf dem Weg zu einer liberalen Eugenik?*, Frankfurt am Main: Suhrkamp 2001.

[35] Vgl. Chris Thompson Cussins: »Confessions of a Bioterrorist. Subject Position and Reproductive Technologies«, in: Ann Kaplan und Susan Squir (Hrsg.)., *Playing Dolly. Technological Formations, Fantasies, and Fictions of Assisted Reproduction*, London: Rutgers University Press 1999.

Vor diesem Hintergrund dieser Szenarien dessen, was biotechnologisch machbar ist oder möglicherweise sein wird, werde ich nochmals auf den moralischen Status zukünftiger Generationen hinweisen, also auf die Frage unserer Verantwortung gegenüber Menschen, die noch nicht existieren, die wir aber durch unsere Handlungen mehr oder weniger tiefgehend werden beeinflussen können. Wir beeinflussen sie erstens durch die von uns absichtlich oder unabsichtlich veränderten ökologischen und soziokulturellen Lebensbedingungen, und zweitens durch die von uns durch Auswahl oder biotechnologische Interventionen veränderten Erbanlagen, wie gerade angedeutet.

Was sind die normativen Implikationen? Wie schon erwähnt, wenn man das Prinzip der ähnlichen Behandlung und Bewertung ähnlicher Fälle zugrunde legt und Ähnlichkeit mit normativ signifikanten faktischen Eigenschaften verbindet, dann folgt aus der Verschiedenheit beziehungsweise Gradualität *faktischer* Eigenschaften – unabhängig davon, welche Eigenschaften als »normativ signifikant« zugrunde gelegt werden – auch eine *normative* Verschiedenheit oder Gradualität.

Die Möglichkeit besteht, eine gattungsbasierte normative Auffassung des Menschseins zu verteidigen und dadurch eine gattungsspezifische Menschenwürde, unabhängig von individuellen Eigenschaften und Fähigkeiten.[36] Der Ausgangspunkt der Transzendentalpragmatik ist aber ein anderer: Ihre reflexive und diskursive Tätigkeit umfasst im Prinzip alle Personen (die *de facto* Menschen sind), das heißt: biologisch inkarnierte Personen. Das setzt eine Sozialisierung (ein *role taking*) mit anderen biologisch inkarnierten Personen voraus, um Person im Sinne von praktisch Mitdiskutierenden zu sein: Biologisch inkarniert und zugleich vernünftig genug, um Diskussionen irgendwie folgen zu können, und fehlbar und beschränkt in ihrer Perspektive, um von anderen lernen zu können und der Einsichten anderer zu bedürfen. Weil nicht alle Betroffene Mitdiskutierende in diesem Sinne sein können, und weil viele von ihnen grundsätzlich nur *moral subjects* sind und sein können, bietet sich eine graduell praktizierte advokatorische Vertretung an. Die paradigmatisch partizipatorische Grundauffassung der Diskursethik muss in diesem Sinne modifiziert und ergänzt werden – tentativ durch inhaltliche Argumente und Entscheidungen.

[36] Dazu gibt es theologische und soziologische Überlegungen, die nicht mit individuellen Eigenschaften operieren.

In welchem Sinne gibt es dann, aus pragmatischen Selbstbezüglichkeitsgründen, eine Verpflichtung gegenüber zukünftigen Menschen? Natürlich können zukünftige Personen nicht in unsere Diskussionen als Teilnehmer einbezogen werden. Eine Verpflichtung zu einer diskursiven Einbeziehung kann es hier nicht geben. Doch zukünftige Menschen wie auch andere zukünftige *moral subjects* sind von uns auf verschiedene Weise *betroffen*, in diesem Sinne gibt es Pflichten zur diskursiv aufgeklärten *advokatorischen Vertretung.*[37]

Roboter, *Role taking* und Empathie für verletzbares Leben

Im Folgenden ein Gedankenexperiment, das ein bisschen nach *science fiction* klingen mag, tatsächlich aber werden solche Gedanken schon als technologische Möglichkeiten diskutiert:[38] Man stelle sich Gesprächspartner und Mit-Akteure vor, die keinen biologischen, sondern einen mechanischen Körper haben – etwa Roboter mit Computergehirnen und *artificial intelligence.*

Ich denke hier idealtypisch, und gehe deshalb nicht auf die Frage einer graduellen Biologisierung der Roboter ein, wie sie zum Beispiel in einigen bekannten Filmen dargestellt ist.[39]

Dann ergibt sich die Frage: Sollten sie als Mitdiskutierende einbezogen werden?[40] Wir vermuten, dass sie logisch richtig schließen und damit überwältigende Mengen von Daten korrekt behandeln können und dass sie ähnliche Fälle ähnlich berücksichtigen werden. In diesem bestimmten Sinne könnten wir sagen (*for the sake of the argument*), dass sie eine Fähigkeit für *theoretische* Diskussionen besitzen. (Ich sehe jetzt von der Frage ab, ob ih-

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[37] Unter anderem findet sich hier die vertrackte normative Frage der marktbasierten Diskontierung, nicht nur innerhalb einer Generation bzw. Innerhalb eines individuellen Lebens, sondern *über Generationen hinweg*.

[38] Raymond Kurzweil wurde bereits erwähnt. Früher schrieben dazu u. a. Donna Haraway: »A Manifesto for Cyborgs«, in: dies., *Simians, Cyborgs, and Women. The Reinvention of Nature*, London: Routledge 1991, und Andrew Pickering: *The Mangle of Practice*, Chicago: Chicago University Press 1995.

[39] Gemeint sind Filme mit menschenähnlichen Robotern und genetisch hergestellten »Replika«, etwa *Blade Runner* (1982) und *Ex machina* (2015).

[40] Vgl. »dialogführende« Computer, die ab und zu therapeutisch fungieren!

nen Intentionalität oder sogar Bewusstsein zugeschrieben werden kann oder ob sie als Handelnde angesehen werden können.)

Darauf die nächste Frage: Ist es auch möglich, sie als gleichberechtigte Partner in *praktischen* Diskussionen anzusehen? Zur Antwort: Praktische Diskussionen fordern unter anderem eine Fähigkeit für *role taking*, Rollenwechsel,[41] wodurch sich gegenseitige Solidarität und Empathie entwickeln können.[42] Ohne einen biologischen Körper hat man aber keine Erfahrungen, die direkt oder indirekt mit unserem biologischen Leben zusammenhängen, das heißt alles was mit Geburt, biologischer Verletzbarkeit und Tod, mit Kindheit, Jugend und Alter, mit Sexualität und Reproduktion verbunden ist sowie mit körperbasierten, sozialisierenden Lernprozessen mit anderen Menschen mit (unter anderem) Gesichtern, Händen und Augen. Wie wäre *role taking* möglich ohne diese Erfahrungen, das heißt ohne einen biologischen Körper?[43] Zugespitzt gesagt: Mitdiskutierende in praktischen Diskussionen können nur die sein, die einen biologischen Körper haben. Biologisches Leben ist eine notwendige Bedingung für eine Einbeziehung in praktische Diskussionen. Nicht nur ein biologischer Körper beziehungsweise ein biologisches Leben ist erforderlich, sondern ein Körper, der in entscheidender Hinsicht den unsrigen ähnlich ist. Dieser Punkt mag implikationsreich sein.[44]

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[41] Zur Diskussion über Rollenwechsel (*role taking*) siehe Gunnar Skirbekk: *Praxeologie der Moderne. Universalität und Kontextualität der diskursiven Vernunft*, Weilerswist: Velbrück Wissenschaft 2002, S.170–172.

[42] Wie wäre es auch sonst möglich, eine Sprache zu lernen und eine soziale Identität zu entwickeln – was schließlich auch für eine theoretische Diskussion erforderlich ist? Diese Problematik kann hier nicht weiterverfolgt werden.

[43] Wir sehen uns auch mit einer unangenehmen, zur Zeit noch hypothetischen Frage konfrontiert: Inwieweit würden wir Menschen, mit unseren naturwüchsigen und »unvollkommenen« Körpern (und Gehirnen), dennoch ein zureichend tiefgehendes *role taking* gegenüber Menschen mit genmodifizierten und viel vollkommeneren Körpern (und Gehirnen) leisten können, zuerst hypothetisch zukünftigen Generationen gegenüber und dann möglicherweise gegenüber gegenwärtig lebenden Menschen, die ein radikal »vollkommeneres« Leben führen?

[44] In diesem Sinne könnten wir sagen, dass diese Körperlichkeit und die damit verbundene Sozialisierung sich als eine Bedingung der Möglichkeit der Diskursethik ergeben.

Menschenwürde versus Roboter und *Transhumans*

Wenn man mit individuellen, aktuellen und normativ signifikanten Eigenschaften anfängt, scheint eine normative Gradualität schwer zu vermeiden.[45] Diese Ansicht impliziert eine Erweiterung der moralischen Welt, über die Grenzen der Menschengattung hinaus. Repräsentiert diese Ansicht eine Schwächung des Prinzips Menschenwürde? Aus Sicht der Anthropozentristen vielleicht; aus Sicht eines Gradualisten kaum. Und vergessen wir nicht was in der Praxis schon häufig getan wird, zum Beispiel in der biomedizinischen Profession: In vielen Fällen wird eine normative Gradualität zugrunde gelegt, um nicht zur Untätigkeit verdammt zu sein.[46] Mit einem solchen *praxisbezogenen ethischen Gradualismus* leben wir schon seit langem.

Um den *Kontrast* zu Transhumanismus-Ideen nicht zu verlieren, verweise ich nochmals darauf, dass nur (mehr oder weniger) vernünftige Personen an praktischen Diskussionen teilnehmen können und dass diese Personen qua ihrer Körperlichkeit verletzbar sind und ihre soziale Identität (und dabei ihre soziale Verletzbarkeit) durch Sozialisierung und *role taking* mit anderen biologisch verkörperten Personen erreicht haben. Roboter, »Personen« mit mechanischen Körpern, sind dazu nicht in der Lage.[47] Und die erforderlichen Bio-Körper müssen grundsätzlich wie der menschliche Körper aussehen und funktionieren. Wie weit dies erforderlich ist, ist weitgehend eine empirische Frage – aber normalerweise sind Personen mit Händen und Augen, Ohren, Haut und Gesichtern erforderlich. Einige Mängel können kompensiert werden. Aber grundsätzlich ist dieser körperliche Habitus, mit seiner Verletzbarkeit und Sterblichkeit, eine Bedingung der Möglichkeit für *role taking* und Sozialisierung und dabei für menschliche Identität, Solidarität und Sprachlichkeit. Zugespitzt formuliert: Wenn wir Marsbewohner normativ als »uns gleich« vorstellen, müssten sie »uns ähnlich« sein, nicht nur intellektuell, sondern in gewisser Hinsicht auch körperlich.

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[45] Dies gilt auch für die Transzendentalpragmatik. Wenn man mit einem essenzbezogenen Gattungsbegriff anfängt, kann man eine solche Gradualität überwinden, aber nur mit der Hilfe einer philosophischen Argumentation, die nicht die der Transzendentalpragmatik ist, sondern gattungsbezogen bzw. theologisch.

[46] Zum Beispiel bei Abwägungen über die Verwendung von knappen Ressourcen für terminale Patienten.

[47] Es gibt Filme, die mit der Möglichkeit einer Verliebtheit bzw. Liebe zwischen einem Menschen und einem Roboter (verschiedenen Geschlechts) spielen; man muss aber bedenken, welche Voraussetzungen erforderlich sind, um so etwas wirklich denken zu können.

Kurzum: »Seele ohne Körper taugt nicht« (wegen des Fehlens von *role taking*, Sozialisierung und biokörperlicher Verletzbarkeit). »Seele mit mechanischem Körper« – etwa Roboter mit *artificial intelligence* – taugt auch nicht (und zwar aus ähnlichen Gründen). »Seele mit einem Biokörper« ist notwendig, aber nicht zureichend. Zum Beispiel würde ein genetisches menschliches Gehirn in einem Löwenkörper erhebliche Schwierigkeiten für ein identitätskonstituierendes *role taking* und eine gegenseitige Sozialisierung stellen. Wie Ludwig Wittgenstein sagt: »Wenn ein Löwe sprechen könnte, wir könnten ihn nicht verstehen«.[48]

Role taking erzeugt Reziprozität, Gegenseitigkeit, indem die Perspektive des Anderen angenommen und angeeignet wird. Natürlich gibt es hier mannigfaltige Unterschiede und Herausforderungen in dem Sinne, dass Mann und Frau, Alt und Jung in vieler Hinsicht unterschiedliche Biokörper haben.[49] Doch der allgemeine Punkt bleibt meines Erachtens bestehen – grob gesagt: Ohne menschenähnliche Biokörper, mit den damit verbundenen grundlegenden Erfahrungen, geht es nicht!

Tentativ möchte ich deshalb diese Reflexionen so zusammenfassen: Eine durch *role taking* vermittelte identitätskonstituierende Sozialisierung fordert grundsätzlich einen dem menschlichen Körper vergleichbaren Biokörper.

Die unvermeidliche biokörperliche Inkarnation aller Personen scheint eine gewisse Exklusivität des Menschseins zu implizieren. Eine Explikation der Idee der inkarnierten Person ist in diesem Sinne schon eine Verteidigung der Menschenwürde, vielleicht sogar eine konkretere als jene, die man unter Philosophen zunächst im Sinn hat. Aber dieser »verkörperte« Menschenbegriff liegt wahrscheinlich einer alltäglichen Intuition ganz nahe.

Gegenwärtig ist auf der einen Seite die Zukunft menschlichen Lebens gefährdet durch Bedrohungen technologisch ermöglichter Zerstörungen,[50] auf der anderen Seite gibt es Möglichkeiten technologiebezogener Verbesserungen unserer verletzbaren Lebensschicksale. Wir werden gesünder und leben länger. In vielerlei Hinsicht sind solche Verbesserungen als positiv und wünschenswert anzusehen.

Aber in welchem Ausmaß? Denn wie schon erwähnt, einige Transhumanisten sehen in den letzteren Möglichkeiten sogar eine Grundlage für ständig neue,

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[48] Vgl. Wittgenstein: *Schriften I. Philosophische Untersuchungen*, Frankfurt am Main: Suhrkamp 1969, S. 536.

[49] Entsprechendes gilt für sozio-kulturelle Unterschiede.

[50] Wie z.B. biologische Kriegsführung mit der Anwendung von CRISPR-Technologien.

qualitative Verbesserungen des menschlichen Lebens bis zur *Vollkommenheit*. Durch Technologie und Biotechnologie, Chemie und Psychopharmaka können wir intelligenter und stärker werden, bis zum verwirklichten Supermenschen,[51] der fast unverletzbar und krisenfrei ein langes und gesundes Leben lächelnd durchlebt bis zu einem späten, angepassten und entspannten Tod.[52] Doch inwiefern ist dies unbedingt eine wünschenswerte Utopie?

Wir aktuell lebenden, verletzbaren und durch Krisen geformten Menschen, wie sollten wir mit solchen neuerschaffenen, fast unverletzbaren und krisenlosen Supermenschen umgehen? Was hätten wir mit ihnen gemeinsam? Sicher, einen menschenähnlichen Körper. Aber trotzdem wären diese Supermenschen fast als biokörperliche Roboter anzusehen. Unsere Verletzbarkeit und unsere Krisenerfahrungen, unsere Ängste und schmerzhaften Niederlagen wären für sie etwas Fremdes. Inwiefern könnten wir mit ihnen ein genuines *role taking* erleben? Und auf welche Art wünschen wir mit solchen glatten Supermenschen umzugehen? Wie könnten wir mit ihnen tiefere Gespräche über das Leben führen? Wie könnten wir mit ihnen in unserer Verletzbarkeit verzweifeln und bei ihnen Trost suchen? Noch schärfer gefragt: Wünschen wir selber wirklich, solche Supermenschen zu sein? Oder wäre diese Utopie, wenn sie zu Ende gedacht wird, etwas nicht Wünschenswertes?

Wie kann auf solche Fragen eine wohlbegründete und allgemeingültige Antwort gegeben werden? Gehen wir von einer Auffassung der Menschenwürde aus, die vermutlich von vielen jetzt lebenden, verletzbaren und verkörperten Menschen geteilt wird – nämlich die Ansicht, dass die Menschenwürde irgendwie mit unserer jetzigen, verletzbaren Lebensform, mit gegenseitiger mitleid- und empathieerzeugender Sozialisierung verbunden ist – dann dürften wir dieser scheinbaren Utopie des Supermenschen gegenüber eher skeptisch oder sogar ablehnend eingestellt sein. Schärfer gesagt: Wir wünschen sie, letzten Endes, wohl eigentlich nicht.

Die Transzendentalpragmatik denkt grundsätzlich vom Hier und Jetzt im Dialog. Unsere Auffassung der Menschenwürde wird auch vom Hier und Jetzt bestimmt. In beiden Fällen liegt ein situiertes Denken vor. Daraus folgt eine Zukunftsorientierung, die der von Hans Jonas in entscheidender Hin-

[51] Bei Raymond Kurzweil *Singularity* genannt. Diese tritt ein, wenn unsere intellektuellen Fähigkeiten exponentiell steigen werden.

[52] Dank der Technologie, einschließlich der Pharmazie, würden diese Menschen grundsätzlich autark und narzisstisch, selbstversorgt und selbstgenügsam weiter fortleben können.

sicht ähnlich ist:[53] Menschenwürdiges Leben sollte für die Zukunft verteidigt werden, zweifelhafte Utopien nicht.

Ein menschenwürdiges Leben ist in menschenähnlicher Weise verkörpert und verletzbar; es ist kein roboterhafter Supermensch, keine *Singularity*.[54] In unserer verkörperten Verletzbarkeit sind wir dann auch mit anderen verkörperten Lebewesen vereint, nicht nur weil wir die ökologische Umwelt gemeinsam teilen, sondern auch weil wir mit ihnen in verschiedener Weise zur Identifikation und zum *role taking* fähig sind.

Diese Lebensformen zu schützen und zu pflegen, darin besteht die grundlegende Mitverantwortung für die Zukunft, die zugleich eine Verteidigung einer verkörperten Menschenwürde umfasst.

Post Scriptum

Einbeziehung des Anderen? Ja, erstens als eine Einbeziehung anderer biologisch verkörperter, menschenähnlich verkörperter Personen; zweitens als eine graduelle Einbeziehung aller Menschen, die nicht im strikten Sinne Personen sind; und zudem eine graduelle Einbeziehung aller Lebewesen, die in einem moralisch signifikanten Sinne betroffen sind oder sein können; letztlich als solidarische Sorge für verletzbares Leben schlichthin.

Diese Schlussfolgerung bedeutet nicht eine Verringerung der Menschenwürde und damit eine Reduktion des Ethikbereichs. Im Gegenteil, sie bedeutet sowohl eine Würdigung kommunikationsfähiger, biokörperlicher Personen als auch eine würdigende Einbeziehung empfindungsfähiger Menschen und darüber hinaus eine graduelle Einbeziehung anderer empfindungsfähiger Lebewesen in das Reich der »moralischen Subjekte« – alles in allem, eine *Erweiterung* des moralischen Universums.[55]

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[53] Vgl. Hans Jonas: *Das Prinzip Verantwortung*, Frankfurt am Main: Insel Verlag1979, S. 36: »Handle so, dass die Wirkungen deiner Handlungen verträglich sind mit der Permanenz echten menschlichen Lebens auf Erden«.

[54] Siehe die Homepage Raymond Kurzweil, dort heißt es: »The singularity is an era in which our intelligence will become increasingly nonbiological and trillions of times more powerful than it is today – the dawning of a new civilization that will enable us to transcend our biological limitations and amplify our creativity« (www.singularity.com, abgerufen am 17.10.2017). Vergleiche auch die *Singularity University* (www.su.org, abgerufen am 17.10.2017).

[55] Diese Schlussfolgerung hat normative Implikationen, nicht nur für unser persönliches Leben, sondern auch für unsere rechtlichen und sozialen Institutionen: Wie sollten alle diese Fälle in diese Institutionen ernsthaft einbezogen und dort fair vertreten werden?

DIMENSIONS OF NEW ENVIRONMENTAL ANTHROPOLOGY

HUMANITY, RELATIONALITY AND JUSTICE IN THE ANTHROPOCENE

Forrest Clingerman

Novelist Amitav Ghosh, whose work *The Great Derangement* is set to become a milestone for the environmental humanities, poetically reflects on the current failure to create narratives for our ecological catastrophes, especially climate change. Ghosh reminds us that stories are necessary: they help humans understand who we are, and how to respond to the way modernity has imprinted the excess of human culture around and upon the globe. The relative absence of narrative representations of climate change points to a broader issue, according to Ghosh: the lack of literary reflections that fully grapple with environmental problems "…will have to be counted as an aspect of the broader imaginative and cultural failure that lies at the heart of the climate crisis" (Ghosh 2016, 8). To put this another way, due to a lack of imaginative and narrative power, humanity struggles to understand the seismic changes we have caused to the world. We might even conclude, as science writer James Bridle has, that we are entering a "new dark age," characterized by a paradoxical situation wherein we have increasing amounts of information and knowledge, while we also have a decreasing ability to appreciate or understand it (Bridle 2018).

What does this mean for our attempts to address who we are, and how we commit to environmental justice? This essay will explore a few of the aspects of this question. A current that will run throughout this essay is the acknowledgment that humans confront the current environmental situation without the proper words to speak. Humanity finds itself struggling with the wrong words to tell the wrong stories, and needing to discover new words and stories that allow us to fully and truthfully speak. To contribute to this task is the work the present essay. In the following, I will investigate how the word "Anthropocene" is used to name our current environmental situa-

tion, apply the work of Martin Buber as a framework for the different narratives of being human in the Anthropocene, and finally reflect how different words uncover the possibility of environmental justice in different ways. How do we reimagine the human relationship with nature, since humanity has radically more power to master the environment than our previous stories chronicled? What changes must we make, because past narratives no longer tell the tale? To satisfactorily answer, our narratives will need to convey equity and justice for humanity and the more-than-human world, while seeking a future that is aligned with sustainability and a sense of finitude.

Interpreting the Story of Earth through the Anthropocene

If we are living through the wrong words and wrong stories, the pressing task before us is to systematically uncover the areas of friction in our environmental discourse. For both the sciences and humanities, the initial step of explaining environmental narratives has already begun. In the face of climate change, loss of biodiversity, and other ecological ills, researchers are not only cataloguing the physical changes themselves, but also investigating the conflicts that are inherent in framing and interpreting such changes. A number of recently published works have begun the process of explaining the multiple levels of these tensions. For instance, adding to Ghosh's *The Great Derangement*, Mike Hulme's *Why We Disagree About Climate Change* (2009) investigates how debates over the climate are really conflicts that emerge from competing interpretations about the social, economic, political, epistemological and spiritual dimensions of climate change and Stephen Gardiner's *A Perfect Moral Storm* (2011) explains that ethical categories collide in our understanding of climate change, making it a vexing moral problem.

Many of these investigations have begun to coalesce around a new metanarrative in environmental discourse: the story of the Anthropocene, or an emergence of the age of overwhelming, globally pervasive human control of the Earth through advances in science and technological knowledge. This term was introduced as an attempt to highlight the planetary environmental impacts of humanity. Thanks to the flourishing that occurred in response to the ecological stability of the Holocene, humanity is poised to make a geological mark on Earth, and in the process overturn the stable Holocene epoch. Will Steffen, Paul Crutzen and John McNeill have explained this state of affairs in this way:

> Underlying global change … are human-driven alterations of i) the biological fabric of the Earth; ii) the stocks and flows of major elements in the planetary machinery such as nitrogen, carbon, phosphorus, and silicon; and iii) the energy balance at the Earth's surface. The term Anthropocene suggests that the Earth has now left its natural geological epoch, the present interglacial state called the Holocene (Steffen et al. 2007, 614).

On the surface, Steffen, Crutzen, and McNeill offer a science-oriented interpretation — heavily associated with industrialization, technological, and the climate — about the human-Earth relationship. Scientific description, they argue, coalesces in a proposal to name a new geological time period due to the effects of global human activity. The Anthropocene proposal is an attempt to define certain changes to the Earth system, as measured by geology and other sciences.

While the scientific analysis of the Anthropocene presents one side of the debate, the seemingly neutral vocabulary of science suggests another, more value-laden levels of the term. Ramus Karlsson writes, "[a]s with few other concepts, [the Anthropocene] has succeeded in capturing the brutal scale of human domination over what was once 'nature'." (Karlsson 2016, 25). Fields such as philosophy, literary studies, religion, and history have accepted the sentiment behind this analysis, approaching more normative methods to interrogate scientific evaluations. Humanities scholars applying an interpretive sensibility to show a hermeneutical side to the dialogue, which will "…look at the Anthropocene not as a settled scientific matter, but rather as a historical process." (Szaj 2020). This means the Anthropocene has become not merely a scientific matter, but equally (as philosopher Patryk Szaj notes by applying the concept of "horizons" from Hans-Georg Gadamer), "a hermeneutic horizon" which serves as a "transcendental condition of being-in-the-world" of human being, part of a historicality that engages us, and "…a global process which concerns us all and calls us to an appropriate response." (Szaj 2020). In other words, the Anthropocene is not exclusively scientific or material explanation, but is best understood as an attempt to encompass many competing levels of understanding the narrative of a changing Earth. The Anthropocene now symbolizes the conflict of interpretations that exist within the human-nature relationship.

Once the Anthropocene moved past scientific explanation, it emerged as something embedded in a process of narrative, weaving together conflicting interpretations of material, historical, moral, and ontological relationships between Earth's inhabitants and the planet itself. This conflict of interpreta-

tions raises new questions, apart from scientific quantification. What happens when the current geologic time period is defined in terms of human activity and agency? When one species becomes self-aware of its role as a dominant driver of global environmental change? How does this constituted a break from both the human past and geologic history, insofar as the Anthropocene means domesticating the world with eyes wide open? Multiple research fields are in the position to systematically uncover competing narratives of how "the Anthropocene" is the name of a novel state, in which humans engage in a *reflexive*, *self-conscious* domestication of their world. Importantly, "*the Anthropocene" is a hermeneutical name*: it is a framework to bring coherence (and thus understanding) to competing and conflicting interpretations. As hermeneutical, the Anthropocene is not simply an attempt to quantify and assess material changes in the Earth system. It equally becomes a way to interpret our changing relationship with the planet, our local environment, and each other.

In sum, in keeping with the introduction of this new meta-narrative, the scholarly discussion of the Anthropocene is hermeneutical or interpretive in orientation. Insofar as it is a framework for interpretation, the Anthropocene should be appreciated as a word that expresses a story, rather than the communication of data. What is imperative in the face of environmental change, therefore, is research into *the hermeneutics of the Anthropocene*: an investigation into a "conflict of interpretations" about our new political, economic, material, and moral world.

Martin Buber and the Human Story of the Anthropocene

One element of the Anthropocenic story is the role of human beings in the natural world. How does the Anthropocene frame our own environmental narrative and how might we describe the narrator?

A hermeneutics of the Anthropocene leads to stories in need of interpretation. In the most basic form, Anthropocenic stories are portrayals of nature itself. Thus the physical parameters of rapid change have led some researchers to create ways of telling stories of the world. One of the more intellectually successful examples of this form of scientific storytelling is Rockström and Klum's *Big World Small Planet*, an exploration of the topic of "planetary boundaries" and the need for a "safe operating space" through photographs and text (Rockstöm and Klum 2015; see also Rockström et al. 2009). Works like this one showcases what damage has happened to ecosystems, how "nature" is ravaged, and what human mastery has become through multiple scales.

Yet, there also is something implicit in these stories: pronouncements that are at least partially stories of the transformation of the human. As Ewa Bińczyk writes, "[i]n the Anthropocene, that which is natural and that which is human jostle each other and, in a problematic way, condition each other." (Bińczyk 2019, 7). Thus what is also required is examination of the anthropological narrative: who are human beings of the Anthropocene? What have we become as individuals and as a species?

To be sure, Anthropocenic dynamics cause changes to what it means to be human, but what is the right narrative path that these dynamics offer? By questioning human embeddedness in nature — and uncovering shifting balance between alienation and connection, balance and domination — do we see a new, flourishing beginning for humanity, or a dangerous retelling of the human story? Depending on how we address questions like these, the Anthropocene redefines environmental anthropology in more positive or negative terms. The present section thus deliberates on environmental anthropology in the face of the hermeneutics of the Anthropocene, using the work of Martin Buber to suggest the possible danger we face, as well as what the qualities of anthropology in a "good Anthropocene" should look like.

Just like an overall hermeneutics of the Anthropocene contains different dimensions (material, moral, economic, political, and so forth), the anthropological implications are not found on a singular, settled path. On one hand, certain tendencies suggest the possibility of a new, positive narrative for being human: a description of humanity attuned to a balanced, restrained relationship with nature. For instance, the so-called "ecomodernists" and "eco-pragmatists" advocate that we concentrate our energies to create a good, benevolent Anthropocene through human ingenuity (Asafu-Adjaye et al. 2015). For the ecomodernists, progress toward justice and equity is possible through the use of human technological achievement to "decouple" economic development and environmental impact. In this interpretation, being human is synonymous with the skills and qualities needed to progress towards a more just and sustainable knowing. The "good Anthropocene" is inhabited by a compassionate *homo faber*, who uses technological, economic, and scientific knowledge for a hopeful future. This follows a path Bińczyk suggests when writing, "[w]hat we need…is not hyperagency, but rather a more responsible human agency." (Bińczyk 2019, 7).

On the other hand, there are reasons to think that such a view is far too hopeful. For philosophers like Clive Hamilton, a tragic or even dangerous Anthropocene is the more likely outcome, particularly given that the human

community has already crossed tipping points and boundaries of key environmental thresholds. This competing interpretation defines humanity more pessimistically, seeing our techno-scientific hubris as a path to an overhumanized natural world. In this telling of the story, the morale is we have misnamed or distorted what human responsibility ought to be. For responsibility is predicated on relationships; according to environmental philosophy, this includes both relationships with each other and with the more-than-human world. When the world is named after the human (or, similarly, after human social behaviors as in the "Capitalocene," the "Technocene," or the like), then the world ceases to exist, leaving only the human in its place. What occurs when our narratives obscure the agency and value of everyone and everything except the narrator? Will the Anthropocene first reduce interconnections between self and other in favor of the uniqueness of the human species, and in the process weaken our understanding of the whole human species, so that the narrative becomes a belief in the overwhelming power of the single, autonomous individual?

We cannot know which interpretation of being human will prove correct. I wish to argue that much will depend upon whether we are capable of overcoming the anthropological danger that is implicit in the Anthropocenic story through the words we use and the stories we tell. The root of the danger is that we are attempting to rename the cosmos — the meaningful, purposefully-ordered world — because this is part of the ongoing human task. Instead, the danger is found in how we undertake the responsibility of redefining ourselves. Our Anthropocenic utterances are symbols of a particular task set before the individual human: we have become self-consciously planetary agents. Does this role engage the world in a way that is anchored by dependency or context, or is the task bereft of meaningful relationality with nature? To use terms more evocative of the past stories of the human-world relationship: hitherto our sense of being human has undertaken our role of instantiating a microcosm that is balanced with a macrocosm, a human within the world. If humans continue to have a vocation as microcosm, *the danger of the Anthropocene is that we tragically describe the microcosm by denying the existence of a macrocosm*, preferring instead to balance the microcosm with a shadowy replication of itself.

To further explain the possibility of this narrative danger, it is useful to turn to Jewish philosopher Martin Buber and his sense of being human in relation. Buber's influential work *I-Thou* is a meditation on both philosophical anthropology and the ethics of intersubjectivity. At the start of the book, he explains that the human experience of the world is diverse, writing "[m]an's [sic] world is manifold, and his attitudes are manifold." (Buber 1970, 9).

Because of these manifold attitudes, we speak what he calls basic "word pairs" in reflecting on the experiences we have. The two word pairs of I-It (*Ich-Es*) and I-You (*Ich-Du*) are fundamental in speaking of our experience: these word pairs are not mere utterances, but establish a human's mode of existence as beings in the world.

The first of these word pairs—the I-It—is what is often thought of as objectification, creating a context similar to what philosopher Martin Heidegger referred to as "calculative thinking" in his *Memorial Address* (1966). Such objectification is impossible to avoid completely; indeed, we can argue that the scientific revolution and the technological progress of modernity occurred when a rigorous, systematization of the I-It emerged. The I-It is in this sense symbolic of modernity. In any case, Buber suggests that the I-It defines our usual experience of the world; as a subject, we see things as objects. While I-It relationships are common, such a relationship is never all-consuming, because its objectifying gaze does not present us with the true depth of the other. Therefore, the I-It is a word pair that is by necessity incomplete in its explanation of one's relationship with the world. To contextualize this first word pair into the story of the Anthropocene: beginning with the works of figures like Descartes and Bacon, the I-It is the utterance of modernity, because the ability to use I-It *self-consciously* became the means to harness the power of science and technology. Self-conscious objectification of nature has become even more overwhelming since Buber wrote *I-Thou* in 1923, leading some to agree with Heidegger's diagnosis that technology is an enframing (*Ge-stell*) that sees things as "standing reserve" or inert supplies for use (Heidegger 1993, 308-41).

In contrast to the relationship of an objectifying I-It, unique circumstances emerge to create the opportunity to utter the presence of I-You. When uttered, the I-You is all-consuming, subject-to-subject, and without boundaries between the self and other. It is also an utterance that exposes a fundamental intimacy between subjects. The I-You narrates an encounter between subjects that results in the mutual actualization of each other; it is a word that expresses one's ultimacy in relation. In this manner it is not merely a description of philosophical anthropology, but also of the way to form ethical responsibility. For as human beings, we become who we are through our expressions of I-You. As Paul Ricoeur would suggest decades later, we become ourselves only through a detour through the Other; this places a moral and an ethical responsibility on relationality (Ricoeur 1996). In the midst of I-You, each being discovers a real Presence — in fact, Buber suggests that in every uncovering of I-You there is a manifestation of the "Eternal You,"

a spiritual wholeness that happens when we are fully present to another as another.

Perhaps most importantly for the current argument, then, the I-You clarifies the value of any being that is encountered in such a relationship. The I-You can be expressed by all species and subjects; it is not exclusive to humanity. For this reason, the I-You word pair is participative for the telling of a good Anthropocene. Humans can encounter the natural world through the utterance of I-You, and in the process there is a potential for a transformation of contemporary technology, politics, economics, and human society.

Yet the utterance of I-You in the face of our contemporary environmental crises might prove difficult, in large part because modernity has obscured the *depth* or transcendence at the heart of the subjectivity of nature. Following Buber's intention, I-You is a spiritual (though not necessarily an institutionally religious) utterance. Buber's vision of the I-You exemplifies one prominent dimension of theological thought in the West, namely the possibility of and need for a lateral transcendence, which emerges from our relationships. The ramifications for environmental thought are apparent: certainly there is meaning in all our relationships, whether with humans or non-humans, and the most profound meaning is encountered when relationships unearth the infinite value of the other. The expression of I-You thereby highlights the ways that concrete relationships with the earth becomes an encounter with transcendence, with what is beyond the self. This is what 19th century theologian Friedrich Schleiermacher hinted at when he connected religion to the "sensibility and thirst for the infinite" as a response to the universe (Schleiermacher 1996, 23), Rudolph Otto called "the Holy" (1967), and Paul Tillich called "the Ground and Abyss of Being" (1951).

Thus the I-You suggests conditions for the possibility of a "good Anthropocene": what is needed is the utterance of I-You in our relationship with the natural world. More specifically, a "good Anthropocene" is one that includes a fully embodied and totally overwhelming relationship with the subjectivity of the environment; this is a relationship that would see ecosystems, other species, and the world itself as distinct individuals that ought to exist apart from the machinations of human society. In contrast, the I-It must be minimized, with our self-conscious control understood as an imperfect balance. Even though I-It relationships will inevitably continue to emerge, critical reflection — emerging from this new human age — promotes a recognition of the value and subjectivity of nature. Ultimately, the Anthropocene could be a story of a relationship that embraces the infinite

value present in the other — seeing each tree, bird, rock, and stream as a manifestation of the Transcendent, Eternal You. This becomes more akin to deep ecology than eco-modernism; more in keeping with Gaia theory than an economically informed, development-focused sustainability.

But what of the conditions for the possibility of a tragic or dangerous Anthropocene? Although providing important tools for analysis, the I-It nor the I-You do not fully address the emergence of the most fundamental anthropological danger of the Anthropocene. While the I-It is the symbolic word of the emergence of science and technology in modernity, and I-You symbolizes the hoped-for good Anthropocene, it is a third word pair that might best describe current relationship with nature. This is a word pair that tempts our moral relationships and allows the human microcosm to exist in its own totality: the I-I. Contrary to calls for a "good Anthropocene" and the I-You, this term does not take on a position of environmental subject in meaningful relation alongside the human subject. And contrary to the world of modernity, the I-I does not simply objectify the other, but effaces it.

Discussed at the start of *I-Thou*, Buber writes that the "I-I" is one where all roads lead back to oneself. In the case of someone living within an I-I,

> Things are something that they speak of; persons have the great advantage that one cannot only talk of them but also to, or rather at them; but the lord of every sentence is no man but I. Projects can be entertained without complete devotion, spoken of, and put on like a suit or dress before a mirror. When you speak to men of this type, they quite often do not hear you, and they never hear you as another I.
>
> You are not an object for men like this, not a thing to be used or experienced, nor an object of interest or fascination. The point is not at all that you are found interesting or fascinating instead of being seen as a fellow I. The shock is rather that you are not found interesting or fascinating at all: you are not recognized as an object any more than as a subject. You are accepted, if at all, as one to be spoken at and spoken of; but when you are spoken of, the lord of every story will be I. (Buber 1970, 11).

Buber's description has a moral and ontological judgment: the I-I utters a distorted vision of the world, allowing us to abdicate responsibility to the (now non-existent) other.

The amplification of such I-I thinking, we might speculate, comes in the ways that technologies are ingrained within our experience of the world. For example, the factors that gave rise to the "Great Acceleration" are technological. But what is fundamental for the Anthropocene is not the material impacts of our technologies, but the conceptual dimensions of this materiality. Heidegger suggested how we are in a "flight from thinking" (Heidegger 1966, 45) that is calculative — focused on organizing and structuring, not encountering, nature. Indeed, "[n]ature becomes a gigantic gasoline station, an energy source for modern technology and industry" (Ibid., 50). Directly addressing recent technologies, James Bridle furthers this critique by describing our overreliance on "computational thinking," which is promoted in and through technological artifacts. After providing numerous examples of the ways computers have become the lens through which we interact with the world, Bridle writes "[c]omputation does not merely augment, frame, and shape culture; by operating beneath our everyday, casual awareness of it, it actually *becomes* culture." (Bridle 2018, 39). The reliance on computational thinking overwhelms our vision and the results of our thinking. "Computational thinking has triumphed because it has first seduced us with its power, then befuddled us with its complexity, and finally settled into our cortexes as self-evident." (Bridle 2018, 44). Computational or calculative thinking erases what is outside the human being, leaving only the self.

Applying such calculative or computational to the human relationship to the environment, the I-I is when the otherness of nature is transformed into a conceptual sameness subservient to the human subject. The inevitability of I-I can be debated. If it appears through the Anthropocene, however, the utterance of the I-I will be the process that breaks apart the tension between the two word pairs of I-It and I-You by radically transforming the other into the same, difference into similitude.

Through Buber we are exposed to two possible paths for understanding the human in the Anthropocene. While we will continue to find ourselves relating to the natural world as an object — through the I-It — can we undertake the optimism of the I-You? Or, is it likely that the story of the Anthropocene is to become an utterance of I-I? The danger inherent in the I-I cannot be underestimated: it unearths the ultimate tragedy of the Anthropocenic human, whose utterance of the I-I remakes the totality of the world into the image of the human, and dismantles the boundaries between self and other. With the I-I, the world becomes a replication and an appendage to the speaking subject, while the human unwittingly narrates the overhumanized world, unable to even grieve for the loss of nature. The utterance of the I-I

performs an implicit anthropology that envisions the individual human as an autonomous microcosm, which has no complementary macrocosm.

Environmental Justice as Connection and Relationality

Threatened with the ramifications of an overhumanized world, the danger of interpreting humanity in the Anthropocene through an I-I — that is, to see the Anthropocenic world as a vaporous, calculative reflection of one's own personal humanness — is palpable. The potential of seeing ourselves and nature through an I-You, in contrast, raises the hope for human and environmental flourishing. Faced with these two paths, who are we to become? Seeking the I-You over the I-I in the midst of the Anthropocene is not a matter of preference, but a matter of environmental justice.

Desiring I-You to be our Anthropocenic path is grounded on the presupposition that humans cannot exist fully and meaningfully in the distorted, reductive relationship of I-I. A hopeful hermeneutics of the Anthropocene reaches into the way we humans exist *with* (not merely on) the planet. By envisioning the human in the Anthropocene through narratives aligned with Buber's I-You, we can embrace the Other as a unique and meaningful subject in its own right. There is a positive relationship present here: to utter I-You allows the speaker to acknowledge the value of the other, as unique and distinct from the speaker's subjectivity. Unfortunately, as shown above, the Anthropocene proposes another, more tragic possibility as well: when the human self speaks I-I, it creates a relationship to a world — no longer either subject or object — that becomes a mere extension or appendage of humanness. The utterance of an I-I is an anthropological challenge: is it possible to understand ourselves when we remake the face of the Other to be more of the same, a mirror of the human self?

Clearly a choice must be made. Rather than attempting to make this choice through calculative reason, however, it is more appropriate to remind ourselves of the starting point of this essay: we are in need of the right words and stories, of a more meditative thinking. The interpretive judgments are being made through the telling of stories that imagine differing visions of right relationship. Stories of right relationships are stories of justice, while stories of broken or harmful relationships are stories of injustice.

Environmental justice (including the more specific variant of climate justice) is frequently discussed by applying past descriptions of justice to the inequities that are caused by the violence of climate change and other environmental problems. For instance, philosopher Kristin Schader-Frechette defines environmental justice in terms of how natural goods are related to

equity, security, and democratic participation. She writes, "Environmental justice requires both a more equitable distribution of environmental goods and bad and greater public participation in evaluating and apportioning these goods and bads." (Schrader-Frechette 2002, 6). Similarly, in his examination of the relationship between international relations and climate justice, Chukwumerijie Okereke divides climate justice into four conceptual dimensions: mitigation and burden sharing, impact and adaptation, procedural justice, and systemic injustice. These four dimensions frame the theoretical locations where dilemmas of justice and equity appear in climate policy, while also cataloguing the unique ways the climate regime impacts our political and economic systems. Issues of climate mitigation and burden sharing, according to Okereke, raise dilemmas of whether justice entails that developed economies should be responsible for historical emissions, or whether it is unfair to hold "…the present generations responsible for the 'sins' of their forefathers." (Okereke 2010, 464-6; see also Moellendorf 2012). For Schader-Frechette, Okereke, and others, environmental justice is concerned with presenting logical tools for judging the use of power and the distribution of material goods in common life.

Yet what underlies this is a more fundamental dynamic, already hinted at in the foregoing discussion of the competing anthropologies of I-It, I-You, and I-I: justice involves telling stories of *connection.* For environmental and climate justice, the connections being narrated are between the human and more-than-human worlds, between past and future, and between communities victimized by the climate and communities who have benefitted from this victimization. In particular, environmental justice is a story that promotes mutual dependency while acknowledging conflict and separation. Scholar of American Studies Julie Sze writes, "Environmental justice was, and remains, about expansion, connection, and change, governed by this belief in mutuality." (Sze 2020, 5). According to Sze, there is a great deal of debate about the meaning of the term environmental justice, because we often name environmental problems in different ways. For example, environmental issues can be classified as "environmental racism," "inequality," "inequity," and the like. Each of these terms interpret different ethical and political senses of ecological issues. However, such differences are secondary to the more fundamental underlying structure: the physical and environmental injustices of the world are structures where there is a breakdown of relationships in the face of power. Thus her examination of environmental justice begins with the corruption of relationships through abuse and violence, or as she notes, "…[the] starting premise is that unjust environments are rooted in racism, capitalism, militarism, colonialism, land theft

from Native peoples, and gender violence." (Sze 2020, 7). Environmental justice, therefore, is not an abstract calculus unrelated to everyday experience. "Environmental justice is…a 'structure of feeling.'" (Ibid., 9).

For the present context, environmental justice can be described as the process of telling stories of connection and alienation in the face of power. On the side of justice are narratives of the promotion of mutuality and the encounter with the depth of the other, while on the side of injustice are narratives about the violence, abuse, and destruction of the other. In each case, the normative force of the story is discovered by reflecting on how well the individual is connected with community. For justice, there is a depth and wholeness to the self-in-community. Injustice is when one asserts power over another, fraying the possibility of mutual connection, reciprocity, and right relation. The environmental humanities excel at interrogating these differences. For example, Ghosh suggests when discussing climate change that "…at exactly the time when it has become clear that global warming is in every sense a collective predicament, humanity finds itself in the thrall of a dominant culture in which the idea of the collective has been exiled from politics, economics, and literature alike." (Ghosh 2016, 80). In effect, Ghosh is pointing out a primary reason that climate injustice is embedded in the Anthropocene: with the loss of our imagination, we have lost ways to tell the story of connections lost and regained. Gardiner's *A Moral Climate* similarly explains the complex stories of injustice and climate change by explaining the differentials between communities, societies, and generations, and the complexity of finding ways to reestablish equitable connections in light of this wicked problem. Both Ghosh and Gardiner show that a just climate is one that dwells within mutuality and reciprocity — an I-You encounter between humans, human communities, and the more-than-human world.

Wilderness preservation is another example of how the Anthropocene raises narratives of justice and relationality. The Anthropocene threatens nature with both a material and conceptual domestication, which together efface the possibility of wildness. As Eileen Crist writes, "The Anthropocene discourse veers away from environmentalism's dark idiom of destruction, depredation, rape, loss, devastation, deterioration, and so forth of the natural world into the tame vocabulary that humans are changing, shaping, transforming, or altering the biosphere, and, in the process, creating novel ecosystems and anthropogenic biomes." (Crist 2013, 133).

In the wilderness preservation debate, the cultural and ontological importance of wildness is to serve as a counterbalance to the domesticating story

of the I-I — a perspective that inadvertently masks the wild otherness of nature. Tim Caro and his colleagues argue that the promotion of nature conservation is best served by acknowledging that wildness still exists, even in the face of the Anthropocene (Caro et al. 2011). This argument doesn't start with science, however, but with the yearning to defend our need to conserve what is beyond our control. Such defense is not an act of altruism, but self-preservation akin to Ricoeur's detour of self through the Other. Indeed, the relation to the other "keeps the self from occupying the place of foundation," safeguarding us from "exalting" or "humiliating" the self at the expense of another (Ricoeur 1996, 318). The choice raised by I-You and I-I, in other words, is concretely a choice of the interpretation of the value of wildness versus domestication. And justice demands wildness: the recognition of the Other and the encounter of the value of each subject.

Conclusion

Near the end of his memoire *Desert Solitaire*, mid-century American writer Edward Abbey wrote "…I discovered that I was not opposed to mankind but only to man-centeredness, anthropocentricity, the opinion that the world exists solely for the sake of man [sic]; not to science, which means simply knowledge, but to science misapplied, to the worship of technique and technology, and to that perversion of science called scientism; and not to civilization but culture." (Abbey 1971, 305-6). While he was writing from the context of the impending loss of wilderness in the face of American consumerism, Abbey's stance speaks to us now more than ever. These words came from the first years of the "Great Acceleration" and (depending on one's preference for dating) the start of the Anthropocene itself. Abbey wrote them near the radioactive heart of atomic weaponry, the contaminants of which were spread from mines beneath Abbey's fee to the surface of the planet itself.

Abbey comes to the conclusion that the human of itself is not the problem — it is the pervasiveness of humanity, which has now developed a self-understanding akin to the utterance of the I-I. In the years since, his questions become more pressing: does any wildness remain, or have we so fully domesticated the planet that only the I, the human, remains? The environmental humanities might not be able to resolve that question. But by reflecting on the narratives we have — and the paucity of narratives we use — the disciplines of the humanities acknowledge why these questions are fundamentally unique in the "age of the human."

In the face of the Anthropocene, environmental anthropology and stories of justice intersect: both desire to create new narratives that understand how a better future places demands on the present, especially if that present is threatened by human dominion. When Crutzen and Stoermer first suggested the term of "Anthropocene," their intention was "…to emphasize the central role of mankind in geology and ecology…" (Crutzen and Stoermer 2000, 17). This seems to presume accepting the need "…for scientists and engineers to guide society towards environmentally sustainable management…" on a global scale (Crutzen 2002, 23). While this was not mentioned by the authors, this argument appears to rest on a grim acceptance that there is no longer any wildness left — instead, the debate becomes one between the various forms of tragic Anthropocenes. But that is only one possible story. What about our need (or at least our desire) for our planet to hold at least some areas apart from human control? How does this rush to accepting domestication remove the possibility of nature having its own story and value? When all is under human control, is human subjectivity itself lost in our words and stories?

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EPISTEMOLOGICAL PERSPECTIVES UPON CLIMATE CHANGE DEBATES

A CLIMATE OF DIALOGUE

Andrea Saltelli and Paul-Marie Boulanger

The authors are linked by common interests, including for the analysis of controversies involving science and society. While they agree on several of their diagnoses, e.g. on vaccines (Saltelli and Boulanger 2019), they disagree on climate. How is that? The present dialogue explores this disagreement in a style which remains – to the best of the authors' capacity, pacated.

Science's Public Image and Science's Roles: A Problem of Epistemic Authority?

AS: I take issue with the role of science in the present discussion on the urgency of action on climate. Science is here not just providing dispassionate facts. As noted by U. Beck in 1986:

> Scientists act *as if* they held a lease on truth, and they must do this for the outside world, because their entire position depends on it [...] Business, science and the like can no longer act as if they were not doing what they are doing, that is, changing the conditions of social life and hence making policy *by their own means.* (Beck 1992).

(Italics from UB). This 'making policy by its own means' is precisely what we see now. In support to this interpretation, one can read what is written in *Nature*:

> Whatever they decide, nations will have to reckon with some difficult numbers that will ultimately determine whether the world can avoid the rapidly approaching climate meltdown. (Marris 2019).

By talking about an impending climatic Armageddon science – or a large sector of the scientific establishment – is staking its epistemic authority on climate, thus creating a virtuous image for itself as committed to the saving of

the planet, when the role of science in the present socio-economic trajectories would lend itself to a more mixed judgment (Saltelli and Boulanger 2019). As a result, the media thus incited have come to present a series of processes dominated by decadal dynamic (rise in temperature, in sea level, in frequency and intensity of extreme events) as having jumped through the roof, as happening here and now. Hurricane Dorian is described by two scientists on the columns of *The Guardian* as the ultimate proof of climate induced state of exception (Mann and Dessler 2019). What is exceptional – I admit, is instead the White House's interference with how NOOA – the US National Oceanic and Atmospheric Administration, should report about the hurricane (Flavelle, Friedman and Baker 2019). In my opinion, the excesses of the White House do not justify parallel excesses from scientists, nor science's silence when we are told that 'billions will die', the 'world will end in 12 days', and so on.

This state of excitement – not to say war – on climate is becoming critical. It detracts attention away from other pressing environmental concerns, from the collapse of fisheries to the decline in insects (Monbiot 2017) (van der Sluijs and Vaage 2016) – not to mention a long list including atmospheric pollution, persistent organic pollutants, endocrine disruptors, and so on.

The unfortunate epithet 'denier' may be applied even to those scientists who do not believe that climate is the most urgent environmental threat – let alone the economic and geopolitical one, while "sceptic is a term of derision" (Turner 2015). One needs impeccable ecological credentials to be allowed to say climate is not perhaps the most urgent environmental threat (Monbiot 2017). One of the best-known sociologists of science can be heard declaring his allegiance to the climatic cause and expressing concern about the misuse of his earlier work from deniers (Kofman 2018). The resemblance of these practices to those of official religion is surprising.

More in general, focusing on the 'fear' of the public for the climatic threat appears a convenient distraction from a rapidly evolving crisis involving new media, loss of democratic representation, rising inequality and insurgent populism and nativism (Saltelli and Boulanger 2019). That policy is being 'distracted' by climate has been noted, for example, in relation to the G7 meeting in Biarritz of August 2019, where in spite of work done in Chantilly in July in preparation for the meeting, promising to address 'fairer capitalism' and inequality, i.e. economic and financial topics befitting the G7 more that global threats, the climate discussion ended up obliterating these important themes (Jaillet 2019). The G7 represent 45 % of the world GDP and just 10 % of the world population; the same club is responsible for 90 % of the financial transactions, for currencies representing 90% of world

reserves, and dominates all organisms regulating world's finances and banking (Ibid.). That this club elects to discuss climate suggests that some of the world leaders find climate a convenient theme. As president Macron has learned, it is safer to criticize president Bolsonaro's handling of Amazonian fires than to impose a tax on fuel in his own country. Not even the celebrated Scandinavian model of trust in the state and its planning makes exception to this allergy to green taxation. In Norway the project of a new tax on roads led to the emergence of a 'no-more-tolls' party, conquering a sizeable representation in regional elections. Taxes on consumption are regressive – they hit the poor more than the rich, so why should this be a surprise? The new president of the European Commission has promised to make Europe carbon neutral by 2050 (Schiermeier 2019). Even here, one could reflect on the socio-economic and geopolitical relevance of the theme compared to the problem facing today the EU project.

If we believe sociologist Niklas Luhmann, every observation requires a distinction between an indicated and an unmarked zone. The distinction itself represent an implicit, a blind spot (Figure 1) as the system operating the distinction is hardly aware of it. Thus, marking climate unmarks a host of other urgent issues, which become the environment, the theatre, where the climatic drama unfolds.

Comparing the climatic Extinction Rebellion movement of today (*The Guardian* 2019) with the Occupy Wall Street in Zuccotti Park in 2011 (Levitin 2015), with their focus on inequality, intergenerational fairness and the financialization of the economy. One can wonder which appears more threatening to the powers that be. I personally find the agenda for action of the indignados (Hessel and Duvert 2011) more cogent and relevant than a cooler future, especially for the young generations cornered between the fourth industrial revolution and the neoliberal project "to render as many people as superfluous as possible" (Mbembe) (Bangstad and Nilsen 2019) – the so called 'unnecessariat' (Bastani) (Bastani 2019).

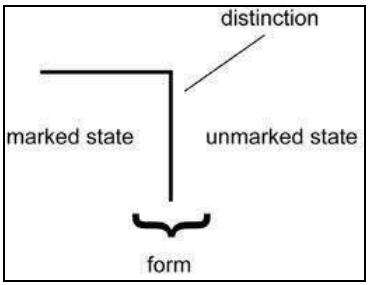


Figure 1 Luhmann's theory of observation, adapted from (Boulanger 2018)

If the Amazonian forest is not being killed by climatic change but by Mr. Bolsonaro, then the climate emergency forced on us is perhaps ill-advised.

PMB: I distinguish two main questions here, each of them deserving an

article of its own. The first question has to do with the relationship between science and politics, a question you are raising about the climate issue, but which is actually much more general. The second is the question of what should have priority on the global political agenda. You contend that climate is given too much attention with respect to other issues that you consider more important and urgent. In this respect, you mobilize Luhmann's theory of observation, highlighting the "blind spot" of the climate activists, which would make them unable to consider other issues and urgencies. Of course, since every observation is based on a distinction with its own unmarked space and blind spot, then your argument can very easily be turned against any other standpoint, including obviously the climate-denier's one. Instead of doing this, I will seize the opportunity you give me in invoking Luhmann's theory of observation to try to uncover the principle of our respective distinctions, the matrix that structures our different understanding of the issues and realities.

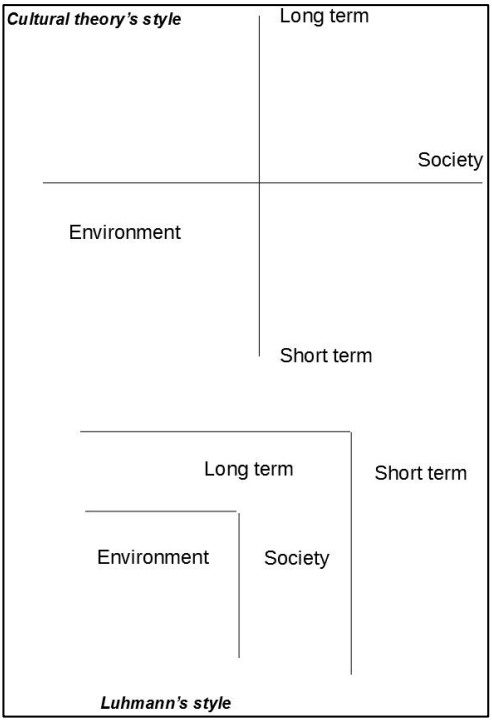
Luhmann's theory of observation is only a starting point. It is general and abstract, and gives us no indication on the actual distinctions that are made in debates such as ours. This requires the use of other tools. In this respect, the cultural or "Grid-Group" theory first proposed by anthropologist Mary Douglas and then further developed by Aaron Wildavsky and Michael Thompson (Thompson, Ellis and Wildavsky 1990) seems to be the ideal complement to Luhmann's observation theory. To my knowledge, the two have seldom been articulated with each other so far, but I think the experience is worth trying. Cultural or "Grid-Group" theory consists in classifying lifestyles, systems of thought and norms, and institutional discourses within a Cartesian space defined by two orthogonal axes: one called "Grid" denoting the degree of dependence of individual behaviour on prescriptions related to the social stratification system; the other, called "Group" denoting the degree of dependence of individual beliefs, attitudes and behaviours on commitments in and towards inclusive social groups.

I suggest keeping the skeleton of the cultural theory but substitute to the grid-group axes the following ones: short term/long term and society/environment. I submit these categories structure the perception of the risks and stakes that confront our society today and lurk beneath our discussion. The first axis refers to the time span considered, the second to the species and domain of vulnerability. For instance, the "Long-Term & Environment" configuration means that one considers that the most urgent and harmful risks are ahead of us in a medium or long term and will come from changes in our natural environment. This is, as I understand it, the standpoint of climate and environmental activists in general. A "Long-Term &

Society" configuration sees society collapsing in a medium to long future because of its internal contradictions, class struggles or whatever. "Short-Term & Environment" gives priority to the current threats to health and well-being arising from pollution and shortages of water and other natural resources. "Short-Term & Society" focuses on the tensions, inequalities and social contradictions already at work in our society.

As advocates of the cultural theory argue (as well as Luhmann about observation), no attitude is necessarily more accurate or legitimate than any other. All are legitimate and necessary in a complex society. Yet, according to the circumstances, it is possible that one of them becomes prominent for a time because of the necessity to act in a domain that has been hitherto neglected. This, I submit, is the current situation with regard to the climate issue. I am convinced that as soon as significant advances will have been made towards its control and/or adaptation, the corresponding attitude will recede, leaving the place to another priority, long or short-term, environmental or social.

Figure 2 shows the proposed framework in both the cultural theory and theory of observation fashions (Boulanger 2018). We note that the theory of observation adds an additional dimension with respect to the cultural theory. Indeed, in the theory of observation the distinctions are embedded so that it is possible to distinguish between first observing with temporal lenses and then with material or substantive ones or the reverse. This invites to consider subtle nuances that the cultural theory cannot take into account.



The conclusion of all this is that there is no point in opposing one mode of obser-

vation to another. None is inherently more legitimate, more justified than another. As every observation has its unmarked space and its blind spot, no one is complete, totally comprehensive and sufficient. It follows that politics cannot for long favour one point of view at the expense of the others. It must endeavour to satisfy each of them, at least (and necessarily), partially. If climate activists are shouting so loudly at the moment, it is because they feel that their point of view has been for too long neglected since all the Nation-States of the world have endorsed the United Nations Framework Convention on Climate Change, in 1992.

Being a "Long-Term & Environment" observer, I partake this feeling but as such I give equal weight to others mid- and long-term environmental issues, amongst which especially the biodiversity crisis ("insectaggedon"). However, what is special with climate change is that it impacts negatively and therefore worsens all other environmental (and social) issues.

This being said, let us turn to the wide question of the relationship between science and politics and speculate about what has gone wrong in the climate change case.

Paradoxically, in the case of climate change, the relationships between science and policy is very peculiar. Why? Because of the IPCC; it is a rather exceptional institution which had (almost?) no other equivalent in other fields at the moment of its settlement. Actually, the IPCC is a hybrid of science and policy.

Now, has science been successful in staking its epistemic authority on climate? I am not sure. Except perhaps on vaccination, no domain has been as fiercely controversial as the climate one, especially the issue of human influence on climate. It is not to be denied that something unfamiliar has happened with climate science and the climate issue. Whilst "normal science" conforms traditionally to the ethos described by Robert K. Merton as the conjunction of communism, universalism, disinterestedness, and organized scepticism (Merton 1973) – an ethos that guarantees its legitimacy and credibility – climate science, on the contrary, as institutionalized in the IPCC, has been characterized by a stubborn search for consensus, banishing organized scepticism from the scientific arena and leaving room for unorganized scepticism in the media. In some sense, we are here not very far away from what can happen in the religious domain; the climate-sceptics being considered as heretics and being indicated for disrepute.

Contrary to what happened with the H-Bomb Committee where two rivals labs have been settled and financed on an equal basis (Turner 2015), Chapter 15. "Expertise in Post-Normal Science"), the climate issue has been en-

trusted to a unique scientific (more exactly, a mix of scientific and administrative) body devoid of internal mechanisms for competition and contest.

Paradoxically, it could be possible to argue that the IPCC has done more harm than good to climate science and climate change awareness. It seems that the climate issue was less controversial before its inception in 1988 than after. According to Nathaniel Rich:

> Nearly everything we understand about global warming was understood in 1979. By that year, data collected since 1957 confirmed what had been known since before the turn of the 20th century: Human beings have altered Earth's atmosphere through the indiscriminate burning of fossil fuels. The main scientific questions were settled beyond debate, and as the 1980s began, attention turned from diagnosis of the problem to refinement of the predicted consequences (Rich 2018, 2).

At a point that:

> There can be no understanding of our current and future predicament without an understanding of why we failed to solve this problem when we had the chance. For in the decade that ran between 1979 and 1989, we had an excellent chance. The world's major powers came within several signatures of endorsing a binding framework to reduce carbon emissions — far closer than we've come since. During that decade the obstacles we blame for our current inaction had yet to emerge.

On the other hand, I don't think that science has "staked all its epistemic authority on climate". There is no evidence that scientific communications on climate change have crowded out scientific communications on fisheries, pesticides, and many other environmental issues. Is it science or the media that are responsible for having severed the climatic issue from its natural environment, the ecological question in general? As argued (Boulanger 2007): "the public's capacity for processing information must not be much greater (and probably smaller) than the individual one" and, according to Miller's famous paper in cognitive psychology (Miller 1956), this must not be greater than the 'magic number seven plus or minus two'. The authors (Hilgartner and Bosk 1988) have cogently compared the public arena to a Darwinian ecosystem where social problems struggle for recognition, only a few of them succeeding in capturing the attention of the political system. In Luhmannian terms, we would say "succeeding in irritating the political system". Luhmann again can be invoked here to understand why the theme of

climate change has been more successful than other ecological themes in its struggle for recognition. As suggested here above, the fact that the IPCC didn't provide itself for an internal contradictory debate gave the media an opportunity to organize it itself. As Evelyn Fox Keller notes:

> Even our most responsible newspapers and journals, in their very commitment to the traditional ethic of "balance," sometimes contribute to the widespread misimpression that climate scientists are deeply divided about both the extent of the dangers we face and the relevance of human activity to global warming (Keller 2011).

One can regret that the climate issue has overshadowed the theme of sustainable development – clearly too complex and cumbersome a concept to have a chance to become a suitable theme for the media. However, it had the merit of putting the whole environmental issue (not just the climatic one, or any other) on the political agenda and by acknowledging the legitimacy of economic and social concerns with regard to environmental ones, so as to exclude nobody from the debate. In regard to the promises of sustainable development, one can lament over the excessive place climatic concerns have taken today at the expense of others perhaps as urgent and vital environmental issues but this is not a very productive attitude. It is not at all assured that it will help putting these others concerns on the agenda. On the contrary, it could just contribute to discard absolutely all environmental concerns as the examples of Trump or Bolsonaro illustrate.

AS: I amicably disagree with your last statement – as discussed, the point of contention is not presence – absence on the agenda, but the Darwinian – and Deweyan, competition for attention in the public sphere. Additionally, while you reproach the media of a false 'balancing' act, inflating the opinion of doubters – or 'deniers', 'delayers', 'contrarians', 'confusionists', 'lukewarmers', or other denigratory denominations sprouted in the heat of the confrontation, there are voices which reproach media for being more receptive to Apocalyptic warning of end of mankind than to a reasoned assessment of climate science (Nisbet 2019) (Shellenberger 2019) (Kloor 2017). Coming to the work of Turner you mention, I find it very relevant, especially your selection of differences between the debate on the H-bomb and that of climate. I would just like to say that in his judgment of how Mertonian norms have been disattended in climate research this author is quite severe:

> The record of climate science is quite different. Attacking critics, even editors who allow critical papers into print, stig-

> matizing scientists for raising questions, and refusals to supply relevant information have been characteristic of climate science. If we look at the adherence to self-denying norms in isolation from the question of whether the claims of climate science are true, this much seems clear: the fact that these issues have both been raised and the fact that climategate confirmed many of the suspicions of the critics is sufficient to raise questions about the authority of these scientists (Turner 2015, 295).

PMB: I don't see the point on which you – amicably – disagree with me. The Darwinian competition is precisely for a place on the public agenda, taking account of the limited capacity of the public to tackle several issues at once. But I totally agree with you that. Turner is excessively severe Turner is probably not the best reference on that matter.

Nuanced observers such as Sarewitz (Sarewitz 2010) or, still better, the former chairman of the Tyndall Centre for Climate Change Research, Mike Hulme (Hulme 2013), though acknowledging the legitimacy and urgency of the climate change issue, blame the IPCC for having underestimated the autonomy of the political and overestimated the one of science in society. And, as for the "climategate", both of them reduce it to its proper proportion, insufficient to discredit the entire IPCC production. They both know that science is a human enterprise and not a divine one, and that some slippage is always possible.

But, as already stated, the IPCC is not THE science of climate. It is an intermediary institution between climate science (and other things too) and the unfinished, flawed political system of the world society. Its crime is to have subscribed to the linear model of the relationship between science and politics, the "truth speaks to power" model (Beck 2011). The problem is probably here: in our functionally differentiated society, hybridity is an uncomfortable situation.

But we should not throw the baby out with the bath water forgetting that upstream of the IPCC, there are thousands of scientists who are just concerned with finding and communicating the truth, a truth which they know is temporary and incomplete but that, in all honesty, it is their duty – the duty of science – to communicate. They cannot be held responsible for the errors of the IPCC's Assessment Reports writers; if any.

Now, going back to your concern for what has been called insectageddon (Monbiot 2017) (van der Sluijs and Vaage 2016): it seems you are ready to substitute one catastrophism to another? I – amicably – don't find this very

consistent. First, because it is to science that we owe it to ourselves to know the magnitude of the problem and, above all, the seriousness of its consequences. Secondly, because an "insectaggeddon" would have the same consequence for other issues, environmental, social and economic as a "climageddon", namely to drive them out at the very bottom of the political agenda.

The challenge is not to set these concerns against each other, but to show their intertwining, their systemic nature and to adapt our modes of governance accordingly. In fact, global warming is not unrelated to the disappearance of insects, although it is one factor among others.

What is certain is that it is not the privileged social categories in terms of wealth and power that will suffer the consequences of climate change. The resources at their disposal will allow them to take shelter without difficulty. There is no doubt that at the subconscious level, they know it and anticipate it.

The fight against climate change is therefore also and perhaps above all a social and political fight. As Greta Thunberg brilliantly put it, she indicts the economic and political elites who consciously let the situation deteriorate ("We could not say that we did not know" Chirac said in Johannesburg in 2002). What I think most shocks the young people who are demonstrating is precisely the gap between the major declarations, the so-called international agreements and the concrete actions. It is the characteristic of youth to think that actions must be in harmony with words. Adults have long ago lost any illusion in that respect, in the political sphere, at least.

This concerns the main difficulty of environmental policies, the beneficial effects of which will only be felt in the medium and long term and therefore benefit future generations, while the costs are borne by current generations. The most sophisticated criticisms of sustainable development are that it seeks to achieve intergenerational justice at the cost of injustice to the poorest of the current generations. And it is obviously a risk, unless public policy instruments are used that place the burden on the most advantaged. Such an instrument would, for example, consist of a basic free basic CO2 allocation for all, financed by a progressive tax on any CO2 emissions that exceed the quota, which is calculated to meet the basic needs of poor and middle (low) class households.

AS: I believe that one should carefully balance the inertia of the elites with the nature of the demands posed by climate activists. The demand to governments to accelerate our transition away from fossil fuel cannot be met without changing our pattern of consumption, lest we meet the same fate of the German Energiewende – whereby the more solar and wind power is in-

stalled, the more carbon must be burned to offset the intermittency of renewable energies (Renner and Giampietro 2020). These failures have recently led to disillusionment. For Kay Scheller, the president of the German Federal Court of Auditors, "voters could soon lose all faith in the government because of the massive failure [of Energiewende]" given the "extreme disproportion" between expenditures and results" (Dohmen et al. 2019). Another consequence of the demand posed on the governments to enact a rapid transition to a less carbon intensive economy is a renaissance of nuclear ambitions. To give an example, the failure of Energiewende can be blamed – for some commentators, on a too hastily exit from the German nuclear (Seneviratne 2019).

The Breakthrough Institute, one of the upholders of the Ecomodernist Manifesto, is tireless in its advocacy of nuclear as the only way to ensure a carbon neutral future, just glance to the Energy section of their online presence at https://thebreakthrough.org/energy.

Last but not least, if the climatic predicament must be avoided by governments assisted by technology, the recourse to 'negative emissions' is inescapable. According to the same IPCC (2014) BECCS (bioenergy with carbon capture and storage) and other CDR (carbon dioxide removal), techniques are associated with challenges and risks. I do not want to develop here a critique of geoengineering – for this see the work "Geoengineering dreams" of Paula Curvelo (Curvelo 2015). I only wish to note, in relation to BECCS, that we have been there before, with the folly on official EU targets on biofuels, now generally considered as failure on both sides of the Atlantic (Giampietro and Mayumi 2009) (Editorial of Outline 2018).

In more general terms I see the following paradox at play: a swift transition is being asked from governments – whose elites are charged with inaction. This call can only be answered with technology, i.e. with more of the same, with a risk that the same trajectories which have led to the present 'rape of the planet' will produce additional damage and that instead of mastering technology – as advocated by philosophers and ecologists for the best part of a century, we will continue to be ruled by it.

I agree with your progressive tax, also because – as we have discussed, any regressive tax such as a tax on consumption would be rejected by large sectors of society. At the same time, I do not believe we are locked in by governments prey to unscrupulous lobbyists – tough 'dark money' is surely there (Mayer 2017); we are locked by our own pattern of consumption.

PMB: It is clear that we are stuck in our consumer habits and not only by unscrupulous lobbyists, but above all by infrastructure and buildings that

were designed and built at a time when the climate issue was not yet an issue. The question of the transition to a low-carbon economy has, in my opinion, been dealt with in the most rational way by researchers at the Rotterdam DRIFT (https://drift.eur.nl/about/), adopting an approach focusing on the intermediate level of the socio-technological systems of energy, mobility, housing, etc.

This transition must use many and varied instruments: economic, technological, socio-cultural. But, contrary to what you think, technology is not necessarily "more of the same". Energy production with biomass technologies coupled to capture and storage of their CO2 emissions are not, in my opinion, "more of the same", and this is just one example among others.

Moreover, it is not because Germany acted recklessly by abruptly leaving the nuclear industry because of the emotion caused by Fukushima that all countries are condemned to the same fate. France can obviously count on its large nuclear park to make a smooth transition, even if it renounces the financial abyss represented by the Flamanville EPR. Note also that, despite its coal burning facilities, Germany has decreased its GHG emissions about 31% between 1990 and 2018. However, admittedly, it will be difficult to reach its target of 40% reduction by 2020.

In the USA, nuclear energy would not even be necessary. The 50 states of the USA could “convert their all-purpose energy systems (for electricity, transportation, heating/cooling, and industry) to ones powered entirely by wind, water, and sunlight (WWS). The plans contemplate 80-85% of existing energy replaced by 2030 and 100% replaced by 2050.” (Jacobson et al., 2015). Actually, “Countries which are close to 100% renewable electricity include Paraguay (99%), Norway (97%), Uruguay (95%), Costa Rica (93%), Brazil (76%) and Canada (62%). Regions within countries which are at or above 100% include Mecklenburg-Vorpommern in Germany, Schleswig-Holstein in Germany, South Island in New Zealand, Orkney in Scotland and Samsø along with many other parts of Denmark.” (Brown et al. 2018). Note the presence of German landers.

AS: We won’t be here in 2030 by all likelihood, but I greatly doubt the decarbonization of the US will have been completed by 2050. As per Denmark please note that Denmark benefits from generous hydro power provisions from Sweden and Norway. These two countries together account for nearly 70% of Europe's hydropower (Graabak et al. 2017), and there are several weeks every year when Denmark imports on 60-80% of the electrical energy it consumes (Nord Pool 2019).

As per your Energiewende numbers (31% between 1990 and 2018), I just quote from the Financial Times (Buck 2018) which cites the German Federal Environment Agency: "Since 1990, greenhouse gas emissions have fallen 28 per cent, but the bulk of that reduction came courtesy of the collapse of East German industry after reunification", and "Europe's largest economy blasted out 905m tonnes of greenhouse gases [in 2017], a level almost unchanged from that eight years ago." As of today, Germany continues in its policy of burning coal to smooth the intermittency of renewable, and this explains the dissatisfaction of the president of the court of auditors Kay Scheller mentioned above. More recently, German Minister of Economy and Energy Peter Altmaier came out against unfeasible targets of the transition agenda, such as one million electric vehicles in Germany by 2020: "Nowhere in Europe is going to manage that," he observed. "And even if we did manage to get enough electric cars, we wouldn't have enough renewable electricity to keep them on the road", concluding that Europe needs "a compromise that prevents us from having an unachievable target", and "Citizens across Europe are losing faith in politics. When they see that we are setting very ambitious targets and that a few years later we're deferring this, we are way off their expectations" (Simon 2018). I personally wish European leaders – including the European Commission president, would listen to Mr. Altmaier.

PMB: You omit to mention that Altmaier, in his parliament speech in 2018 also declared:

> It is true that Germany has not been, recently, up to its ambitions in terms of energy transition, but the picture is not as bleak as you like to show it. For instance, renewables have become the main sources of energy, accounting for 33% of the total in 2017, among which hydro power's share is not bigger than 3,1%. And primary energy consumption has been cut significantly, by 7.6% between 2008 and 2015.

You can find this figures together with a scientific, dispassionate discussion of Germany's Energiewende in a recent article on Energy Reports (Chen et al. 2019). By the way, it evokes also the minister Altmaier, but for having declared that ''The Energiewende will succeed if we make progress with the grid extension'' (Ibid., 1251).

All in all, it is less a question of technical and economical possibility than of political will. And let us remember Mark Twain's famous "They didn't know it was impossible, so they did it."

AS: Well, I hope I have shown that this is unfeasible in the stipulated time windows, both technically and economically. As per the political will, this is not just the will of politicians, but of their constituencies who are not ready to withstand a change of lifestyle. Not all scientists share this 'can do' euphoria. British scientists point out that the UK electric car target for 2050 collide with a physical impossibility – the UK would need about two times the current total annual world cobalt production, nearly the entire world production of neodymium, three quarters of that of lithium production and at least half of that of copper (Editors 2019a). Of course, if you are a techno-optimist, mining asteroids is only a few techno-steps away (Bastani 2019).

In order to keep the attention of the citizenry focused on the climate battle, a 'can do' attitude is being held, offering simplistic images of an economy which can be made circular, or rapidly decarbonized, against historical evidence of past transformations (Voosen 2018). Mathematical models are shown as capable of predicting the damage in dollars from hurricanes and draughts up to the year 2050 or 2100 (Saltelli et al. 2015). Problematic quantifications play a key role in these narratives. Thus, an educated public has been led to believe that in order to limit temperature increase to 2 degree centigrade with a 50% certainty a greenhouse-gas concentration of 450 ppm CO2-equivalent should not be exceeded. Needless to say, these numbers (0.5, 450, 2) are model-generated (Meinshausen 2005).

For the authors in (Renner and Giampietro 2020) the low carbon narrative of the European Commission is simultaneously heroic and reductionist. These authors deploy tools from relational biology and societal metabolism to identify physical infeasibilities, economic non-viability and – to conclude, dubious social desirability of what would be needed to equip Europe to deal with renewable intermittent energy sources reliant on wind and solar within a few decades. Based on data for Spain and Germany, this analysis identifies in the problem of energy storage, in the monetary costs, and in the greenhouse gas externalities associated with the creation and use of batteries the existing bottlenecks which prevent a plausible rapid way out of carbon by adoption of intermittent renewable sources – in contrast to the domination narrative and promises. These authors confirm the implausibility (for lack of natural resources) of a Lithium based storage system even at the level of a single country, and note how European leaders cannot simultaneously promise (a) to curtain CO2 emissions and (b) to scale-up the supply of intermittent sources of electricity (wind- and solar-based) to obtain a significant decarbonization of European economies within two or three decades, as the construction of the new infrastructure and storage will in all likelihood more than double the emission during the transition period. The

concept that more renewable installed capacity will automatically lead to a new greener future – in the absence of a parallel societal change of institutional regimes and patterns of consumption, clashes against historical records that more renewable is weakly linked to reduction of conventional (fossil) energy production (Renner and Giampietro 2020).

Is Action Urgent?

AS: There can be little doubt that science has played a very active role in putting climate change at the top of the policy agenda on a planetary scale. Is this priority and urgency justified? Are we right in moving from concern to alarm? Should we panic as suggested by a passionate young activist (Greta Thunberg 2019)?

PMB: I have no professional competence allowing me to decide of the urgency of action against climate change. I have no other choice then than to trust those who have that competence, people like, for example, David Chandler of the MIT who wrote (Chandler 2009):

> "The most comprehensive modelling yet carried out on the likelihood of how much hotter the Earth's climate will get in this century shows that without rapid and massive action, the problem will be about twice as severe as previously estimated six years ago – and could be even worse than that."

Or, more recently, the 11.263.scientists who recently signed the warning of climate emergency (Ripple et al. 2019).

As I have understood the problem, it is fundamentally a stock and flow one, CO2-equivalent gases are accumulating in the atmosphere, at a greater pace than they dissipate or are absorbed by the oceans and the biomass. As for every situation of this kind, the more you delay the closing of the inlet valve, the more you risk to exceed the absorbing capacity of the container.

Now, panic is never a good counsellor. However, Thunberg's call for panic is understandable knowing – as argued here above – that the main information was already available at the end of the seventies and that even Georges Bush (the father) was very close to take measures that would have helped avoiding any panic or hysteria today (Rich 2018).

What Nathaniel Rich demonstrates when he says that everything we understand about global warming was understood in 1979 (quoted a few pages above) is that we have been very close to a scientific AND political consensus already in the early eighties.

Of course, the heating effect of the CO2 was known since the 18th century with the work of the physician and mathematician Joseph Fourier. In 1959 the Irish physicist John Tyndall demonstrated that carbon dioxide absorbed heat and that variations in the composition of the atmosphere could create change in climate. In 1896 the Swedish chemist Svante Arrhenius published his article *On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground* which stated the basis of our knowledge of the greenhouse effect and the role of CO2 in global warming.

It is not an exaggeration to say that a scientific consensus existed in the United States in the seventies and until the end of the eighties. In February 1979, scientists coming from 60 countries gathered in Geneva for the first World Climate Conference agreed upon the necessity to act urgently. With the exception of the Reagan administration, the American political class, Republicans and Democrats combined, did not question the findings of scientists and supported measures to limit greenhouse gas emissions. Even Reagan, after the success of the Montreal Protocol, which banned CFCs to combat the rise of the ozone layer, seemed ready to change its mind.

It was not until the end of the 1980s that systematic and concerted challenges to the findings accepted so far were brought to light.

Nevertheless, in 1992 at Rio, 154 countries and the European Commission signed the United Nations Framework Convention on Climate Change and they were 195 at the 15th Conference of the Parties in Paris in 2015. Currently, 192 parties endorse the Kyoto Protocol convened in 1997. The problem is that despite all these treaties and repeated commitments, nothing significant has ever been done. No wonder the population stops believing in its leaders and politicians, no wonder young people get outraged by the casual attitude of these leaders towards the fundamental conditions of trust: that the words we use and the words we utter have meaning.

AS: Well, thanks for this recap of climate science. If I may, the first person to measure that "The highest effect of the sun's rays I have found to be in carbonic acid gas" was a woman, Eunice Foote, in 1856. A copy of that ancient paper is now available (see https://bit.ly/339odZS) (Darby 2016). As you know, we do not disagree on the fundamentals of anthropogenic climate change, and I have done my share of work on the topic, specifically on atmospheric chemistry and the effect of the sulphur cycle on the carbon cycle – with some effort I resist the temptation to quote my work here. Does this waving of academic credentials make me into an expert? I fear that it does not. None of us can be an expert in this immense field. Comparing facts is undoubtedly useful, but here we are comparing how us, two differ-

ent scientists, have come to assimilate their knowledge into an opinion about what should be done, in the hope that something we say may resonate with our readers – or 'irritate' them in a Luhmannian sense.

Coming back to the climate of emergency on climate – pun intended, why do I find it counterproductive? In intimating to be scared Greta Thunberg calls for what Hans Jonas called the hermeneutics of fear – the idea of fear as a paradoxically maximizing energy. Against this moral 'maximalism of climate emergency' an appeal to the classical virtues of prudence and phronesis appear in order. The French philosopher Pascal Bruckner shares this vision:

> "The idea that decarbonizing economies will be a long and tortuous process, and that an incremental ecological policy therefore makes more sense than thundering declarations, is totally unacceptable to the prophets of the coming Apocalypse. Whereas ecology demands policies that actually work, that take into account the human costs of transition, and that do nothing to harm the poorest among us, they prefer aggressive fanaticism." (Bruckner 2019).

PMB: I don't know of whom Bruckner is talking about. I note that in the section of the article devoted to climate change, he gives no reference, no name, no publication, except for Hans Jonas. He is talking about abstract, imaginary "ecologists" or cherry picking the very few most excessive amongst a wide community of rational, moderate people concerned with the ecological problems we pass on to the next generation, to castigate the whole community. It is as if you reduced the whole Christian nation to Torquemada! Worst, and this is something I resent, he writes: "Those who speak in the name of the planet seek to oppress." This is purely and simply impugning motives, or indulging in conspiracy theory. Or else it can be said of anyone who speaks in the name of general values or "godlike" entities: Reason, History, even Science if taken as an absolute, or a mythical Europe, as does Bruckner in this article.

Greta Thunberg and other whistle-blowers are just the tip of the iceberg. It is foolish and dangerous to reduce an iceberg only to what emerges of it but what is visible must be seen as an indicator of what is invisible and constitute more than 80% of the stuff. In our case, the submerged part is made up of hundreds of reports and articles on the energy transition, its difficulties, its constraints, but also its possibilities. A journal such as *Environmental Innovation and Societal Transitions* is entirely devoted to it and I invite you to have an eye on it.

AS: I am sure that the comparison has been made by others between Greta and Joan of Arc. In both cases the appeal of these figures is extraordinary, and their moral stature is – in a sense, beyond criticism, surely above the non-edifying noise originating from the present contention. In both cases we see 'sanctity' of a sort at play. When Greta tells leaders that they should be ashamed, we 'feel' that she is right in a higher sense which we should respect, as was the 12-year-old Severn Cullis-Suzuki addressing the U.N. Earth Summit in Rio de Janeiro in 1992 – over a large array of social injustices and ecological damages, who said to the adults in the room "If you don't know how to fix it please stop breaking it" (Fernandes 2012).

At the same both Church and Science have promoted causes which in retrospect we have come to condemn. I stand by my opinion that science cannot prove that climate is more urgent than the Gaza strip, or an incumbent new war in the Gulf, or insectageddon, or too-big-to-fail banks, and I disapprove of those fellow scientists who seem engaged in trying to do precisely that.

PMB: I agree with you on that. It is a thing science can't prove. It is up to each of us, as citizens, with multiple diplomas or illiterate, to form an opinion based on the information available and our hierarchy of values. However, when you take care of, for instance, what happens in the Gaza strip you can benefit the population living there (but perhaps only a part of it); when you take care of climate change you benefit populations all over the world including of course the one living in the Gaza strip, and this whatever their standing in the conflict. Climate change, more than any other environmental global issue, gives us an opportunity, for the first time in history, to have all nations in the world united in a common endeavour, beyond all that opposes them besides, as is the case in the Gaza strip.

Do We Need Climate Change to Reduce Fossil Fuels Consumption?

AS: In the hot debate about climate change it is not infrequent to witness a representation of science as victim of big oil in relation to climate change. According to this narrative, science attempts to save us and the planet, and if our lifestyles have not changed yet it is because of the so-called deniers, helped by the well documented (Mayer 2017) fossil fuel industry strategy to make energy and climate as an intellectual battleground of conservatives, especially in the US. This reading is perhaps disingenuous. We could change our consumption pattern ourselves irrespective of what deniers and president Trump choose to do. If the World Health Organization is right is estimating that seven million people die every year because of atmospheric pollution (outdoor and indoor, WHO, 2018) we would have seven million

reasons to reduce the consumption of fossil fuels without awaiting the extreme events, draughts, and the rising sea levels attributed to climatic change. For this reason, I am not sure that the text which you quote (Rich 2018), that "Nearly everything we understand about global warming was understood in 1979" has a point. Even death by atmospheric pollution is an old story, which hasn't changed out patterns of consumption any more than the number of casualties from car accidents has affected the way we manufacture cars, let alone the way we move around. People don't die yet because of the rising sea level, but while trying to cross the Mediterranean and other seas or deserts in search for a better life.

PMB: Of course, there exist many good reasons, other than climate concerns, to shift to cleaner source of energy and it is something that should have been done since long. The damage to human health coming from the burning of fossil fuels has been known since at least the 19th century (McNeill 2000) and despite improvements in the efficiency of furnaces, boilers and engines, the pollution it causes continues to kill millions of people around the world prematurely, as you rightly remind us.

On the other hand, we definitely need to reduce fossils fuels consumption to mitigate climate change. So, we have all the reasons in the world to stop burning fossils fuels where and when possible. As we have very good reasons to stop smoking, drinking too much alcohol and eating too much sugar or fat and to practice more physical activities. Would you affirm that the tobacco, alcohol, and fast food industries have absolutely no responsibility in the adoption of these unsafe consumption patterns?

Your reference to migrants dying whilst trying to cross the Mediterranean gives me the opportunity to stress that it is African people which are likely to suffer the most from climate changes, as well as those living near the sea at lowest elevation. Africa is particularly vulnerable to climate change for many reasons but mostly because of the fact that the greater part of its population is composed of farmers and herders who are totally dependent on ecosystems services (Connolly-Boutin and Smit 2016). Of course, African migrants are in search of a better life and as their conditions of living will deteriorate partly because of climate changes (more droughts and higher temperatures mean more malaria, more diarrheal diseases, more nutritional deficiencies) there certainly will be more and more of them trying to escape such a fate (Black et al. 2011). One should add also that they are also dying because of our unwillingness to welcome them. Let us be clear: I am far from underestimating the role of the economic and political (dis)organization of the world society in the living conditions of the poor all over the

planet and especially in Sub-Saharan Africa. I am just arguing that letting the climate deteriorate, knowing that it is the already destitute that will suffer the most from it, participate to this disorganization of the world society.

AS: Your mention of drug and alcohol makes me think of the editor of *Lancet* Richard Horton (Horton 2019) for whom "The climate crisis is one of the greatest threats to the health of humanity today". I mentioned already the seven million deaths from air pollution. For WHO alcohol kills 3.3 million a year; drugs – including the tragic opioids epidemics – 450 thousands. As per human health, heart diseases kill 15.2 million; 3.0 million die from pulmonary disease, 1.7 million from lung cancer, and 1.6 million from diabetes, and the list continues (https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death). The statement of "one of the greatest threats" from Horton comes from science – it is an editorial of *Lancet*. Thus, one would like to see the evidence behind climate coming to the top of this list. The impression is that scientists partake the present climate of urgency – and so does Richard Horton – who – writing on a medical journal – is surely well aware of the host of preventable deaths which medicine could tackle.

PMB: There are two big differences between the climatic risk and the other ones you rightly mention. The first is that mortality by heart diseases, lung cancer, etc. is for a large part related to individual behaviours that can be changed by individuals themselves. On the contrary, malaria, diarrheal diseases and nutritional deficiencies have nothing to do with risky behaviours. The second is that, considering the inertia of the climatic system, is not one or two generations that will be harmed without of course any responsibility in it but several ones.

AS: You note that the issue of migrants is not uncoupled from the issue of climate. I would say that migration is not uncoupled from demographic pressure. If we take again the year when we 'knew' (Rich 2018), i.e. 1979, the world population was then ~4.4 billion and it is ~7.7 today, not far from double. As noted by the Norwegian philosopher Gunnar Skirbekk, the world faces a crisis which is as factual as it is epistemic. In our science-based risk-societies the importance of the epistemic challenge is not to be discounted. By analysing texts produced by international institution Skirbekk notes that issue like demography (unsustainable population growth) and class (a socio-economic class perspective) are apparently latitant in what he describes as "A lack of important concepts". Skirbekk identifies additional challenges in relation to the "tensions between the various goals", the "mutual interconnectedness of various factors in a modern world in crisis", to end up with

the “Realism and credibility” of present-day narratives. The dense text of Skirbekk cannot be summarized here but the sense of urgency he conveys about the superficiality of the stories we tell ourselves, e.g. in relation to promoting growth with sustainability, is compelling.

PMB: You are talking to someone who spent more than 10 years of his career on population issues.... And of course, P for population is one of the three main factors, with affluence (A) and technology (T) jointly responsible for the environmental impact of human activities in the well-known I=PAT equation.

What Is the Role of Public Intellectuals and Politicians in This Discussion?

AS: There is no public figure which is not convinced that climate poses the most urgent threat to mankind, and the patent institutional failures to address the climate threat are presented as a symptom of the deterioration of our global political systems. Thus, the tones of the debate have escalated. For *New York Times* columnist Timothy Snyder (Snyder 2012) climate scepticism is a crime against humanity comparable to the Nazi exterminations of innocent children. The leader of the extinction rebellion movement embarrassed his followers and angered Germans politicians by iterating the same poor use of similitude, aligning the Belgian colonial atrocities, the holocaust, and climate on the same trajectory (Taylor and Connolly 2019). Paul Krugman deplores the ‘depravity’ of climate deniers (Krugman 2018), while Vandana Shiva, Naomi Klein, Noam Chomsky and others intellectual sign an open letter calling for citizens to rise up and organise for the climate ‘emergency’. The democratic party in the US proposes a Green New Deal (Wyden 2019), where Joseph Stiglitz assures with a confidence only economists can muster that "It is better to leave a legacy of financial debts, which our children can somehow manage, than to hand down a possibly unmanageable environmental disaster" (Joseph E. Stiglitz 2019). Is leaving the future generations to the wonders of the gig economy a reassuring prospect? Ironically, the only institution suggesting that jobs come before climate is the catholic church (Pope Francis 2015). The same pope even recently made clear that “there can be no true ecological approach... without the attainment of social justice... not only for present generations but those yet to come” (Editors 2019b).

As discussed in relation to green taxes on fuel, to use a form of taxation which hits the poor more than the rich to fix the environment appears to many protesters as the ultimate effrontery of the elites. This new phenome-

non of protest – which appears to pit the aspirations of the have against the needs of the have-not, takes place after Brexit and the election of Donald Trump. All of these events have come as a surprise to the same elites, and new media have played a role in all, offering an example of the interplay between techno-science on the one hand and policy and society on the other (Saltelli and Boulanger 2019). In relation to climate, a majority of the progressive believe that a climate-dominated agenda, as the Green New Deal is the US, is the best strategy to fight populism and authoritarianism. Perhaps they could follow the pope in not ignoring "social justice".

PMB: The environmental issue is all through an ethical one. This means that social justice includes environmental justice. In this regard, the attractiveness of the idea of sustainable development, as articulated in the Brundtland Report, is to be rediscovered. In my opinion, except for the population issue (that you pinpointed yourself here above), *Laudato Si* is the best articulation of the sustainable development ideal since the Brundtland Report,

I don't see where the Green New Deal of US democrats is oblivious of social justice. Personally, what I am more afraid of is the risk of a kind of a political climato-socialism oblivious of civil liberties. Now, you ask what is the role of the public intellectual? I think it is to do exactly what we are doing here: communicating open mindedly with one another (or at least trying to, but I am not sure succeeding...) exchanging arguments and only arguments, not insults and without impugning motives, in order to help the people who hear or read us to make their mind in the most rational way. And then, let anybody act personally in accordance with his-her conscience and let the political democratic procedures and law decide what is to be done collectively.

AS: Gro Harlem Brundtland, the UN Secretary-General's Special Envoy on Climate Change, is rightly remembered for the words: "Doubt has been eliminated". The words were uttered in 2007 at a speech before the United Nations. In a Greta-ante-litteram style, she went on to say "It is irresponsible, reckless and deeply immoral to question the seriousness of the situation." This intimation put Brundtland in trouble with the Norwegian Research Ethics Committee for Science and Technology (NENT), which received in November 2009 a complaint about Brundtland's speech. The complaint argued that Brundtland had violated the principles of research ethics, in particular academic freedom, anti-dogmatism and organized scepticism. The interested reader can find the story at (Strand 2012). NENT blandly reminded Brundtland that what she said did not amount to 'scien-

tific language' but it was considered that hers was a political – as opposed to scientific – speech, be it that she based her arguments on one of IPCC reports (AR4) and on the Stern review on the Economics of Climate Change. I recall this episode here as it is instructive of how public intellectuals mobilitate science – and of what problematic vision of science in society, this role entails. As noted by Strand, a science-based life-philosophy cannot derive authority from science itself. Of course, the sin of former prime minister of Norway – a politician after all, pale before the texts of the scientists / activists such as Naomi Klein (latest book: *On Fire: The (Burning) Case for a Green New Deal*) and Bill McKibben (latest work: *Falter: Has the Human Game Begun to Play Itself Out?*). I hope not to appear unreasonable insisting that, beyond the limits of the IPCC reporting, we have today a problem with science itself.

What Will a Future Historian Say?

AS: Take a future historian looking at the XXI century – plagued as it was by a rather normal mix of wars, social and environmental catastrophes, augmented by a rather aggressive season of technological disruptions. This historian might look with puzzlement at humans electing the greenhouse effect as the existential threat of the epoch. She will be studying mathematical models as her predecessors studied papyrus scrolls. To her, models will be read as confessions of an epoch's unspoken metaphors and zeitgeist. She will be surprised by model-based cost benefit analysis of climate impact. Existential threats, after all, are not counted in monetary numeraires. Yet she knows that each epoch is paradoxical in its own specific way.

PMB: What about a future historian (if it exists at all) looking with puzzlement at humans of the XXI century who whilst having all the information concerning the risks of climate change decided to let go because "the American (or European as well now, with our new EC) way of life is not negotiable"?

Concluding Remarks

AS: We are divided by the relative balance of what we resent; I resent Europeans marching against climate while Erdogan marches against Kurds, and – incidentally, as European, I agree with Bruckner (and Amin Maalouf and many others) that Europe may one day pay a price for its insouciance. By the time this dialogue has been written, the signals of a shifting geopolitical landscape have multiplied, and I resent scientists' role in forcing us to look elsewhere.

I suspect that the climatic day of reckoning is an idol in the Baconian sense, whose function is to assuage anxieties about the present by projecting the threat into a convenient not-so-close-to-affect-me future. Instead of acting as nourishment for a deeper ecological sensitivity it boxes ecological problem into a single planetary container, where an odourless and colourless gas slowly increases the temperature of the planet. This idol risks subtracting energies from the fight against the messier aspects of our impact on the planet, let alone a disturbing social and geopolitical transient.

Science is thus contributing to a hiatus which is likely to alienate from science a majority. This is regrettable, as science is our most valuable tool, and leaving it as the preserve of the elites, as predicted by the so-called techno-spit scenario (Lent 2017), is dystopian. In this scenario one would be left with an affluent super-technological and possibly trans-human/immortal minority (Harari 2016), and a useless, confused and distracted majority left glued to its mobile phones and tablets (No author 2018).

Before leaving the word to Paul-Marie for his final comment, I wish to report a personal episode which perhaps adds to the reason why a civilized dialogue as the present one is necessary. Recently *La Repubblica*, the second Italian daily newspaper by copies sold, attacked L' Accademia dei Lincei (usually abridged to The Lincei, plural, 'Those who see far'), arguably the most venerable Italian academy. The title of *La Repubblica* was *The Lincei organize a workshop on climate, and give the floor to denier Battaglia* (my translation). Battaglia is an Italian professor faulted by La Repubblica for having attacked Greta. The article also noted that one of the organizers resigning in protest for this presence. The program of the event (I was one of the invitees) listed 14 talks and eight poster presentations. Only one talk, signed by eight authors, and entitled "Critical considerations regarding the anthropogenic global warming theory" included the aforementioned professor. A few days after the article, the academy cancelled the event, thus offering the opportunity to journals of different orientation, which accused The Lincei of censoring dissent. The intellectual suicide of The Lincei poses ethical problems and vindicates the existence of a science police, whereby "On highly charged issues, such as climate change and endangered species, peer review literature and public discourse are aggressively patrolled by self-appointed sheriffs in the scientific community" (Kloor 2017).

PMB: In both camps, you will find excessive, irrational, even neurotic people and statements. For me, it doesn't prove anything. It is never the ones who shout the louder who are right. These are just the skum of the wave, the

tip of the iceberg. What matters is the wave, the hidden part of the iceberg. The question is not of the kind *either-either*, but of the kind *and-and*. As I tried to argue at the very first of our discussion, a complex world doesn't need simplistic and one-sided views but combinations of long term and short term, society and nature's oriented, perspectives.

Climate change is only one of the many dimensions of the current socio-political-ecological crisis we are facing now, not especially as Europeans or whatever, but simply as part of a human species gone mad by hubris. It has been identified for long now and it is a pity we spent (and are still spending) so much energy pushing for some, pulling for others so that nothing really significant has been made. If only our inability to do so was the price we pay for acting on the others problems you mentioned, but it is not the case. It is not because we are busy helping the Kurds, solving the Gaza strip problem, welcoming and helping migrants that we let the climate deteriorate, with the risk of harming everybody on earth, except for the happy few rich enough to insulate themselves from its consequences. All these incapacities are linked and I do believe that if only we could unite oneself around the climate stake, it would make us stronger and more able to address successfully our others challenges.

There are certainly lessons to be drawn from what happened with the climate issue, both for the scientific system and for the political one. I think the first should have refrained from mixing itself too closely with the second in the IPCC and kept its full autonomy. Conversely, the second should have endorsed the full responsibility of the collective treatment of the question without putting itself under the authority of science. We see this has been deleterious for both systems and therefore for society as a whole.

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HOW TO MAKE PEACE WITH NATURE

Ragnar Fjelland

Introduction

In October 1947, Albert Einstein sent a letter to the UN General Assembly warning of the arms race, pointing out that it threatened humanity's continued existence. The background was the invention of the nuclear bomb, and the race between the United States and the Soviet Union to develop increasingly powerful bombs. The letter had no consequences, because the leading countries were not interested in disarmament. Today the situation is even more serious than at that time.

Armament and war are not only the greatest threat to humanity, but also to nature. Norway is a member of NATO, and all the time it is required that the military budget should increase. The background is, as it has been since World War II, the threat that Russia allegedly represents. For this reason, it is relevant to mention some figures, to get an idea of the proportions:

In 2017, the world spent a total of $ 1739 billion in military budgets, according to the Stockholm International Peace Research Institute (SIPRI). It is interesting to look at the countries at the top of the list:

United States: $ 610 billion

China: $ 228 billion

Saudi Arabia: $ 69.4 billion

Russia: $ 66.3 billion

Then follow India, France and the United Kingdom. China's budget increased by as much as 5.6%, while Russia reduced by as much as 20%. It is worth noting that the US military budget is almost ten times that of Russia (SIRPI).

To make peace with nature, the most important thing is to fight all militarism. It is so obvious that I will not spend more time on it.

From the title of this article, it may seem like I have a simple recipe for how to make peace with nature. Of course, I haven't. But I will mention some conditions that must be met in order for us to move in the right direction.

In 1962 Rachel Carson published the book *Silent Spring* (Carson 2000). It is considered one of the most important books of the last century. The title of the book alludes to the fact that the bird song in the spring in Carson's neighborhood had gone. Carson pointed to the cause, namely the huge amounts of toxic pesticides that were used in modern agriculture to eradicate insects.

Carson was immediately attacked by agrobusiness. They threatened to sue *The New Yorker*, which had first published the book, and right-wing organizations tried to stop it. They failed, but the press attacked Carson for being a hysterical woman, putting emotions before scientific facts. President John F. Kennedy, on the other hand, became so interested that he asked his Scientific Advisory Committee to investigate the matter. They issued a report on May 5, 1963, and it concluded that Carson was indeed right.[1]

The time after the World War II was the heyday of technological optimism. Antibiotics had been discovered in the early 1940s, and it turned out to be effective against a broad range of bacterially caused diseases, vaccination programs had dramatically decreased diseases like tuberculosis and polio in the industrial world and DDT was highly effective in killing mosquitos and other insects. It was a widespread belief among physicians that all infectious diseases would be eradicated by the end of the century (Garrett 1994, 51).

However, in her book Carson did not just point to what might be regarded as unintended adverse effects of the technologic-scientific development. She pointed out that chemical pesticides allegedly solved a problem that was created by modern industrial agriculture. In traditional agriculture, based on diversity, insects were not a major problem. She pointed out that a majority of species on earth are indeed insects, but that they are held in check by natural factors. She refers to calculations carried out by Thomas Huxley one hundred years earlier that showed that unrestrained a single female aphis could produce progeny in a single yar with a total weight equal to that of the total Chinese empire of his day (Carson 2000, 216). The problem arose with the introduction of industrial agriculture and an accompanying monoculture. Then certain insect species could spread unrestrained, leading to the problems that pesticides were supposed to solve.

The problem with industrial agriculture and the uses of chemical pesticides is that they don't take the balance in nature into consideration. When the

[1] See for example Linda Lear's afterword mentioned above.

natural balance is upset, nature strikes back. One of the chapters in the book has the heading "Nature Fights Back".

Carson's book is often regarded as the start of the modern environmental movement. When you read the book today, you are struck by how far ahead of her time she was.

Another influential figure was Barry Commoner. After earning his doctorate in biology from Harvard University in 1941, he served in the Navy in World War II. There he was in charge of a project that consisted of exterminating insects on the beaches before the troops were landed. They used aircraft to spray DDT over the vegetation. He discovered that the insects disappeared in the first place, but after a while there were many more because all the fish that DDT had also killed were rotting on the beaches. Then he became aware of what later became his first ecological law: Everything is connected to everything else.

Later, Commoner argued that all environmental problems can be traced back to one basic relationship, the contradiction between what he called the ecosphere and the technosphere. These two are fundamentally different. The ecosphere is cyclical, while the technosphere is linear: we produce, use, and discard. The problem is that humans are part of both, and we are at war with the ecosphere. So, we are at war with nature. But this war has led nature to strike back. The only solution to the problems is to make peace with nature. Hence *Making Peace with the Planet* is the title of Barry Commoner's book from 1990 (Commoner 1990).

The First Condition Is to Realize that Everything Is Connected to Everything Else

Although Commoner emphasizes that ecology is a new and therefore not so advanced science, he still believes that we can formulate some ecological laws. He himself formulates four such laws. His first law is "Everything is connected to everything else."

The fact that everything is connected with everything else breaks with the ideal of knowledge that was established in the scientific revolution of the 17th century and which has been dominant to this day. The best description can already be found with Galileo Galilei and his younger contemporary René Descartes. The method is based on mathematics. It consists in isolating a phenomenon, dividing it into its elements, and then putting it back together. Galilei called this *metodo risolitivo* and *metodo compositivo*. But this is also the most important method for developing technology: We divide phenomena, and then put them back together in combinations that do

not exist in nature. It is precisely this method that chemists use when synthesizing chemical substances.

Science and technology thus become a means of controlling nature. In *Discourse on Method*, Descartes argued that science can give us

> [A] practical philosophy can be found by which, knowing the power and the effects of fire, water, air, the stars, the heavens and all the other beings which surround us, as distinctly as we know the various trades of our craftsmen, we might put them in the same way to all the uses for which they are appropriate, and thereby make ourselves, as it were, the masters and possessors of nature (Sixth Discourse).

In Descartes' time, this was just a dream, but it has been a fundamental driving force behind the technological-scientific development. The ultimate goal is complete control. One of last century's best-known physicists, Richard P. Feynman, who is often regarded as the inspiration behind nanotechnology, imagined that we can control nature atom by atom.[2] It really would be the fulfillment of Descartes' dream.

Applying this approach to the environmental problems means that we try to solve each problem individually, without seeing them in context. But because everything is connected to everything, it can have unforeseen negative consequences. Nuclear power plants have no CO2 emissions, and therefore nuclear power has been proposed as a solution to global warming. But nuclear power creates a number of new problems, such as the storage of waste that will be radioactive for thousands of years, radioactive pollution, not to mention the possibility of catastrophic events, such as the explosions at the Chernobyl and Fukushima nuclear power plants.

Electric cars also have no CO2 emissions, and are also proposed as part of the solution to the climate problems. They have shown some advantages, above all that, in addition to not having CO2 emissions, they reduce local pollution. But if the electricity is generated by heavily polluting coal-fired power plants, we have just moved the problem. In addition, electric cars take up as much space as fossil cars, and they cause just as many accidents. On the whole, they have all the other disadvantages that fossil cars have.

Because everything is connected to everything else, we have to give up the idea of complete technical control, or a technological fix on the envi-

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[2] Feynman's talk "There's Plenty of Room at the Bottom" from 1959 can be read at https://www.zyvex.com/nanotech/feynman.html (1.10.2018).

ronmental crisis. Measures must always be seen in a larger context, and technology must be integrated into the natural cycle. Therefore, as early as the 1980s, Commoner stated that the only solution to man-made climate change is to replace fossil energy with renewable energy.

The Second Condition Is to Realize that Nature Knows Best

This is Commoner's third ecological law. Technical advances lead to interventions in nature. But even though they may be useful to us, any major interference with nature is likely to be detrimental to nature. Commoner uses an analogy to illustrate this. If we open a clock and start randomly striking it, we will probably damage or destroy it. Admittedly, there is a tiny chance that the clockwork has stopped and that our random jamming will get it started again. But that is the exception. That's why we leave it to a watchmaker to repair a watch, precisely because "the watchmaker knows best" (Commoner 1971).

The analogy to the watchmaker is the natural selection of evolution. Mutations are random and most variants are not fit. Therefore, they are eliminated by the natural selection. But evolution is a slow process, which has taken billions of years. For example, when substances are not found in nature, it is probably because they have been eliminated in the evolutionary process. Commoner mentions that the number of protein types found in nature is negligible compared to the number of possible protein types. The reason why a protein does not exist in nature is therefore most likely to have been eliminated through natural selection.

In Commoner's words:

> Ecology's third law states that artificial introduction of an organic compound that does not occur in nature, but is made by humans and yet is active in a living system, is likely to be harmful [...] In practice, this view means that all artificial manufactured organic compounds that are in any way biologically active should be treated in the same way we treat or should treat drugs – cautious, cautious (Commoner 1971).

I said that technology consists in putting nature's constituents together in new ways. In organic chemistry we synthesize substances. They are most likely to be harmful, for example toxic or carcinogenic. As an example, Commoner mentions that there is no DDT in nature. This may be because an unlucky cell synthesized the drug once in the past and died.

Now, of course, we can claim that we do not *know* whether an action causes harm, or whether a substance has harmful effects. There is uncertainty associated with most of our knowledge of the environment. Uncertainty is also the most important weapon of climate skeptics. They often claim that there is so much uncertainty associated with climate scientists' models that we should refrain from implementing expensive measures. But even those who believe in man-made climate change will often point to uncertainty in relation to concrete measures. What is the effect of reducing oil production on the Norwegian continental shelf? What is the effect of reducing car traffic? What is the effect of replacing fossil cars with electric cars?

But is a claim that we cannot be sure that we are harming nature a good reason for not doing something? The point is, of course, that we cannot be sure that we do not harm nature. When it comes to our future, the burden of proof should not be on those who claim that we harm nature, but on those who claim that something is harmless.

The Third Condition Is that We Are Cured for *Neomania* (The Belief that the New Is Always Better than the Old)

We take it more or less for granted that there has been more or less continuous progress throughout history. If something is not so good now, we can at least comfort ourselves that it was much worse before. The philosopher and historian of technology Lewis Mumford claims in his classic work *Technics and Civilization* that the idea of progress is so strong in our modern civilization that we have a hard time imagining that there has been no steady progress. If the cities of Europe were dirty in the 19th century, then in the 13th century they must have been six centuries dirtier, for we take it for granted that the world has become cleaner. If the hospitals were overcrowded in the early 19th century, conditions must have been even worse in the 15th century. The fact that the cities in the 13th century were generally much cleaner than in the 19th century, and that the medieval hospitals had better space and better sanitary conditions than the hospitals in the 19th century, is simply excluded (Mumford 1963, 183).

Technological optimism was perhaps at its highest in the 1950s. Nuclear power plants would in the future produce unlimited energy at a price so low that it would be practically free, we would walk around in clothes similar to space suits, and eat pills that provide us with exactly the nutrients we need. But now it has been more than fifty years since that time, and much is the same. Admittedly, in the industrialized part of the world, most people have been given a washing machine, fridge, television and car, and in recent

years computers, the internet and mobile phones. But in many areas, we are much more old-fashioned than we think. We wear shoes that look a lot like the shoes you used thousands of years ago. Clothes have varied over time, but in principle we use the same type of clothing as they did two thousand years ago. We drink wine, which has been around for six thousand years, in glasses that were also invented several thousand years ago. Our kitchen utensils are about the same as found at the Pompeii excavations. We also do not move around in flying cars or motorcycles. We still travel shorter distances on foot, and the bike is about to get its renaissance.[3]

How long will a technology last? For example, if we take a person of a certain age and ask how long we assume she or he will live, the answer is simple: The older you are, the shorter the remaining life is, statistically speaking. But this does not apply in general. Nassim Taleb quotes in *Anti-Fragile*, as I have referred to above, the physicist Richard Gott who in 1993 asked the same question regarding the shows on Broadway. If the lifetime of Broadway shows followed the same logic as human lifespans, we would think that those who had been running longest would also have the shortest time left. But he found the opposite result: The longer a show has been running, the longer we can expect it to run. Taleb claims that the same goes for technology: The longer a technology has existed, the longer we can assume it will exist.

Taleb points out that the internet has been around for a few decades, and we can therefore expect it to exist for a few more decades. The e-book should make the paper book redundant, but still the sales of paper books are much greater than the sales of e-books, which is marginal. The paper book has been around for hundreds of years, so we can expect it to exist for another hundred years. The e-book has been around for a couple of decades, and we can therefore expect it to exist for a few more decades. Taleb points out that here we are only dealing with a rule of thumb, which we must not take too literally, but it can still be a useful reminder (Taleb 2012, 319).

A condition for making peace with nature is to give up the idea that the new is always better than the old. Too often we replace something that works well, with something that works worse. The burden of proof must be on those who want to introduce something new.

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[3] These examples, with the exception of the bicycle, I have taken from (Taleb 2012, 312).

The Fourth – and Perhaps Most Important – Condition Is to Reduce the Gap between Rich and Poor

I started with a book from 1962, that is Rachel Carson's *Silent Spring*. I'll end with a book that came out three years before. In 1959, physicist, novelist and university administrator, Charles Percy Snow held four public lectures at Cambridge University entitled *The Two Cultures*. They came out in the same year as a book with the same title, and in subsequent years were printed in a number of editions. The term the two cultures has become classic. With that expression, Snow aimed at the fact that the academic world was divided into two "cultures", science and technology on the one hand, and the humanities and social sciences on the other. He claimed that there was almost no communication between them.

What caught the most attention was that Snow attacked humanists not only for being ignorant of science and technology, but for being proud of their ignorance. They would not care to have anything to do with science and technology. However, he did not attack the humanities, but the humanists. But he also attacked his science colleagues for not be interested in applied science and technology.

Snow's concern was to bridge the gap between the two cultures. He believed that natural scientists and humanists had to work together to solve the urgent problems of the time. However, the last chapter of the book is completely forgotten. It has the headline: "The Rich and the Poor". Here he pointed to the gap between industrialized and non-industrialized countries. The first are rich and the second are poor, and the problem was that the gap between them was increasing. He then made a forecast: When the poor discover the gap, they will no longer accept the situation. The gap will be gone by the year 2000.

He couldn't be more wrong. The problem is just as big today, and the difference between rich and the poor is growing, both between countries and within each country. This must be seen today in the context of climate change, for the two are connected. The poor part of the world is hit harder by environmental problems and climate change caused by the rich part of the world. We have had the benefits, while the poor must pay the greatest price. Of course, this is deeply unfair.

The poor countries rightly point out that they have the same right to development as we do. At the same time, we know that the earth has no sustainability for everyone to have our standard of living. There is only one solution to that problem: We must consume less. It is absurd that all parties in Norway, presumably including the Green Party, are in favor of increased

economic growth. This growth will certainly not make us happier, on the contrary. One argument for continued growth is that it enables us to solve the climate problems. As I have pointed out, this will lead to more of what has caused the problems.

Finally, I should mention two points:

Naomi Klein's book *This Changes Everything* (2014) is also about climate change. The first chapter is entitled: "The Right is Right". She quotes the President of the US Chamber of Commerce, Thomas J. Donomue:

> There is no way this can be done without fundamentally changing the American way of life, choking off economic development, and putting large segments of our economy out of business (Klein 2014, 31).

The Right is right in the sense that we cannot continue "business as usual". According to Klein, there must be profound changes in order for us to do something effective against climate change:

> [A]ny attempt to rise to the climate challenge will be fruitless unless it is understood as part of a much broader battle of world-views, a process of rebuilding and reinventing the very idea of the collective, the communal, the commons, the civil, and the civic after so many decades of attack and neglect (Klein 2014, 460).

A prerequisite for this to be successful is that we can regain the belief that humanity is not just selfish and greedy, as neoclassical economic theory has led us to believe. As Gordon Gekko (played by Michael Douglas) says in the movie Wall Street (1987): "Greed is good!" Man can be greedy and compete with others when conditions are made for it. But it can also be selfless and cooperate if conditions are facilitated. Instead of basing society on selfishness and greed, we must have a community based on community and collaboration.

The second step follows from this, namely to show that we can live better and be happier by consuming less. Let me give one example. On Monday, September 18, the English newspaper *The Guardian* had a headline: "For me, this is paradise: Life in the Spanish city that banned cars." It's about the Spanish city of Pontevedra. The city was drowning in pollution and noise from traffic, and was characterized by relocation. Around 2000, bans were imposed on private cars, and car traffic was reduced to an absolute minimum. The building of supermarkets has stopped and a number of smaller

shops have been opened in the city center. Now you can hear birdsong and human voices instead of traffic noise.

Conclusion

Environmental pollution and man-made climate change are, besides nuclear war, the greatest threat to humanity. I have purposely pointed out a number of other environmental issues to just shed light on Commoner's claim that everything is connected to everything. Looking at the whole, it becomes quite clear that there is no technical solution to these problems. Of course, that does not mean that we should not develop technology. On the contrary, it is crucial that we develop technology that takes into account the cycle of nature.

But the problems can only be solved by us if we, in the words of Commoner, make peace with nature.

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Part II

(UN)JUST SUSTAINABILITIES. POLICIES AND PRACTICE

BIODIVERSITY CONSERVATION FOR SUSTAINABLE FUTURE

FROM FISH MANAGEMENT TO FISH REWILDING: A FINNISH CASE ANALYSIS

Markku Oksanen, Outi Ratamäki and Timo Haapasalo

Introduction

"Fish" is a moniker for a group of cold-blooded aquatic vertebrates, many of which are intensively exploited, both farmed and stocked and thus dependent on human actions. The resource characteristic of fish is plainly present, as in English references to fish stock – "stock" referring to supply or goods available for sale (Hornby 1987) – appear at least as often as the pure ecological concept of fish population. The term "fish" simultaneously denotes a biological category, an important component of biodiversity and a subject of conservation policies. The ambiguities surrounding fish as a group of species tend to be even more complicated, since the applicability of the concept of wildlife to fish is not universally shared. The U.S. Endangered Species Act considers fish as a target species of conservation (*Tennessee Valley Authority v. Hill*,[1] involving the conservation of snail darters in the context of the building of Tellico Dam is a classic case from the 1970s). However, fish as a group of species is not included in the concept of wildlife but forms a category in its own right regulated by specific fishing laws (see Camacho 2015, 865). Consequently, are fish biological entities that can be rewilded? As we see it, this example indicates that fish is an exceptional category through which we can shed light on the idea of rewilding. Our analysis focuses on Finland and changes in the legislation on fish management and conservation. We ask how the concept of rewilding applies in the context of fish, fisheries and fishing policies.

[1] *Tennessee Valley Auth. v. Hill*, 437 U.S. 153 (1978).

This paper is a mixture of theoretical speculation and empirical analysis of key regulatory texts in Finland. Speculation is inevitable since the notion of rewilding is relatively new and has not yet become – and may never become – an issue on the Finnish political agenda. The fact that there is no established translation for *rewilding* in Finnish indicates its novelty. Moreover, there is no one concept of what it means to rewild fish populations and the habitats in which they dwell. For example, what does the viability of fish stock mean in light of rewilding? Or does the rewilding of migrating fish need natural waterways and breeding habitats?

As we will argue, there is a policy transition from mere fish and fisheries management to the maintenance of viable fish populations and their habitats. Nevertheless, there are some inherent contradictions, as fish species tend to remain the object of continuous fishing interest that result in human-affected fish populations. As long as fishing continues, it raises questions over the precise meaning of rewilding: at one extreme is the view that no fishing should be permitted, and at the other is the perspective that human beings are rewilding themselves in attempting to catch fish almost bare-handed. In between these extremes, there are views that allow fishing activities within the limits of sustainability.

Theories and Methods

Our analysis rests on the concept of rewilding. Originally, it referred to the key role played by wide-ranging, large animals able to maintain ecosystem structure, resilience, and diversity through top-down trophic interactions (Soulé and Noss 1998; Ripple et al. 2014). The concept has also been associated specifically with ecological replacement of long-extinct species rather than restoration of ecosystem function (Pleistocene rewilding) but according to Seddon and Armstrong (2016, 20) recent interpretations of rewilding involve species translocations to restore ecosystem functioning. The question of whether the concept of rewilding is premised upon the dissociation of human beings from the rest of nature has also been discussed (Jørgensen 2015; Prior and Ward 2016). This has led to a broad definition of rewilding in which human-induced activities play a greater role than mere reintroduction or translocation and where the focus of rewilding is not only large mammals but also abiotic factors in relation to ecosystems, e.g., the removal of dams and other "hard engineering" river-management practices (Prior and Brady 2017). Prior and Brady (2017, 34) define rewilding as a process of (re)introducing or restoring wild organisms and/or ecological processes to ecosystems where such organisms and processes are either

missing or are "dysfunctional". This definition falls under the category of *ecological rewilding* (see Pettorelli et al. 2019, 8–9) and allows for differentiation between restoration and rewilding: restoration aims for a return to a defined previous state whereas rewilding has no predefined aim beyond increasing wildness (Pettorelli et al. 2019, 8; see also Johns 2019, 19–20 and Prior and Brady 2017, 37).

However, Pettorelli et al. (2018, 1115) stress that the differences between restoration and rewilding are not clear-cut. Restoration, when passive or open-ended, could be understood as rewilding. In fact, Pettorelli et al. (2018, 1117) define rewilding even more widely: "the reorganisation of biota and ecosystem processes to set an identified social–ecological system on a preferred trajectory, leading to the self-sustaining provision of ecosystem services with minimal ongoing management." This definition, in their opinion, is justifiable for at least two reasons. First, they argue that the definition does not rely on the "highly subjective notion" of wilderness or exclude rewilding that requires or entails strong human inducement, e.g., on private land or regions where human activities are fully established. On this issue, Prior and Brady (2017, 35) suggest that it seems appropriate to think of "rewilding" as a relational – rather than binary – category, which can be implemented across a range of scales and at different intensities, as opposed to homogeneously across the totality of a given landscape. Second, Pettorelli et al. argue that their definition also embraces all forms of rewilding (including passive, ecological, trophic and Pleistocene rewilding as well as some forms of restoration) and is adaptive in terms of spatial and temporal scales since it is not tied to specific goals identified from the past. They adopt this stance on the basis that returning to some previous state, or historical benchmark, might not be possible because of the changing climate. Key notions in their rewilding conceptualization are process-orientation, smooth operation (service delivery) and low maintenance (wildness).

The uncertainties and restrictive human control that go hand in hand with rewilding projects have raised questions about the scientific and professional nature of rewilding (Guerrero-Gatica and Root-Bernstein 2019, 132; on risk management, see Pettorelli et al. 2018). Because rewilding projects are open-ended, experimental and rife with uncertainty, current legal norms and policy instruments may not offer them any support. Moreover, rewilding can be fundamentally at odds with attempts to incorporate the idea of rewilding into legislation (Pettorelli et al. 2018, 1121). In modern societies, environmental and natural resources legislation is strongly connected with ecological understanding of the natural and human-created systems (Kumpula 2006, 95–99). This legislation traditionally emphasizes in situ conser-

vation and the preservation of historical conditions, both of which shape the facilitation and framing of collecting data for research purposes (Pettorelli 2018, 1121). Nevertheless, the relationship between environmental legislation and ecological knowledge is not – and never has been – straightforward. One source of complexity is the role of values in science: some assume that the conceptions produced by science are "value-free" or "morally neutral"; others simply deny this or seek to find a balance between issue advocacy and impartiality (see, e.g., Nelson and Vucetich 2009). Nevertheless, the dominant view stresses the authority of scientific knowledge with respect both to legislation generally and to specific cases and policies. Thus, in modern societies, there is a widely shared presumption that evidence-based policies will be followed.

These perspectives on rewilding and their connection with scientific knowledge will guide our analysis, which involves both speculation and empirical study of the rewilding concept in the context of fish, fisheries and fishing policies. The more empirical part of the paper consists the analysis of Finland's Fishing Act and the discursive processes involved in updating the 1982 Act to the 2015 Act now in force. More precisely, our study revolves around the Act's objectives as spelled out in its first section. The concept of rewilding was not applied during the redrafting of the Act but ideas related to it were clearly articulated.

According to Gellers (2015), legal documents are excellent material for discourse analysis because of the idiosyncratic but explicit properties of legal language. Moreover, Gellers (Ibid., 484) points out that legal language and jurisdiction reflect the existing social hierarchies and power relations of society at large. The methods applied in our analysis includes features from critical discourse analysis, transdisciplinary research and the recognition of unsustainable outcomes supported and produced by the law.

The critical aim of our analysis is to shed light on the implicit meanings in these legal texts, to make visible dimensions that are not spelled out but can be surmised and can inform fishing practices and the governance of fisheries and fishing waters (for which there is a specific term in Finnish: *kalavesi*, which refers to the harvestable aquatic habitats of fish populations). In other words, the legal text under investigation contains concepts that are politically, economically, historically and ethically loaded and probably not free from scientific controversies.

Our analysis is informed by the awareness that although the data consist of Finnish legal texts, our research goes beyond the state government level. Although the idea of resource sovereignty remains the cornerstone of inter-

national law and shapes the conservation of biodiversity, the enactment of law in a sovereign state is not insulated from exogenous influence (Armstrong 2014; Oksanen and Vuorisalo 2019). Since 1996, fisheries management in the Finnish economic zone in the Baltic Sea has been governed by the legislation of the European Union (EU), and environmental conservation – in inland waters – is also the subject of EU legislation. Moreover, Finland has adopted numerous international environmental conventions as well as some border river treaties. All in all, the matter at hand comprises a complex area of regulation and governance. These international and supranational norms affect domestic law and policymaking. However, although sovereignty over fish management and conservation may be subject to certain constraints, it is not non-existent. All this is reflected and creates tensions in legal texts at national level as discussed below.

Analysis of the 1982 Fishing Act

The objectives of the outdated Finnish Fishing Act were as follows: "In the pursuance of fishing, efforts shall be made to maintain the maximum permanent productivity of the waters. Special consideration should be given to ensuring that the fish stock is exploited rationally and with due attention to fishery viewpoints, and ensuring that the fish stock is managed and expanded. Consequently, such measures shall be avoided that might harmfully or adversely affect nature or the balance of nature."

Its apparently neutral key terms are "fishing," "fishery," "waters" (fishing ground), "permanency," "productivity" and "fish stock," but the clear ideological dimension is expressed by such terms as "rationality," "management," "expansion," "harmful" and "balance of nature." The objective section thus appears as a statement for using fishing grounds optimally and efficiently, thus rationally. Causing damage to ecological systems – couched in an old-fashioned way in terms of "nature" and the "balance of nature" – seems to be important mainly because it might pose a risk to this rationality. Supporting or regulating services (see MA 2005) of ecosystems seem to be subordinate to the exploitation of fish stock on the basis of the word "consequently" used in the section of the Act quoted above. This would be, however, a simplification that ignores the accumulated layers of meanings and contents. Two types of discourses can be identified to expose these implicit elements: the farmer discourse and the rationality discourse.

The Farmer Discourse

The idea that human beings are farmers of aquatic bioresources is clearly present in the 1982 Act. Fisheries and their habitats are viewed as analogous to grain and fields, all of which are subordinate to human needs and wants. The formulation of the element of productivity in the objective section is striking: "In the pursuance of fishing, efforts shall be made to maintain the maximum permanent productivity of the waters." Due to its position as the opening section of the Act, the productivity goal is a priority and is defined in terms of quantity and sustained yield. Three questions can be asked:

1) How can and should productivity be understood? What is the "stuff" of productivity?

2) From whose perspective has productivity been defined?

3) How does productivity relate to sustainability (to which the attribute "permanent" refers)?

First, productivity can be understood either quantitatively or qualitatively or as a combination of both of these aspects. Of course, quantitative productivity can be understood crudely to refer to weight of catch in a hectare or as the result of an hour's work. Productivity can also be understood in terms of money (the monetary value of the harvest minus the costs involved). The qualitative dimension of productivity is more difficult to articulate if we take into account the experiential aspects of fishing activity (as a form of recreation or as a cultural practice). The quality of fishing experience is, arguably, determined by its authenticity, meaning that fishing occurs in natural settings with wildlife and with no guarantee of the catch (in contrast to "fish pond" fishing) (Liu et al. 2019).

Second, productivity is generally assessed from a human perspective and more specifically aims at safeguarding the continuation of commercial and subsistence fishing. The emphasis is thus, as it is nowadays expressed, on provisioning services in the categorization of ecosystem services (MA 2005). This means that the law prioritizes commercial fishing over recreational fishing and to some extent also other uses of waters that are not directly related to fishing.

Third, the permanency of the productivity is a challenging concept, as attempts to maximize productivity may conflict with attempts to secure the permanency of productivity. This is a general dilemma in terms of seeking to utilize bioresources in a manner that is both sustainable and efficient.

The Rationality Discourse

The opening section of the 1982 Act employs the concept of rationality: "the fisheries must be exploited in a rational way". It may be noted that ideas as to what is or is not rational do not amount to timeless truths if we take the view that the substance of rationality depends on the results of scientific research and that evidence-based fishing policies are followed. Scientific understanding of fish stocks has evolved with increasing use of modelling and advances in genetics and molecular research. The new understanding that salmon populations do not comprise a single "salmon stock" but several micro populations whose breeding behavior is characterized by the concept of site fidelity is one example of this. The 1982 Act emphasizes that "practices having damaging or harmful impact on nature or its stability must be avoided." The way in which this aim has been operationalized is problematic. Following the 1982 Act, the safeguarding of viable fish populations was understood as stocking of fish and other forms of regulation played a lesser role.

The question of how this stocking relates to the idea of balance of nature is relevant here. In general, the notion of balance of nature is, as one author characterizes it, "ecology's enduring myth" (Kricher 2009), while others may see it as an outmoded metaphor that can be replaced with concepts of equilibrium or stability or be rejected altogether (Cooper 2003). Thus, competing views exist in the field of conservation ecology as to what normative concepts characterize the best natural systems without undermining the normative core of the balance of nature paradigm. If the balance of nature is understood in terms of genetic diversity and viability, critique targeted at stocking practices is justified. Furthermore, the widespread and systematic practice of stocking does adversely affect the gene pool of fish populations leading to their decline as compared to the situation where fish populations breed without human interference (Ågren et al. 2019; Lemopoulos et al. 2019).

Analysis of the 2015 Fishing Act

The objectives of the new fishing Act are expressed in the following way: "The objective of this Act is to use the best available information to ensure ecologically, economically and socially sustainable management of fish resources in such a way as to secure a sustainable and diversified return on fish resources, the natural life cycle of fish stocks, and the diversity and protection of fish resources and other aquatic flora and fauna." Our analysis

recognizes three different discourses: those of knowledge, ecological sustainability and naturalness/nativity.

The Knowledge Discourse

The opening sentence of the unofficial translation of the Act refers to the best available information but the term "information" is not a good translation since in the original Finnish text the word used more accurately translates into English as "knowledge". (And often the concepts of knowledge and information are utilized separately). The basic idea is, however, clear and is also repeatedly conveyed in EU legislation and in international treaties: management practices and decisions should not conflict with the state-of-the-art in science. Doubt as to whether this requirement is always met remains, but this does not undermine the idea itself since it is the nature of scientific knowledge to be fallible and scientific opinion may also change over time. This relates to the challenge as to how to avoid or settle conflicts over what represents the best available knowledge. To put it somewhat pessimistically: as far as scientific facts exist there will be controversies over them. In the implementation phase, there will always be uncertainties and risks no matter how carefully the scientific knowledge is accounted for.

There is also the question of politics. In the statements given in relation to the government bill on the new legislation, stakeholders made the criticism that it is too protective of fish at the cost of fishing industry (Government bill 2014, 26). Any law is a negotiated compromise between scientific facts and contravening political interests. Nevertheless, both science and legislation are dynamic in the sense that when scientific evidence changes, this should, at least ideally, be taken into account in legal interpretation, thus allowing for new policy responses.

The Ecological Sustainability Discourse

The concept of sustainability is not limited to ecological sustainability but also includes economic and social dimensions. There has been a lot of academic and non-academic discussion on the meaning of sustainability and on the relative weight of its constitutive components. Can ecological sustainability override economic and social elements or does economic sustainability come first, and so on? In this sense, the objective section of the Act is a good example of a legal norm resulting from a political compromise but which also reflect the human condition: it involves the recognition that we are dependent on bioresources to sustain life and must therefore find the best ways to meet the needs of current generations without compromising

those of future generations. Nevertheless, the objective section does reflect an attitudinal change over the last thirty years, including the apparent rejection of a crude understanding of productivity in terms of quantities and the inclusion of qualitative dimensions such as cultural and recreational demands and ecological factors.

The Naturalness/Nativity Discourse

The Finnish term *luontaisuus*, used in the Act, is rendered as *naturliga* in the official Swedish translation and as "natural" in the English translation. However, *luontaisuus* also connotes a place that is natural for a living thing. In English the correct term would therefore be *nativity*. For example, the rainbow trout is not a native or natural species in Finnish waters, but is regularly stocked in some open (unfenced) waters and thus lives in the wild. Thus, the expansion and increasing viability of the rainbow trout stocks does not count as an improvement if *luontaisuus* is understood in terms of nativity.

The naturalness/nativity discourse has obvious overlaps with the ecological sustainability discourse. Preserving the natural lifecycle of fish can be understood as an objective in relation to decreasing human intervention in fish reproduction, i.e. decreasing dependence on hatcheries and stocking to maintain fish populations. This objective also includes the idea that migratory fish species should be enabled to migrate. This is perhaps the most demanding target in economic terms, because it entails the construction of fish ladders and the dismantling of artificial barriers to migration such as dams. As we see it, allowing the natural migration of (native) species of fish is an instance of rewilding albeit not identified as such in the 2015 Act. While the 1982 Act, both in practice and in spirit, emphasizes fish stocks, the new Act goes in the direction of enhancing the (natural) diversity and wildlife character of the fish population in Finnish waters.

Room for Rewilding?

This section discusses the management of Finnish fisheries and aquatic ecosystems on a more general level from the perspective of rewilding.

To begin with, let us compare rewilding fish, especially salmonids, with the management of game animals. It could be argued that game animals have more wilde (life) characteristics than most fish species. First, while reproduction among game animals tends to occur independently of human assistance, the reproduction of many fish species occurs in hatcheries from which the fish are released into the wild. Second, while the movement of

terrestrial animals is blocked by human constructions (roads, fences, buildings etc.), river dams are even more non-negotiable constructions that in practice make the reproduction of migratory fish entirely dependent on human assistance.

There are two speculative ideas that are discussed in conservation biology circles but not – yet – more widely: the reintroduction of extinct predators and the introduction of novel species. Some top predators became extinct in Finland during the 19th century. Wels catfish (*Silurus glanis*) and sturgeon (*Acipenser oxyrinchus*) are good examples. How can this be interpreted in conservationist terms? First, one could point out that the reintroduction of these species would render Finnish aquatic ecosystems closer to the state they were in the 19th century in terms of species composition. Second, one might justifiably argue that such aquatic ecosystems would be wilder than is currently the case in the absence of historical top predators. In this respect, rewilding is linked with restoration. There is, however, virtually no public discussion on that possibility in Finland. What about the novel species, then? The presence of rainbow trout (*Oncorhynchus mykiss*) is dependent on human intervention and thus might not give the ecosystem rewilding characteristics. Would it change our perception if a species were to be introduced in order to save it in a warming climate? Such a conservation measure is known as assisted migration (Hällfors et al. 2018). This method is highly contested and there may be serious legal obstacles even to carrying out experiments in this area.

If one wishes to see the rewilding of the Finnish aquatic environment, it would be better to pin one's hopes on extant species, in particular migratory fish that are predators, though not top predators, and much smaller than catfish and sturgeon. Landlocked salmon (*Salmo salar m. sebago*) and brown trout (*Salmo trutta*) are good examples in this context. One of the key problems here is not only the population decline and high risk of extinction of these species but also the decline in genetic variation. As the latest scientific evidence indicates, hatchery salmonids often lack some of the traits typical of natural populations. Hatchery fish, for example, may be more aggressive and bolder, leading to higher predation risk after they are released into the wild (Ågren et al. 2019). Thus, rewilding also involves behavioral issues.

Migratory fish have suffered greatly due to human activities. In the case of brown trout, for example, not only the loss of spawning habitats, but also continuous overfishing has resulted in drastic alterations in their migratory behaviour. Most of Finland's migratory brown trout populations are near to extinction, and the remaining populations are mainly local (Syrjänen and

Valkeajärvi 2010, 205-206). As recent studies have shown, migration is – at least partially – genetic, ergo, certain individuals and populations have higher tendency to migrate (see, e.g., Lemopoulos 2019). Preserving trout's natural migratory behaviour enhances biodiversity, thus augmenting rewilding in a real, concrete way.

One way of seeing rewilding is to increase the number of "big fish" in an ecosystem. In this case, instead of reintroducing lost species to Finnish lakes and rivers, we suggest giving extant predators back their apex status. Native predatory fish, including pike (*Esox lucius*), pikeperch (*Sander lucioperca*) and brown trout are top predators in their own ecological niche. Excessive fishing can result in miniaturization both in respect of population and on an individual level (see, e.g., Enberg et al. 2010). Protecting large predatory fish would, naturally, lead to increasing their numbers, but could also strengthen ecological sustainability. Pike, for example, are a keystone species in lake ecosystems, controlling the abundance of smaller, prey fish. The larger the predator, the bigger and more prey it can eat (Tiainen 2017, 7). In the complex web of food chains and predation, new species are not needed, but instead the predatory fish that currently exist need a proper chance to grow large and become the apex predator.

How can the rewilding objectives be achieved, then? There is a need for policy change, not only in legislative terms but also on a practical level, where fish populations are exploited. Stocking fish has traditionally been a method both of compensating for the lack of natural fish reproduction and of attracting recreational fishers (Baer et al. 2007, 57). Although stocking often leads to temporarily higher fish densities, it can also cause evolutionary damage (Pinter et al. 2019, 6–7). For instance, brown trout is genetically a highly diversified species, where stocking trout of different origin threatens the natural population and their genetic diversity (Lemopoulos et al. 2018, 1689). In addition, if the goal of rewilding is to have more naturally spawning fish populations, where human interference is not needed, their habitats also need restoring. Fish can adapt to different habitats to a certain degree, but eventually their ecological requirements need to be met. As studies indicate, restoration projects hardly benefit from stocking if there is any natural population left (Marttila et al. 2019, 523).

Finally, if larger predatory fish are desired, their harvesting needs to be controlled, i.e. they need protection from fishers. Given that fishing is not totally banned, the most efficient approach would be to set a maximum size limit. Traditionally, fish have had only a minimum size limit, which ensures that harvested fish have been able to spawn at least once. This limit does

not, however, protect any of the larger individuals, which are important in predation as mentioned above, but also in spawning: larger fish can produce bigger eggs that have a higher survival rate (Olin et al. 2017, 137–138). Interestingly, it was suggested that a maximum size limit be introduced in the new Fishing Act, and it remained part of the reform process until 2014. Although the new Fishing Act calls for best scientific knowledge in fisheries management, the maximum size limit was omitted from the final legislative text (Government bill 2014, 65).

In Finnish waters, one of the main challenges has been miniaturization of individual fish, or the decline of average size and earlier maturation in their lifecycle. This partly relates to the length of their life, which is too short to allow predators to grow and become "true beasts." On the other hand, the shrinking size of harvestable fish is an evolutionary response to human demand. Whatever the mechanisms of miniaturization of various species, it raises questions about rewilding in general and, in particular, about the precise conditions and criteria under which fishing is possible if the aim is to rewild fish populations and the waters (see, e.g., Vainikka and Hyvärinen 2012; Arlinghaus et al. 2010).

Advancing the rewilding of physical environment also requires the "freeing" or "rewilding" of waters. The natural reproduction of all the species mentioned above depends on specific rapids, access to which is blocked by dams and other constructions or whose key characteristics have been destroyed. Restoration is an established and widely tested method for the alleviation of pressure on some fish populations. We find the attempt to separate restoration from rewilding rather factitious. Although restoration processes are subject to certain guidelines and goals, we take the view that there is always a certain level of uncertainty involved when dealing with natural environments. In the case of salmonids, for example, the main goal of restoration is to introduce lost habitats. Here restoration is about giving nature a chance. When lost habitats are reintroduced, the ecosystem can recover, and different organisms can recolonize their new habitats. It is up to nature, then, as to the fashion in which this occurs and how long it takes (Luhta et al. 2012, 1967). In addition, (re)wild(ed) fish populations call for restoration processes, with all their uncertainty, in many cases.

Concluding Remarks

Much of the debate on rewilding has focused on top terrestrial predators, such as the lion and the wolf; or large mammals that shape their habitats, such as the elephant. This chapter has addressed the fish and the marine and

freshwater ecosystems more broadly in the context of Finnish fishing legislation and management.

As our analysis of the objectives of the Finnish fishing legislation shows, old dominant discourses on fishing have been *partially* overtaken by more ecology-centered discourses that might incorporate, in principle, the notion of rewilding, should it convert into actual legislation. Thus far, it has been no more than an idea in conservation science. The old discourses compare the management of fisheries to agriculture; the new discourse takes into account ecological knowledge and the emerging concern for the loss of biodiversity.

Five criteria can be identified in respect of the evaluation of interventions used in Finnish fish management and attempts to revive fish populations: the selection of species for rewilding; the enhancement of genetic variation within the species; the lifecycle of individual fish; the ecosystem function; and the physical qualities of aquatic ecosystems. To obtain a comprehensive picture of the realities and potentialities of the rewilding of fish and aquatic ecosystems, all these issues must be addressed.

In a broader context, fish species are important aspects of global biodiversity and rewilding is – or perhaps it is more accurate to say that it could be – an instrument by which to protect biodiversity. Fish represent an aquatic resource to be harvested and managed but also have intrinsic value in their own right and form an instrumental aspect of cultural and recreational activities. Moreover, the economically most important fish species are farmed and/or stocked and have lifecycles and genetic variations within populations that differ from those of wild fish. Ecosystems populated by non-native species differ from those populated by native species although they share the same functions in the ecosystem. The issue of whether only natural or human-independent entities count in biodiversity terms is evergreen in conservation science literature. And if human-dependent elements are included in the biodiversity concept, should they matter less than human-independent elements? Furthermore, if the wildlife or wildness characteristic is a prerequisite in biodiversity terms, are stocked species wild and contribute to biodiversity?

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HYDROPOWER RESERVOIRS AND IMPACTS TO THE TRANSMISSION OF SÁMI KNOWLEDGE IN SWEDEN AND FINLAND

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Introduction

In this paper we are discussing the elements of seemingly green energy production in the Arctic – the hydropower development. It has been hailed as an equitable solution to the present need for sustainable energy under climate change and positioned often as an "emission free" source. Challenging these notions of 'green energy discourse' in this paper arises from using two indicators – impacts to Sámi Indigenous knowledge transmission and mercury.

Sámi are the Indigenous peoples of Sweden and Finland (as well as Norway and NW Russia). As with most of the Indigenous societies globally, their endemic (Mustonen 2014) knowledge has been passed on using culturally acceptable ways and in the past was mainly oral. As Coco and Dubois (2019) demonstrate, the modern Sámi are utilizing social media, online sourcing and other methods whilst maintaining an unbroken connection with their homelands and culture.

However, large-scale industrial land use (mining, road construction, hydro dams) affects negatively the Indigenous knowledge, capacity to maintain age-old connections with the Sámi homeland and in some cases, it has been demonstrated to contribute to Sámi language loss (Aikio 1988). Coco and Dubois (2020) provide a large review of Sámi agency and cultural resistance position on hydropower development and Sámi responses as a key element of the past century of Indigenous-state relations in the Nordic north. Central to their (2020) view is the question of the Alta dam development.

Less attention has been given to very similar hydropower struggles in Sweden and Finland affecting the Indigenous Sámi.

In this article I (Mustonen) am also using one additional ecological indicator – Hg, or mercury as a way of discussing how the Sámi are responding also to ecological impacts resulting from hydropower development and other land uses. Primary impacts of hydropower developments include the loss of submerged lands, waters and wetlands, loss of Indigenous camp sites, reindeer herding, hunting and fishing areas and major changes to the hydrological regimes. Additionally, dams prevent migration of high-value fish such as trout, Atlantic salmon and other salmonids. Mercury is a more "hidden" driver associated especially with the early decades of hydropower development. It stays in sediments too (Verta et al. 1989).

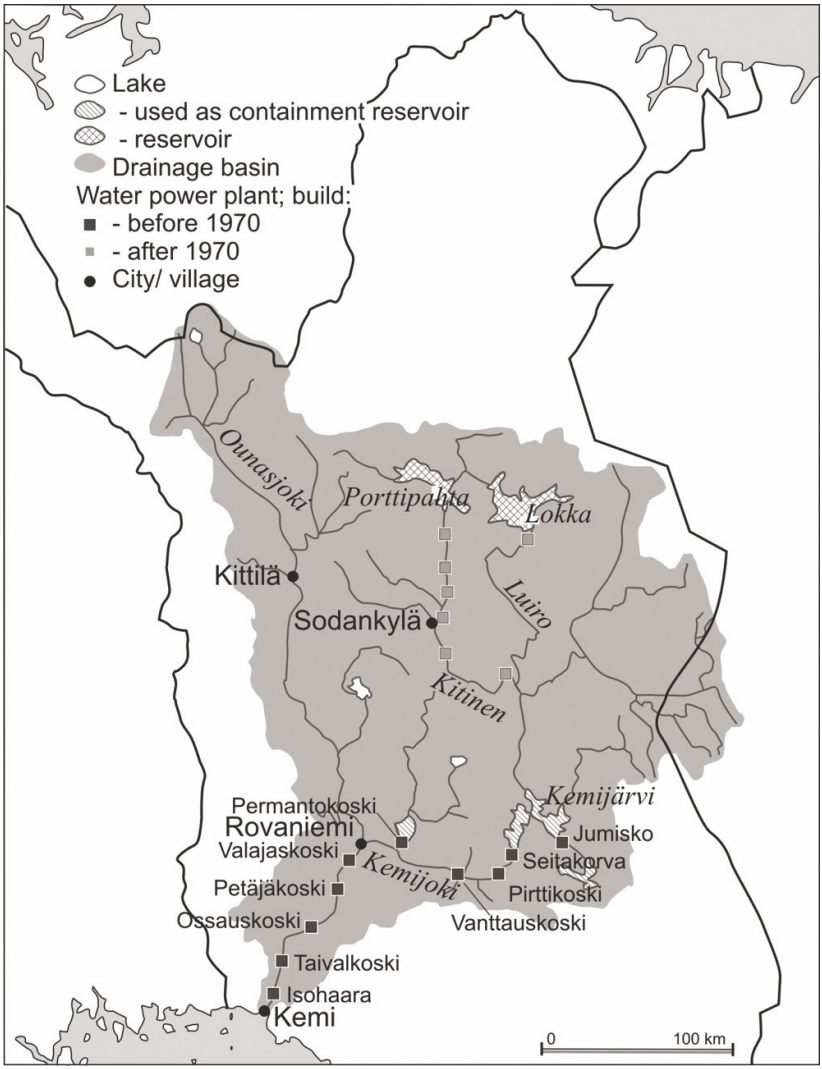
Case Area in Finland

For the Finnish Sámi area, the case study focuses mainly on the Lokka and Porttipahta reservoirs that were created in late 1960s and early 1970s. They are the largest of their kind in Europe. Lokka and Porttipahta are located in the northern part of the municipality of Sodankylä, along the tributaries of river Kemijoki in Central Lapland. Lokka reservoir is situated in the upper reaches of river Luiro and Porttipahta upstream of river Kitinen.

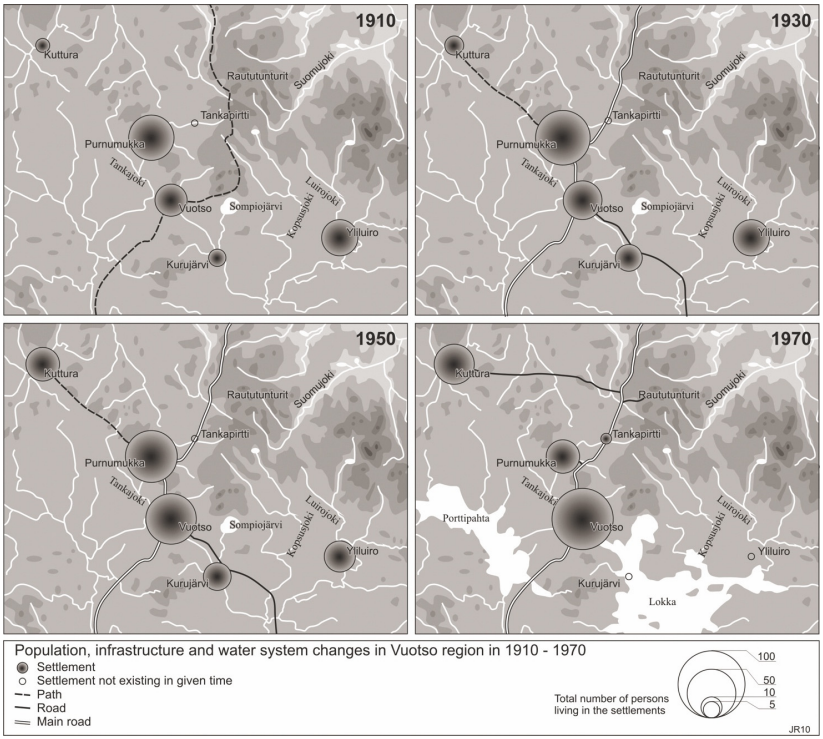
The maximum height of water for both is 245 meters above sea level, and the lowest permitted height of water is 240 meters for Lokka and 234 meters for Porttipahta. Due to their shallowness, lowering of water levels diminishes the size of the basins significantly. In year 1981 Porttipahta was connected with Lokka through the Canal of Vuotso. The regulating dam in Lokka reservoir is situated in the southern tip of the basin, its height of drop is 30 meters, and it has a power station of 35 MW.

Verta et al. (1989), Berglund et al. (2005), Browne (2007) and Wahlström et al. (1996) all agree that in general large-scale hydrodams stimulate and uphold a large loading of mercury from the submerged soils. Such was also the case on Lokka and Porttipahta. The creation of these reservoirs displaced both a North Sámi Indigenous and other local (Finnish) wilderness communities and drowned many villages. The 1950 census named 56 Sámi individuals in the Lokka area. Villages considered to be Sámi majority included Kurujärvi, Yli-Luiro, Ponku, Laiti (in Porttipahta area) and Lusma. The exact number of specifically Sámi-impacted people remains unknown.

Vuotso is the central village of the modern Sompio. A central theme, which runs through this case, is the River Kemijoki (see map 1) that was harnessed for hydroelectric power in 1948. By late 1960s the construction of the dams



and the electricity industry had reached the headwaters of the river, an area where the Sámi and other local people were living and practicing their subsistence economies and age-old traditional cultures. In the span of a few years a whole culture was destroyed and flooded. Majority of the Sámi and other locals were re-settled in Vuotso (see Map 2.)



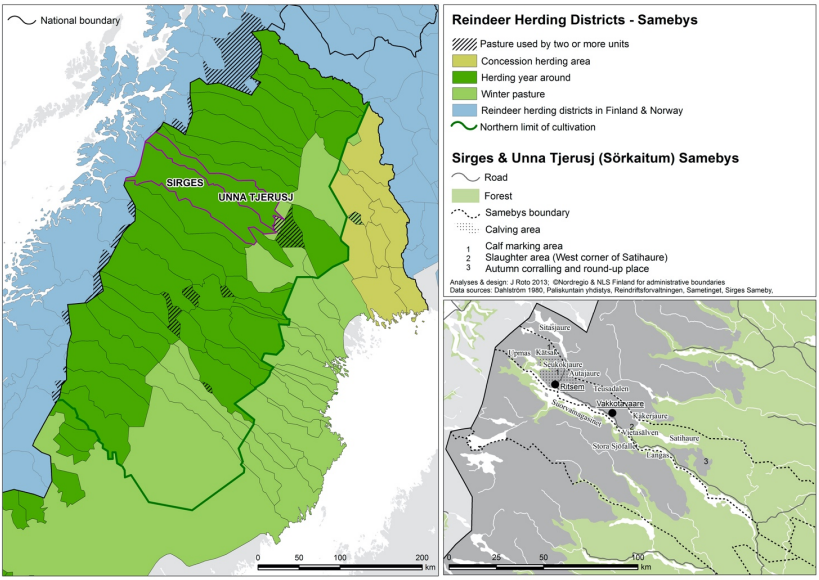
The nation-states of Sweden, Norway and Russia started to exercise their powers in the region with more might in the 18th and 19th centuries. Sweden and Norway underwent various border disputes with Russia and among themselves as well. These had impacts to the migration lifestyle of the North Sámi living in the summer on the coast of the Arctic Ocean and in the wintertime in the highlands of the border area of Finland, Sweden and Norway.

Aikio (Aikio 1988, 65) reports that families of these North Sámi moved to Sompio (Vuotso) region in 1870-1890s due to the problems that border closures had caused to their reindeer life and migrations. Rosberg (Ibid.) provides us with information that makes the case more complex. According to him, the people in Sompio had invited some of the North Sámi to their home areas to herd and manage their reindeer during this period, which also contributed to the migration.

This meant that the Sompio region received totally new Sámi population at the end of 19th century. These Sámi started to establish their own seasonal rounds in the community and navigated the social and political challenges that arose from the land use of the descendants of the Forest Sámi of the region. Aikio (Aikio 1991, 92-93) mentions that the North Sámi had their first areas in lakes Sompiojärvi and Kopsusjärvi and on Riestovarsi, which is the location of the contemporary Vuotso community. Permanent *gammi*s (turf huts) and households were constructed there in 1883-1886. Even today there is a clear separate identity for these North Sámi or 'reindeer Sámi' as they are known, and the other local people in the area (Aikio 1988, 65).

For this case study the methods have included national literature review, community visits 2000-2010, community-based observation using oral histories and contemporary diary reviews (Murtomäki 2020; Aikio family 1960-1980 summarized in Mustonen et al. 2011). Community-based monitoring and visits have been continued after 2010 through documentation of oral histories, especially in the communities of Purnumukka and Vuotso.

Case Area in Sweden



Reindeer herding areas and Sámi communities in the upper part of the Lule River

The Swedish case focuses on the River Lule (Julevädno, Lule älv). It is one of the major rivers of northern Sweden, with a total length of 460 kilometers. The catchment area is appr. 25,000 square kilometres. The River Lule has been harnessed for energy production with several hydroelectric stations. These include the largest in Sweden (Harsprånget) as well as other major ones (such as Porjus, Letsi, Messaure and Edefors). The first hydropower dams were built in 1915. There are both Lule Sámi and North Sámi communities living along the river. At the headwaters some of the largest conservation areas in Europe constitute the UNESCO Lapponia World Heritage area. The municipality of Jokkmokk, "capital" of the Swedish Sámi is located within the basin.

Indigenous knowledge and observations regarding mercury can be summarized to be mainly linked to those Sámi who are living and practising their livelihoods on the River Lule. In this case study the Sámi views on the changes of this river and associated water quality issues are discussed. The Sámi themselves consider their knowledge to be distinct and unique (Mikaelsson 2020).

Methods

Mercury (Hg) is present in boreal natural environment. When, often through human disturbance (burning, ditching, mining, hydropower) the soils are altered, the mercury embedded in the soils travels downstream and reacts with water due to microbial actions (Browne 2007).

This results in methylmercury – a toxic substance that accumulates especially in top predators (for example in birds of prey and northern pike (*esox lucius*), yellow perch (perca fluvialitis), burbot (lota lota) and pikeperch (Sander lucioperca) due to the biomagnification in ecosystems.

Wahlström et al. (1996) note that when the ground is churned up, and especially when it is then covered by water, mercury that has been earlier in the ground is released into the water system. It has been observed that this happens especially when artificial lakes have been built (Wahlström et al. 1996, 159). In the Finnish case I (Mustonen) am using a geographical and CBM analysis on the role of mercury in the Sámi and other local people's lives, snapshot style, in the post-reservoir era. A full CBM study of the impacts of the reservoir was released in 2011 (Mustonen et al. 2011). This case study includes new community materials as well as summarized findings from the CBM work 2000-2011.

The Swedish study on Indigenous knowledge regarding mercury uses a literature review, community-based monitoring work that was mainly conducted between 2003 and 2013 (summarized in Mustonen and Syrjämäki 2013) and additional interviews and knowledge collection in the Spring

2020 for the AMAP study of Arctic mercury issues. Sámi leaders (in Mikaelsson 2020) were invited to assess the present questions of mercury in the area. Stefan Mikaelsson, long-time member of Sámi parliament's Plenary Assembly and a board member of the Udtjá Forest Sámi community summarized these views for the case. Additionally, cartographic summaries are used to illustrate the Sámi communities of the area and the location and extent of hydropower developments.

Results

Finland

The area of Lokka and Porttipahta, prior to the reservoirs, was full of *aapa* marshmires intertwined with lakes, river systems and wilderness communities. Both North Sámi and other local people used the Sompio area. Main wilderness economies were reindeer herding, hunting, fishing and small-scale farming (Mustonen et al. 2011). Murtomäki (2020) reports that the construction of the two reservoirs was preceded by massive clear cuts, up to 417 square kilometres. The villages of Korvanen, Kurujärvi (Sámi village) and Riesto were completely submerged, Mutenia in part. According to him most of the residents of the wilderness villages were then evacuated to Vuotso.

The clear cuts were complemented with the use of Agent Orange, an herbicide and defoliant containing toxins and hazardous chemicals. This was enacted to speed up the removal of timber and unwanted birch trees from the future reservoir sites. Many trees were left in their place and submerged under water. The Sámi and other people such as Oula Aikio and Sulo Alakorva resisted for decades the creation of the reservoirs but they appeared eventually in 1960s and 1970s (Mustonen et al. 2011).

Lokka and Porttipahta flooded key reindeer herding pastures and hunting areas. They altered the flowing of rivers and lake structure. Murtomäki (2020) reports that the fish catches early on the new reservoir were plentiful – mostly northern pike, yellow perch, burbot, ide and whitefish.

He (2020) conveys a local anecdote from the heyday of the mercury debate from the villages. One of the older ladies had said that by hanging large pike upside down in the freezing temperatures the mercury will accumulate in the head of the fish. Then by cutting the head of the fish all mercury can be removed.

Such stories emerged as a way of addressing and adapting to the system-wide changes created by the reservoirs which altered former natural systems into perceived toxic fish stocks and harvesting areas. According to Murtomäki (2020), the use of fish, including pike, perch and burbot continued as a part of

the traditional foods in the Vuotso area even though warnings had been issued in public about the impact and increased levels of mercury in 1970s.

For example, the culturally relevant drying of northern pike continued in full swing. He (Murtomäki 2020) recalls there were at least two old men living in remote wilderness cabin in the new reservoir area that did not come even to Vuotso at all. They subsisted only on fish and were most likely unaware of the new toxic situation in the reservoir fish.

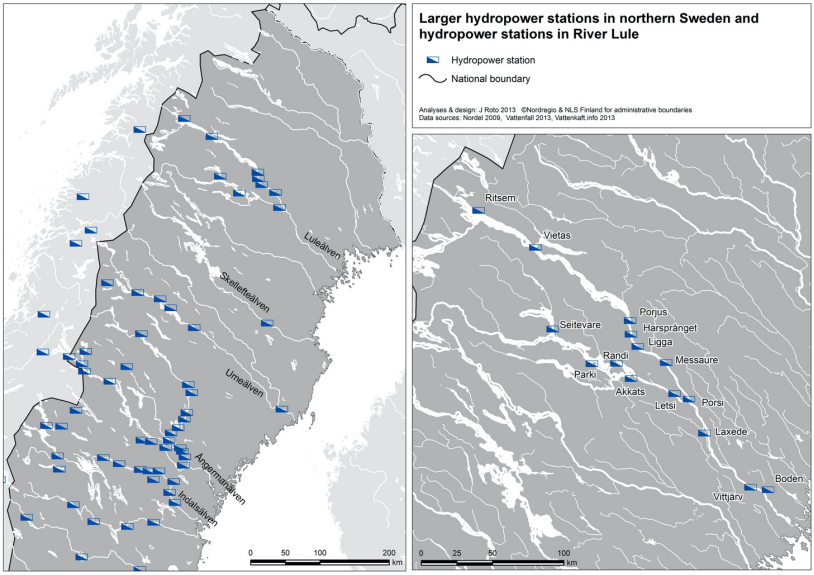
In 1970s the commercial fish catches from Lokka and Porttipahta reservoir suffered from the national discussion on the accumulation of mercury to predator fish (Valste 2008; Murtomäki 2020). Sulo Tanhua and other local people had a good harvest spot with their fish traps close to the drowned river course of Riestojoki in 1970s. Pike markets collapsed quickly after the word got around of high levels of mercury in the pike, which is a predatory fish that accumulates this chemical.

Burbot was harvested and fish traps positioned into the routes of the fish which still followed the former river courses underwater. Catches were plenty. However, the burbot could not be sold in market. Only the liver and roe were harvested from the fish and rest left behind. The liver was consumed by the Sámi and other fishermen for their own food in remote cabins. No heed was paid to the mercury issue.

Murtomäki (2020) also observed the emergence of a population of white-tailed sea eagles (*Haliaeetus albicilla*) on the newly constructed reservoirs. They harvested burbot, up to 78 cm long fish that were available on the Lokka reservoir. Reservoirs thus stimulated a "new ecosystem" which included a large mercury loading from the submerged lands and aapa bogs affecting the local people and wildlife.

Sweden

The River Lule constitutes a heavily altered catchment area, including changes to the main channel starting in 1915 with the construction of the Porjus hydropower station in the upper part of the river basin. Subsequently 14 other hydropower dams were constructed between 1950s and 1977, permanently altering the river (Mustonen and Syrjämäki 2013). This development in the watershed eliminated for the most part the capacity of the Atlantic Salmon to use the river as a spawning area and thus adversely affecting a key Sámi socio-cultural indicator species. However, the Sámi have kept using the altered river and its reservoirs for subsistence fishing for over 100 years.



Hydropower stations on River Lule.

Hsu-Kim et al. (2018) confirm the risks and releases of mercury (and subsequent methylmercury) on altered rivers. Climate change is expected to make it [accumulation of methylmercury on waters] worse (Eagle-Smith et al. 2018). Skyllberg et al. (2007) in their large review of national methylmercury levels confirm its presence in the River Lule watershed at multiple locations. Åkerblom and Johansson (2008) say that whilst the spatial variation of mercury in lakes and streams is substantial nationally, overall mercury levels can at present be up to five times compared to "natural conditions".

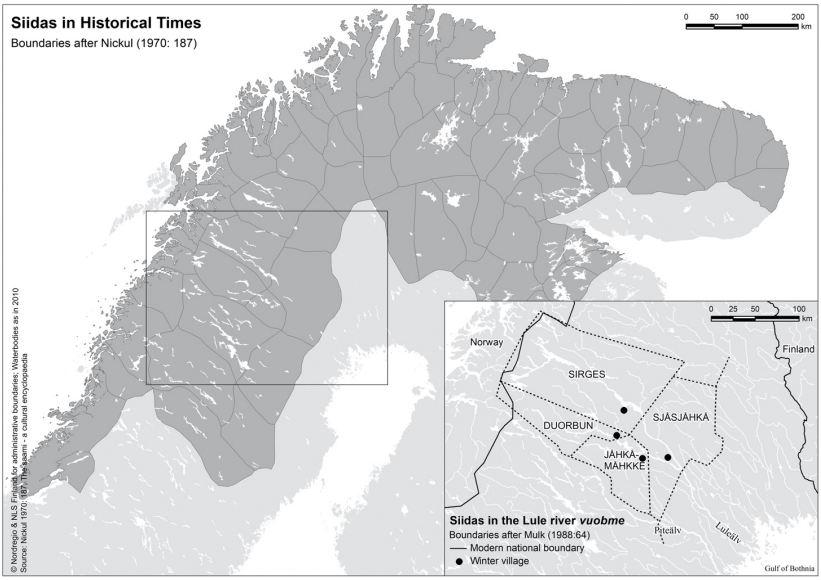
Given the large number hydropower dams and reservoirs on the River Lule we can assume a large amount of sedimented mercury in all of the 15 reservoirs along the stream. National database on Swedish waterbodies (https://viss.lansstyrelsen.se/Waters.aspx?waterMS CD=WA33065308; see also Nyberg et al. 2018) on mercury of the River Lule indicates that levels of mercury are present in all parts of the river system and the it is "unlikely to reach a good chemical status" in the near future.

The Jokkmokk area is often hailed as the hub of Indigenous knowledge in Northern Sweden. Many Elders from the area like Elle-Karen Pavval mastered the old ways. She recalled for example the old weather prediction skills during the oral history work: "*You can forecast weather on reindeer behaviour. For example, winds make the reindeer run [to specific directions,] here and there, it predicts wind. Weather was also predicted from the stars. If you wanted to predict the floods in the summer you needed to catch a big northern pike fish, and take her liver*" (in Mustonen and Syrjämäki 2013).

According to Mikaelsson (2020) traditional food production is valuable for the indigenous individuals themselves who maintain better health. This is important in being able to control their own food devoid of the use of antibiotics and growth hormones. Water quality is also a part of this as clean water is essential for the Indigenous health and well-being.

One of the most respected knowledge holders of the basin, Lars Pirak, discussed the landscape connection of Sámi people: "*Also to sacred lakes that were called* saiva*, the thing was to throw some silver there, so that people would get fish*" (in Mustonen and Syrjämäki 2013). Such behaviour tells of the reciprocal relations the Sámi had with their waters. Respect and careful mindfulness were keys to maintaining good relations with the waters.

Sámi knowledge is in many ways interconnected across the terrestrial, aerial and aquatic systems. Mikaelsson (2020) says that "land on which Sámi live and the natural resources on which we depend are inextricably linked to the survival of our identities, cultures, livelihoods, as well as our physical and spiritual well-being."



Major Sámi siidas, i.e. communities of the Lule river area historically.

Changes such as large-scale alterations such as dams into any of these components of the Indigenous system cascade and accumulate much like mercury itself. Sámi knowledge of mercury on the River Lule is intertwined with the experience of the human-induced changes to the basin. It cannot be separated from the history of development of the river. For this case study a number of key oral history and written materials (Mustonen and Syrjämäki 2013) are shared to highlight the view the Sámi have on the situation.

From the Sámi perspective the Suorva reservoir in the upper part of the River Lule system is of key relevance. It sits 90 kilometres upstream from Porjus (the first hydropower dam from 1915). Originally the present reservoir area consisted of six smaller lakes. Water levels were raised nine meters initially. At the time of the construction the county administrative board assessed the damages caused to reindeer pastures and fisheries to be minimal, ignoring the Sámi knowledge of pasture qualities and seasonal rotations. Forced relocations from further north also increased the pressures on the Sámi herds in the region.

Sámi fisherman Pittsa fishing on Suorva, 1970s.

Throughout the 1900s the Sámi provided critical views and resistance through media and social organisations against the plants. For example, in 1964 Susanna Kuhmunen wrote a long letter in the *Norrbottenskuriren*, a regional newspaper, identifying the changes in her lifetime from the 1925 to 1964. According to her, damages caused by the hydroelectric development included, to name a few:

- changes to fish and fisheries, including amounts, new damages to nets and places (including the mercury loading – author's obs.)
- deserted Sámi places which were now underwater
- new conditions on the lakes and lakeshores, making the subsistence and reindeer life much harder
- overall total impacts to the Sámi uses of the land, including an understanding that both economic opportunities and future land use will be greatly affected with the proposed next state of Suorvva developments in the 1960s (in Mustonen and Syrjämäki 2013).

In the late 1950s and early 1960s Jannes and Riwkin-Brick wrote of the 'awareness' of changes that Sámi have as new developments are pursued – including knowledge of flooded crossing points for reindeer, loss of spring pastures, dead fish, changes to the shorelines and therefore impacts to transportation, fisheries and uses of lakes.

They quote (in Mustonen and Syrjämäki 2013) Anders Pirtsi who said at the time: "Is it right to sell the reindeer grazing grounds of one's descendants for a few thousand crowns?" Another Sámi person had commented that:" No matter how much I love my own life in the reindeer forest areas, I would not advise my children to inherit my work. The authorities seem to have made up their minds to destroy us, in spite of all the beautiful words they use in their reports."

Lars Pirak linked the destruction caused by the hydroelectric stations to changes in fish and income from them: "[Before the time of the Vattenfall, Swedish energy company] we went and sold and exchanged our fish to food items here in Jokkmokk. Now that the rivers have been harnessed and destroyed, fisheries have worsened considerably in some locations" (in Mustonen and Syrjämäki 2013).

Despite these changes, Lule river system remained a major commercial and Sámi fishery.[1] An infrastructure to deliver catches of fishes was established with fish buyers (Mikaelsson 2020). The buyers could buy fish from fishers

[1] http://samer.se/1214.

by accessing fisheries by boat, airplane or helicopter and do business with the families who lived and fished on the most remote mountain lakes. Mostly this fishing was based on catching arctic char and whitefish, species that have a higher economic value than predatory fish species that are prone to gather mercury from their environment, such as perch and pike. However, those species do have a role as catch in the subsistence fishing.

Loading of mercury (as in Browne 2007; Åkerblom and Johansson 2008) from the catchment area due to industrial forestry actions has been also observed by the Sámi. Former President of the Swedish Sámi Parliament Stefan Mikaelsson who has been working as reindeer herder for most of his life said that "*after cutting down a forest, it is a common practise to dig ditches in the soil, which results in faster flow of water from forest to rivers and lakes*" (in Mustonen and Syrjämäki 2013).

Reindeer herder Per Ola Utsi has observed how the reservoirs are altered through the seasons. As the hydro reservoirs are full in the autumn, waters are up and then as they empty, ice is left "hanging" on the beach. Erosion increases as water levels fluctuate. This is expected to further increase the loading of mercury from the banks and shoreline (Hsu-Kim et al. 2018).

Additionally, according to Utsi, water regulation must contribute to the local air moisture and weather. It can be very moist and then lichen close to the shores freezes when the temperatures fall. Everybody is interested in the regulation of the waters but nobody pays attention to the surrounding areas and how they are impacted according to Utsi (in Mustonen and Syrjämäki 2013).

Sara Omma, a young woman at the time of the oral history work, said the century of development of Lule river has left people at the breaking point: "*This damming has taken place already four times. Four times we have had to move. Each time they have said it will never happen again. Such wrongdoings have been committed against the Sámi. Great benefits have been reaped by harnessing the lakes and now the electricity goes via Norway to southern Sweden. So that where we are living, there is no electricity, but just above our heads there are huge powerlines transferring the electricity to Norway*" (in Mustonen and Syrjämäki 2013).

Discussion

Finland

Lokka and Porttipahta are large reservoir systems in the Finnish Arctic. They were constructed in 1960s and 1970s. Local Sámi and Finnish communities were not consulted in the establishment of these artificial lakes that

altered the traditional economies and cultures of reindeer herding, hunting and fisheries permanently (Aikio 1991).

One of the survival strategies for these communities was subsequent commercial fishing. Despite first having unsuitable boats (Murtomäki 2020) for a large lake and wrong gear for this activity, harvests of burbot, whitefish, ide and northern pike emerged quickly. For the early years the national discussion on the presence of methylmercury on predator fish (pike, perch, burbot) influenced the income capacity of the local fishermen. Only a few fish could be sold from Lokka to the southern markets.

Messages of released and accumulating mercury were intertwined and embedded in the context of larger loss and sadness that followed the top-down creation of these reservoirs. For the Sámi and other locals, the assumption and the normal situation was that all wilderness fish was 'clean' and healthy, a staple diet throughout the year as it had been for centuries. The capacity to realize that the key species like pike and burbot were suddenly contaminated and public health hazards went unheeded (Murtomäki 2020) in the early years. This can be considered also a form of a self-defence mechanism in the face of the large, unprecedented alterations of traditional life.

Local anecdotes sprung up on "how to remove the mercury". These can be seen as mechanisms of social adaptation to cope in a world which went upside down and included many people relocated into Vuotso from the wilderness villages. Those that "stayed on land", in remote cabins, were potentially completely unaware of the mercury in the early part and were not warned of the health impacts.

Lokka and Porttipahta have not been discussed or debated in the national level for decades any more. Science measurements indicate that as the humus levels have dissipated the levels of mercury from the pike, perch and burbot are lower than in 1970s. The reservoirs have stabilized in ecological terms. For the Indigenous Sámi and other local people, however, the social and cultural cost (Aikio 1988) has been immense.

Aikio (1988) identifies that assimilation sped up, Sámi language was almost lost in Vuotso and integration into the monetary economy from the Indigenous land-based life has resulted in major disruption of Sámi culture. Mercury loading and presence in the fish, which are central for both the cultural and economic harvests in the area, is a key element of the damages which will influence the area in sediments (Verta et al. 1989) and in human histories (Mustonen et al. 2011) for a long time.

River Lule is a major Sámi watercourse, a spawning river of the Atlantic salmon and many other salmonid fish as well as a migratory route of the Sámi reindeer herders. Both large-scale nature protection (Lapponia) and 15 hydropower dams have altered the Indigenous landscapes of the River Lule into a human-controlled system.

The hydroelectric development has released mercury, turning into methylmercury across the Lule river system and basin (Browne 2007; Åkerblom and Johansson 2008; Skyllberg et al. 2007; Hsu-Kim et al. 2018; Nyberg et al. 2018). Skyylberg et al. (2007) have identified that mercury remains in the river sediments. Climate change may be a new driver of releases of mercury and affect also the sedimented mercury (Chen and Driscoll 2018).

Mikaelsson (2020) says that traditional Sámi food production is a small-scale one and requires that nature remains unchanged for a long time. According to him, the major industrial activities that have taken place have created a great deal of uncertainty in Sápmi. This is related to maintaining one of the Arctic's many indigenous cultures and in part the emissions that occur today from many sources, and ultimately how these affect other areas according to the two basic ecological principles: *nothing disappears and everything spreads*.

The Sámi had a reciprocal relationship with their waters (see Mustonen and Syrjämäki 2013) as a part of the interconnected co-being of their home area. A century of alterations on Lule have destroyed this complex self-governed system. Mercury is one of the results of the macro-level development of the basin. Early Sámi leaders like Johan Turi and Elsa Laula Renberg warned about the dangers of losing the land.

At the height of the hydropower development in 1964 Sámi women, such as Susanna Kuhmunen, identified the system-wide negative impacts, including mercury loading that would result from the hydrodams (Suorva in particular). From 1990s onwards with the intensification of forestry actions on River Lule included ditching and further clear-cuts. Sámi leaders such as Stefan Mikaelsson have conveyed their concerns regarding these actions for decades. Browne (2007) confirms that already the clear felling of trees may increase the mercury releases from the soils.

Some mercury is naturally found in environment, but much of the mercury that today comes into our nature comes with long-haul air transport and originates in other countries (Länsstyrelsen in Mikaelsson 2020). Overall, the Swedish emissions have decreased and the fall of mercury has decreased

since 1990 (VISS-database). Despite that, the fallout is still far too large and the levels in fish do not seem to reduce. Mercury continues to leak into lakes and streams. In southern Sweden, the problem is greatest (Åkerblom and Johansson 2008) which is due to the precipitation of mercury is larger there compared to northern Sweden.

The Sámi by the River Lule have observed mercury as a part of the larger development actions. This has ranged from opposition and concern at the time of construction of the hydro power (Susanna Kuhmunen), into detection of loss of fisheries and fish quality (Lars Pirak, Per Ola Utsi) into new forestry practices such as ditching and increased clear-cuts. Recent assessments on the presence of mercury in the thawing permafrost areas (Schuster et al. 2018) are also concerning to the Sámi within the Lule basin (Mikaelsson 2020). They have also expressed their deep connections with the river as is present for example Katariina Rimpi's yoiks.[2]

All of these changes are leaching mercury into the waterways. A gradient from the high mountains to the coast of the River Lule basin produces higher mercury loading along the coast and lower levels closer to the mountains (Mikaelsson 2020). There is also a gradient for Norrbotten coast with higher levels in the Piteå (south) and lower towards the Kalix (north). Earlier distribution of mercury from Rönnskärsverken near Skelleftea further down south is also relevant in the regional view.[3] Another point sourcing of relevance in Norrbotten is the Aitik mining site. The Aitik copper mine is located about 15 km east to the south east of Gällivare city center.

Aitik case has triggered Sámi Parliament[4] to demand the mining company to show in the environmental impact assessment reports how the dust with increased levels of mercury can affect reindeer husbandry, the health of reindeer and reindeer herders and the quality of reindeer meat (Mikaelsson 2020, see also Sámi Parliament reply to Mark & Miljö domstolen, Court number: M 2672-18, 5.2.2020).

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[2] See in https://www.youtube.com/watch?v=ZSrWPSUf8tw.

[3] https://www.sametinget.se/klimat.

[4] The Sámi Parliament's opinion regarding Boliden Minerals AB's application for change for operations at the Aitik mine with a new mine in Liikavaara, Gällivare municipality in Norrbotten County Objective no: M 2672-18. The opinion went to the Mark & Miljödomstolen in Umeå and was possible thanks to a referral invitation. More in https://www.svt.se/nyheter/lokalt/norrbotten/kort-livslangd-for-ny-gruva-i-liikavaara-i-gallivare-kommun.

Conclusions

The Sámi have no land rights nationally in Sweden or Finland. Hydropower development in both countries has severely impacted Indigenous communities in multiple ways. Mercury is an important indicator of how long the hydropower and industrial land use impacts linger. Hydropower is often linked with associated industrial actions such as timber production at the heart of state power. In an era of climate change hydropower is seen as a crucial energy source due to its "low emissions". However, the impacts may be vaster but often out of sight.

This correlates as, according to Mikaelsson (2020), the Sámi culture and business are mostly invisible in the official statistics on the Swedish side of Sápmi, Sámi home land. In order to find out the overall situation of hydropower and associated mercury impacts on the River Lule, Indigenous knowledge and science assessment should be conducted (Skyllberg et al. 2007). For example, Arctic Char accumulates mercury and is a major cultural fish species for the Sámi but is not debated in the public too much.

Chen and Driscoll (2018) stress the need of action following mercury research. Sweden and Finland have ratified the Minamata Mercury Convention in May 2017. National implementation actions may include question of equity and Sámi rights as a part of the long-term solution on the damages done to their waters, including the re-assessment of mercury impacts.

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WASTE CITIZENSHIP IN CIRCULAR ECONOMY: CASE STUDY OF WASTE GOVERNANCE IN FINNISH LAPLAND

Jarno Valkonen and Teemu Loikkanen

Introduction

"Why wouldn't I sort my waste? I am sorting pretty much everything else anyway. This is life as it is lived, every day. And it is not difficult at all. Recycling begins with sorting the waste. When I sort my waste, someone else may use it as a resource to produce something new. Used milk cartons are turned into new cardboard packaging and core paper, glass jars are born as glass jars again, or, perhaps, as glass bottles. Banana peels and coffee grounds bring nutrients back to the natural cycle and create renewable biogas as a source of energy. A newspaper does not live only twice, but it actually has even five, or six, lives. Glass and metal can be melted to form new objects practically endlessly." (HSY 2020).

This is how simple circular economy can be: If people sort their household waste appropriately and place the materials in the designated recycling containers for each material, the materials can be recycled and reused. Circular economy is thus "life as it is lived, every day". It is an issue that involves us all – and one that brings advantages to the economy as well as the environment.

The above description of the effortlessness of sorting waste is a typical example of the current trend of waste education by authorities and organizations targeted at people. Through communication about the ease and advantages of sorting and recycling waste, as well as the wider significance of circular economy to the environment, waste education aims to cultivate a sense of responsibility in people and to promote their willingness to act on waste issues for the sustainability of the environment.

Although waste education has long been part of institutional waste management (see Strasser 1999; O'Brien 1999; Hawkins 2006), its purpose and significance in the waste policy of circular economy is, however, different. Circular economy is a political program the objective of which is to achieve a profound change in the materials economy of today's society. The approach has developed in response to the diminishing of resources and the ever-increasing quantities of waste through attempts aimed at transforming the inevitable by-product of human existence into useful resources, with the ultimate objective of putting an end to waste production.

In circular economy, waste is no longer seen as non-reusable and as surplus to be disposed of, but above all, as a potential resource and a source of value. Waste has become raw material and the world is now looking towards it for a new economic driver capable of providing solutions to a complex set of problems ranging from unemployment to the depletion of virgin raw materials and the energy economy.

Circular economy is by no means reducible to mere waste management. Its objective is not only to create a new system of economic governance but, ultimately, to transform the very foundations of social life, leading to the formation of a novel kind of society in which materials circulate, production and consumption accommodate to the Earth's carrying capacity, and people are consuming services instead of products. Well-being is no longer created through abundance and ownership of material possessions, but through sharing and recycling (European Commission 2015).

Circular economy cannot be established without the consumer-citizen's everyday engagement and commitment, since the materials – which are waste when discarded – flow only if households, companies, and public bodies sort and recycle their waste. The waste management of circular economy thus frees waste from the traditional framework of landfill sites and combustion plants, and brings it back to people's everyday lives, thus directing citizens towards a new kind of hands-on living with waste. Thus, the success of circular economy is decisively dependent on whether or not consumer-citizens embrace the subject position of the waste citizen ascribed to them in circular-economic thinking.

In this article, we examine what kind of citizenship circular economy produces. Our starting point is the notion that, in order to function, circular economy requires from citizens a particular kind of stance and action regarding waste. The information steering by organizations and authorities is thus not only waste education, but a wider attempt to produce novel kind of agency with regard to waste – waste citizenship. Information, instructions

and advice regarding sorting and recycling waste produce a normative image of "the good waste citizen" as an individual positioned to act responsibly not only regarding waste, but also vis-á-vis the ecological environment on the planetary scale. We are interested in the strategies aimed at turning citizens into ethically minded waste citizens. We ask: How is the subject position of *the waste citizen* constructed and what are the strategies employed to encourage people to embrace this position?

We conceptualize waste citizenship by applying the theory of environmental citizenship. The concept of environmental citizenship emerged in scholarly discussion within Environmental Social Science in the 1990s (see Dean 2001; Dobson 2003; Barry 2006). In the theory of environmental citizenship, the scope of the concept of citizenship has been expanded from the relationship of an individual and the nation state to encompass the relationship between the individual and the global community. The formation of environmental citizenship is seen as requiring sensitization of the individual to environmental concern, active involvement in pursuing environmentally beneficial goals both through everyday consumption choices as well as through actions taken in the public sphere. Thus, both desire and ability of the individual to pursue environmentally beneficial goals are prerequisites for environmental citizenship. In our article, we adopt the view that the central perspectives on environmental citizenship offer tools for analysing the subject position of the waste citizen produced in and through circular economy.

Empirically, our article is based on a project entitled *Waste Society (Jätteen yhteiskunta*), which addresses the problematic of municipal waste policy and management in Finnish Lapland (https://wastesociety.com/). Our data consist of a total of twenty interviews with actors involved in waste management issues representing various perspectives: the municipalities, the state, the private sector, and non-governmental organizations. Informed by the theory of environmental citizenship, we examine the kinds of duties, responsibilities, rights, and justices the actors responsible for waste management in the context of circular economy ascribe to people as waste citizens.

In the next section, we will introduce our theoretical perspective on waste citizenship as well as our empirical data set and the analysis method employed in this study. After this, we will analyse the duties, responsibilities and rights ascribed to the waste citizen. We conclude by providing a synthesis of our findings and discuss the nature of citizenship circular economy presupposes.

Waste Society under Transformation

Social scientific waste studies have shown that the modern society has, in a sense, always been a waste society and the human living in it a waste citizen. Waste is inevitable. All human activities inexorably produce loss, wastage and surplus, and taking control over, managing, organizing and processing it is a significant prerequisite for the functioning of social life. Thus, there is no society without waste and waste management (Valkonen et al. 2019).

Waste is an inseparable part of everyday life. Waste is being generated, sorted, processed and consumed, and we co-exist with it in homes, yards, stores, offices, industries – anywhere where people live, spend time, work, move, or set foot. Waste is also part of the economy, politics, ideologies, infrastructures, power struggles and everyday practices. It is being produced, bought, sold, sorted, recycled, transported, taxed, distributed and processed further.

Examined from this perspective, society is a collectively organized way of dealing with our waste. It is exactly in this sense that all societies have always been waste societies. However, mere living with waste in itself does not set our way of life apart from that of the others. Societies differ with regard to the quantity and quality of waste they produce as well as with regard to the ways of dealing with that surplus.

Every period and way of life gives rise to its own characteristic waste flows. Ours produces particularly large quantities of waste. According to the 2018 report by the World Bank, by 2050, the world is expected to produce a total of 3.4 billion tons of waste annually, compared to around 2 billion tons in 2016, which means that global waste could increase by about 70% (see Kaza et al. 2018). The rich industrial countries generate approximately one third of the world's total waste, although their population accounts for only 16% of the world's population.

In addition to the enormous quantities of waste we generate, our waste society is characterized by diversity of waste. We leave behind every imaginable type of waste ranging from plastic to nuclear waste, we are wasting more food than ever, we are the ones who recycle glass, paper and cardboard and throw away smartphones and computers. Moreover, we generate waste across a range of scales: our waste can be anything from microplastic particles to electronic waste, industrial waste and abandoned vessels. Seemingly small amounts of waste, for example a plastic bottle or a plastic bag, generate large quantities of municipal waste because, taken together, indi-

viduals' acts produce massive aggregate-level effects (Pyyhtinen and Valkonen 2019).

Given the sheer quantity of waste as well as its immense impact on the world, the modern consumer society is a waste society of a particular kind. In addition, the role of the citizen vis-á-vis waste and waste management in consumer society has special characteristics. Our prevailing relationship with waste and the throw-away ethos characterizing our consumer society have long been based on the idea of exclusion, disposability, and denial of waste, as well as distance from it. Although today's consumption patterns, which are characterized by one-trip packaging and short product life cycles, generate immense quantities of material to throw away, with a well-functioning infrastructure in place, people have been able to avoid re-encountering the waste they themselves have produced, because, when recycled appropriately, the excess material quickly "vanishes" from households without a trace (Hawkins 2006; Valkonen et al. 2019).

However, waste is not invisible simply because it is effectively excluded from everyday life, but also because we are so used to the infrastructures, economies and behavioural norms defining and producing it that they conceal their own structuredness. What is essential is that their task is to render waste invisible – something that no longer disturbs us. The waste infrastructures processing our waste were built in such a way as to allow the majority of processing far away from households. As a consequence, we have very little grasp on the quantity of the waste we produce.

According to Gay Hawkins (2006), waste infrastructures have maintained the idea that surplus of consumption ceases to exist when removed from the system. This has played a decisive role in the formation of waste citizenship in the consumption-driven waste society. Because centralized waste infrastructures have taken care of the removal of surplus, the responsibility of the waste citizen has merely been to appropriately place the surplus into the designated containers. The citizen has, thus, had no particular responsibilities regarding waste itself beyond that point. Citizenship has been defined mainly through the citizen's relationship with the state, which has handled the waste, and its contractual relations with the citizens.

Accumulation and acceleration of problems caused by the ever-growing quantities of waste have fuelled efforts to find novel, more effective ways to manage the environmental impacts of existing waste as well as to minimize surplus. One proposed solution is circular economy, whereby production and consumption surplus – materials – are not disposed of, but recycled and reused to produce new products in a continual cycle. Circular economy has

determined the waste management of European societies since the early 2000s.

The European Union has been developing the basic principles of circular economy already in the 1990s, but the actual shift to circular economy took place in 2015 as the European Commission adopted its Circular Economy Action Plan aimed at promoting the EU's transition to a circular economy. The purpose of the action plan, which has been characterized as ambitious, is to generate "sustainable growth". Given the limited availability of many resources, the linear economic model of consumer society – which entails obtaining resources, making products, and disposing of them as waste – has become problematic. In the European Commission's action plan, the advantages of the environment and the economy go hand in hand. Resource use and generation of waste are reduced to a minimum. Materials are kept within the economy wherever possible and re-used in a continual cycle instead of generating waste (European Commission 2015).

From the perspective of citizenship, the transition to waste policy in accordance with the principles of circular economy is decisive. As described above, the waste management of circular economy keeps waste from becoming waste in the first place – that is, prevents it from being taken to landfill sites and combustion plants and, instead, brings it back to everyday life, thus guiding citizens towards living differently with waste. However, the objective is not only to encourage people to process their waste more carefully than before. It is also and especially a matter of making people more aware of the significance of waste as raw material to natural resource and consumer economy, and thus, to further increase their awareness of and accountability for the environmental impacts of waste and consumption. By redefining waste as raw material for new products, circular economy aims to position the consumer as a producer of raw materials for circular economy instead of a waste processor.

It is exactly in this sense that the role of the citizen in circular economy differs from that in the previous waste society. Today's waste citizen is expected to be committed to the idea of recycling and to live up to it in practice. Thus, the implementation of the concepts of circular economy in waste management presupposes that the citizens embrace the role ascribed to them as its subjects (e.g. Valkonen 2017, 40). Each and every one of us generates waste, and in accordance with the waste policy, is thus also responsible for waste management and, by extension, plays a role in the realisation of circular economy.

The Concept of Waste Citizenship

In his theory of environmental citizenship, Andrew Dobson (2003) defines environmental citizenship quite literally as citizenship of the environment. He thus extends the traditional concept of citizenship by including the environment in the citizen's sphere of responsibilities. Environmental citizenship is not only bound to the geographical area of the state but bears a relation to the ecological environment, which introduces new content – above all new rights and responsibilities – to the concept of citizenship.

In her article on climate citizenship, Mirja Vihersalo (2017) presents the view that the theory of environmental citizenship involves a rethinking of the relationships between individuals, governance, the environment, and the common good, and, more generally, what environmental citizenship entails or what its possibilities are. The idea behind rendering the sphere of activity global is to make those who are responsible for the decline of the environment accountable for their actions and to ensure equal opportunity for those who suffer from the decline the most. Similarly, environmental citizenship expands the concept of citizenship to cover the private sphere – the home. As many feminist scholars have long maintained, the decisions made in households have political and societal consequences. The concept of virtue is used to define a set of desirable characteristics of the environmental citizen, which, for Dobson (2003), are justice (which is linked with the shared responsibility referred to above), ethic of care, and a sense of caring and compassion about the environment and one's own activities within the ecological whole.

Different calculators – tools created for measuring an individual's carbon or ecological footprint are examples of ways in which the subject is expected to monitor their own actions. Such tools also allow comparing one's own performance as an environmental citizen with that of fellow citizens (Paterson and Stripple 2010).

In our view, circular economy expands the sphere of citizenship in a way comparable to that of the concept of environmental citizenship. The objective of circular economy is, first of all, to address people so as to evoke a sense of personal responsibility regarding waste. The waste citizenship of circular economy is similar to the traditional citizenship in that it is limited to the area of each country and operates in and through the country's contractual relations with its citizens. On the other hand, circular economy reshapes the citizen's relationship with waste, emphasizing the individual's personal responsibility for the materials tied to surplus of consumption and the retention of these materials in its cycle. This responsibility is greater

than citizenship of a state, since circular economy as a political program aims at restructuring the entire materials economy and, thus, building an economically and socially sustainable society. Thus, the waste citizen's responsibility entails both personal waste and the ecologically sustainable future of society.

Working on the concept of environmental citizenship, Vihersalo (2017) has proposed an analytical concept for the purpose of empirical analysis. She distinguishes four dimensions of the concept of environmental citizenship: duties, responsibilities, rights and virtues. In this article, we use the distinction presented by Vihersalo to examine what kinds of duties, responsibilities, virtues and rights are ascribed to the waste citizen of circular economy. The theory of environmental citizenship also entails examination of the political sphere, which refers to the citizen's obligations towards the community, i.e. whether the citizen's sphere of responsibility encompasses the immediate local environment and its inhabitants, the nation state, or the human kind encompassing the globe in its entirety (Dobson 2003). In this article, alongside previously mentioned dimensions, we analyse the political sphere determining the citizenship of circular economy. In our view, analysis of the political sphere is essential, since the global nature of the ecological footprint and environmental problems in general render waste citizenship as a quintessentially international subject position.

Our data consist of approximately twenty interviews with waste actors – waste management experts working in the private and public sector as well as one non-governmental organization operating mainly in Finnish Lapland. We analyse the interviews using theoretical content analysis, guided by questions emerging from the notion of environmental citizenship. Many of our interviewees talked a great deal about shaping waste policy and governance. Although this information is relevant and interesting, in this article we focus on the duties, responsibilities, virtues, rights and the political sphere ascribed to the implementer of the waste policy – the citizen. We ask what kinds of duties and responsibilities, rights and virtues belong to waste citizenship, and, what exactly is the citizen accountable for in this context and to whom or what are they accountable.

The Dimensions of Waste Citizenship

The Duties and Responsibilities of the Waste Citizen

Our interviews indicate that sorting waste is the citizen's responsibility. It is not only a matter of recycling one's personal waste appropriately, but the

citizen has the responsibility of being aware of the organization of waste management more generally: It is the citizen's responsibility to know what can and should be sorted and recycled in their place of residence. In addition, the citizens are expected to contribute to the overall tidiness of the recycling facilities.

> "[T]hat the consumers would understand their own role in the functionality of the network, and, well… keeping the recycling points tidy, that they would bear their responsibility for the collecting in the sense that, although the responsibility for emptying [the containers] and other stuff is ours, or the producer's. That the household would see that they, too, are responsible for using the eco point and so on… Well, there is no legal obligation to recycle, it is completely voluntary, but of course taking the recyclable types of waste to a collection point is one way of bearing responsibility, too, so it is not obligatory, but it is a way of bearing responsibility that you take the materials to recycling and don't put everything into mixed waste". (H10)

The interviews indicate that the citizen's responsibility for waste ends at the point of delivery of the sorted waste to the recycling facility. After this, the municipality assumes responsibility for the issue. In this sense, the recycling container functions as an interface of duties and responsibilities. Once the citizen has placed the appropriately sorted materials into the container, the legal obligations and responsibilities are transferred to the owner of the container (see Woolgar & Neyland 2013, 73–74).

The Waste Citizen's Virtues

In the theory of environmental citizenship, civic virtues refer to the qualities and characteristics of the citizen, or ones expected or desired of the citizen (Vihersalo 2017). The Lapland-based waste actors interviewed by us emphasize that the waste citizen should be an active consumer. For example, one interviewee working in a municipal waste management company emphasizes the significance of sustainable consumption choices:

> "If the consumers understood that it is worth purchasing the more sustainable [option], maybe the effects would begin to be felt. And one thing that I keep saying on advisory visits is that [do contact the producer] and give negative feedback on the packaging, because if you have a tiny toy in a box of this size, it makes no sense whatsoever that there are so many ma-

> terials, that there is cardboard, there is plastic, and that it would be possible to use smaller packaging, especially when we are dealing with a product that does not go bad, well…of course it is understandable that food products are packaged in a certain way, but as far as utility goods are concerned, we could do with much less packaging." (H5)

The interviewee quoted above points out that packaging materials such as cardboard and plastic could be reduced in all packaging except that of perishable food products, and that citizens should contact the producers and give feedback, urging them to reduce packaging materials. The interviewee, thus, calls for the active citizen who, in the role of a consumer, makes effort to influence the activities of companies to reduce the amount of packaging waste.

The above can be interpreted as being part of liberal citizenship conception, based on the assumption that in the capitalist system, the consumer-citizen is capable of influencing companies through his or her own actions. Packaging materials, thus, are not seen by the interviewee as a matter of state regulation, but citizens, through their own consumption choices, transform the consumer society towards greater sustainability.

Another central virtue that the Lapland-based waste actors ascribed to the waste citizen is the ideal of the aware citizen. The interviewees mentioned that people should be aware of the role of their own actions in waste generation.

> "Well, let's hope that an increasing number of people would realize that what you purchase has a great impact on what also exits from there." (H2)

According to the interviewee quoted above, everyone should pay attention to the fact that all things once purchased will be transformed into waste over time. Therefore, the citizen should – already prior to the purchase – think about the item to be purchased as the waste it will become in the future. In this way, responsibility for waste is associated with the citizen, and, by extension, more profound knowledge and awareness of the entire consumption chain as well as planning of consumption are required of citizens

Thirdly, the waste actors interviewed mention thrift as a virtue associated with the waste citizen. They emphasize that citizens should buy less products that generate unnecessary waste. In so doing, they can reduce the amount of waste and thus actively contribute towards a more sustainable society.

The Rights of the Waste Citizen

Our data include considerably fewer mentions of the rights of the waste citizen, which is rather surprising, given that rights are a central factor defining citizenship in liberal societies. Discussions of environmental citizenship have brought up the fact that citizenship is returning towards duties and responsibilities (see e.g. Dobson 2003, 40–44). This does not, however, mean that citizenship would cease to be defined through rights.

The waste actors interviewed by us talk about the rights of the waste citizen by defining them, in rather contradictory terms, as rights to responsibility. The interviewees mention, for example, that the citizens have the right to recycle and to take care of their personal waste. For example, according to one municipal waste management actor, it is important that recycling is possible for everyone. The interviewee points out that availability of recycling facilities is one manifestation of civil rights, comparable to the availability of health care services within reasonable reach. Recycling is thus equated with civil rights and it should be equally available to all, nationwide.

Then again, one interviewee, who is employed in the private sector, questions this idea. According to the interviewee, the issue is examined from the wrong perspective if the citizen is granted subjective right to sort waste even in cases in which it would not be appropriate from the perspective of the environment:

> "Well, the problem here is that the requirements for service level have been included into the waste, well… the Decree on Packaging, and the Waste Act, and so, this thing, the very purpose of which is the environment and protecting the environment, is now being thought of in terms of the service level, in other words, in terms of safeguarding the individual's right to sort [their waste]. This being so, we are headed in the completely wrong direction, this is no, there is no such thing as a subjective right to sort [waste]. I do understand that there can be a subjective right to receive care if you have an illness or if you are an older adult, or something, but why should we have a subjective right to sort [waste] if it makes no sense from the perspective of the environment. That is, in my view, a large question here." (H14)

The interviewee quoted above maintains that sorting waste cannot be thought of as a subjective right that could be equated with e.g. the citizen's right to receive care in the event of illness. According to the interviewee, the starting point for recycling activities should always be the best interest

of the environment in any given context. The interviewee thus perceives waste primarily as an environmental problem and waste management as environmental protection. For this reason, recycling should be approached on a case-to-case basis instead of defining it as a civil right.

However, the issue can be viewed differently as well. Interpreted as an expression of a waste-ethical relationship, sorting and recycling waste can be examined as the right to perform a duty. This is also the direction in which circular economy is guiding people. The subjective right to recycle would thus entail the idea of "the right to responsibility".

T.H. Marshall's (1950) seminal essay entitled *Citizenship and Social Class* is still considered a cornerstone of the theory of citizenship. However, Andrew Dobson points out that L.P. Jacks spoke about the human being as a responsible being already during the lectures he gave in the 1920s. According to him, the citizen has rights and responsibilities, but the right to responsibility exceeds them all. This is where the citizen's rights and responsibilities intersect (Dobson 2003, 41–43). Can the right to perform a duty, thus, be considered as a right? Seen in the context of, say, ethical pleasure gained from recycling, or, conversely, the negative feelings emerging from unethical actions, the right to responsibility may appear as highly important from the perspective of ethical considerations regarding waste (Hawkins 2006, 40). When recycling materials appropriately, the waste citizen contributes to structuring ethical ways of waste management. Therefore, it is important to take the waste citizen's right to responsibility into consideration. In order for an individual to embrace the subject position of the waste citizen, it has to be possible for all. Otherwise, entry into the subject position might not be possible. If recycling is governed by legislation and it is considered as one of the important rights of the waste citizen, the citizen's access to the recycling system is of primary importance.

The Waste Citizen's Political Sphere

One of the central ideas of the theory of environmental citizenship is that citizens are not accountable to the state or some supranational institution but directly to each other. As an example of this, Dobson mentions the ecological footprint – a key tool for measuring the living space occupied by a single individual. The premise is that the Earth's resources are limited and a large ecological footprint of one individual potentially causes harm to other citizens, and thus, the heavy consumer is accountable to those whose ecological space is reduced or otherwise threatened through these activities (Dobson 2003, 97–117). The term ecological footprint refers to the impact

of a single individual's way of life on our planet, for example in the form of carbon dioxide emissions.

Generation of waste is one way of increasing one's ecological footprint. One purpose of sorting and recycling waste is to reduce harmful impact of waste on the environment and thus to reduce one's ecological footprint. In our study, the interviewees did not directly mention the ecological impacts linked with waste. Instead, they repeatedly emphasized that waste should be perceived as raw material or a resource:

> "It is raw material and raw materials can be used in many ways. Waste makes many kinds of raw materials. We probably have those, well, plastic, metal, glass… Whatever [waste] may be generated in households." (H4)

> "(I) have been waiting quite long for a change in mindset, that waste would no longer be waste but it would be raw material – these materials would become so valuable… that people would compete over them. Well, there is competition over metal now, but in practice many other [materials] have not enough value to create a genuine competitive situation, so that those in the market would act to see who gets them." (H10)

The interviewees mention many types of waste – such as plastic, metal and glass – as materials that are collected and can be used as raw material for new products. Using waste as a material resource can be perceived as economically sound and throwing it away is not recommended. Then again, retaining waste in the cycle of the circular economy as raw material enables to reduce consumption of virgin natural resources. It is, thus, a question of both economy and ecological sustainability.

By framing waste as raw material, the interviewees remind citizens of the fact that sorting waste at home is not insignificant. Citizenship is inseparable from resources and its political sphere is global, similar to that of the ecological footprint. Examined from the perspective of global resources, the waste citizen is a global citizen.

Discussion and Conclusions

This article set out to answer the question: How is the subject position of *the waste citizen* constructed and what are the strategies employed to encourage people to embrace this position?

Similar to environmental citizenship, waste citizenship is strongly determined by duties and responsibilities. Performing waste sorting activities –

above all contributing to the overall tidiness of the recycling sites and sorting waste appropriately – are among the main responsibilities ascribed to the waste citizen. In addition, since the recycling instructions and waste categories vary across municipalities, it is the waste citizen's responsibility to be aware of the details of these practices. The waste citizen's rights are seen as intersecting with the responsibilities. Being a thrifty consumer and a vigilant consumer-citizen who actively and directly communicates with companies regarding waste issues are perceived as virtues of the waste citizen. The citizen's role in waste management is clearly structured around performing waste sorting activities and being a rational, thrifty and active consumer. Once the citizen has sorted the waste appropriately, waste management companies and decision-makers assume the responsibility for recycling, its environmental impacts as well as assessing and monitoring them. The waste citizen is not expected to be politically active or to develop new experimental waste practices, for example. In this sense, there is a clear-cut distribution of responsibilities in waste management.

People are encouraged to embrace the subject position of the waste citizen through approaching waste as raw material. Without going into detail about the possibilities of reusing different kinds of materials or processing them into new products, or considering the potential hindrances, obstacles or exceptions to these processes, the waste actors of our study perceive the issue in a rather straightforward manner: waste is raw material. This idea represents an attempt to introduce a new ontology of waste in order to transform the mindset of citizens. Seeing waste with new eyes, in terms of its qualities and potential as valuable material that can be highly useful to someone – instead of treating waste as surplus to be thrown away – hopes are held for a transformed outlook on waste. Waste citizenship is best embraced as a joint effort of citizens targeted at ensuring the continued use of materials – a break from the traditional way of thinking about waste as something to be disposed of.

Defining waste simply as raw material may motivate people to adopt waste sorting practices. However, previous studies have shown that the proximity of recycling points is the single most important motivational factor for sorting waste (Rousta et al. 2015). As our analysis has shown, equal opportunity for waste citizens to sort their waste can be viewed as a right to responsibility and, as such, a significant aspect of waste citizenship. Then again, such thinking may obscure the citizen's relationship with prevention of waste generation, which, according to the European Union's Waste Hierarchy framework for Circular Economy, is the most important factor in waste management – and a goal our interviewees also called for. If waste is

needed as raw material in society and the system is functioning effectively, we might forget the original aim of "designing waste away". For example, combustion plants produce slag as a by-product, and no appropriate way of reusing it as raw material exists. Similarly, the recycling process does not always proceed smoothly, to say nothing of the carbon dioxide emissions generated by the transportation and processing of materials to be recycled. This contradiction may obscure the otherwise very clear role of the waste citizen in waste management.

In circular economy, reduction of waste generation and recycling occupy hierarchical positions. In practical implementation of circular economy, this hierarchy is easily overshadowed and waste management frequently focuses on the recycled quantities reported as percentages. Although landfill sites in Finland have been closed down over a short period of time, the quantities of household waste generated annually keep increasing. From this we may infer that the waste hierarchy of the circular economy has not so far attained its goals. Because the use of waste combustion for energy is not considered as recycling, the closing of landfills has not resulted in significantly higher recycling rates. In Finland, the rate has remained about the same throughout the 2000s. It is expected that waste citizenship is still in the process of being structured. As waste and environmental problems continue to accumulate in the 2020s, waste citizenship is nevertheless one of the central roles available for people to act and contribute solutions to these problems.

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PRODUCTION, PROCESSION AND DISTRIBUTION OF SUSTAINABLE FOOD

HE WAKA EKE NOA: FOOD INSECURITY IN THE WAITĀKERE AREA

Heather M. Tribe

Introduction

He waka eke noa – a Māori proverb which translates to "a canoe which we are all in with no exceptions." This proverb shows that when a part misses out, the whole misses out, we are all in this together. When part of our community has food insecurity, we are all the worse off for it. Therefore, we must critically analyse the state of our food security. This chapter aims to explore the concept of food insecurity through a feminist and peace studies perspective and apply it to a case study in Waitākere, Aotearoa (New Zealand). The chapter will begin by discussing the food security definition and vulnerability framework. Following this, there will be a discussion on income inequality, gendered violence, and the relationship between gender and food insecurity. Then the chapter will aim to understand the vulnerabilities threatened with climate change from a literature review. These lenses will then be applied to a document analysis of the Waitākere area to understand both the kind and severity of food insecurity in Waitākere.

Food Security

Combating hunger has always been on the agenda of political leaders. For hundreds of years the focus on combating this was in the provision of *enough* food for everybody, primarily through efforts to increase agricultural output. In 1981, Sen produced his seminal work, redirecting the focus of the food security notion to include the idea of accessibility (Sen 1981). He espoused that "starvation is the characteristic of some people not having enough to eat. It is not the characteristic of there not being enough to eat. While the latter can be a cause of the former, it is but one of many possible

causes." Much of the literature since this publication has built upon this understanding, disseminating the variables and causes which restrict access and contribute to inequitable food security within groups.

Whilst widely accepted, the United Nations Food and Agriculture Organisation's (FAO) definition of world food security misses some key arguments, rendering it difficult to operationalize. In 1996 the FAO defined food security as a concept present when "all people, at all times, have physical and economic access to sufficient, safe, nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO 1996). This has been broadly broken into four key concepts – the availability of food, the accessibility of food, the utilization of food, and the stability or vulnerability of the food system.

A primary limitation of this definition is in its inability to provide a direct and all-encompassing indicator. The likes of Maxwell (1996), Barrett (2002, 2010), Pinstrup-Andersen (2009), and Webb et al. (2006) have all postulated the issue of a missing single indicator to gauge the degree of food security. Whilst food sovereignty has often been used as a macro-level indicator of national food security as it covers the aspect of food availability, it does entirely miss Sen's argument of food accessibility being the crux of the issue. Other proxy measures, such as agricultural productivity, food storage, or children's nutritional status are often used. These, however, also only represent one aspect of a truly multifaceted phenomenon (Webb et al. 2006; Barrett 2010).

The literature agrees that tackling issues of food accessibility must occur at the granular level, focussing on the individual and the household (Maxwell 1996; Barrett 2002, 2010; Pinstrup-Andersen 2009). Global and national analysis, by nature, obscures the disparities within a population (Barrett 2010). This localised perspective will bring up issues of intra-household allocation and procurement choices and behaviours (Maxwell 1996; Pinstrup-Andersen 2009; Webb et al. 2006).

Food insecurity, at its focal point, must be considered a behavioural concept. Human beings are not passive victims of food insecurity and will make choices to adapt to their circumstances (Garine 1972). One way to operationalise this is to measure coping strategies under food insecure circumstances (Maxwell 1996). Coping strategies are used during times of short-term food insecurity (as opposed to long-term adaptive strategies) and are most often, highly unsustainable nutritionally, economically, and environmentally (Davies 1993).

Nutrition Transition

The nutrition transition is a key aspect of food availability. Food availability – as in, what food products are available to the community – is in itself a contested and political issue. A simplistic view would consider food availability to be what is growing in the paddock, and disregard the many contributing factors such as – trade agreements (both international and to corporations), cultural expectations and demands for culturally relevant products, and economic potential to expand and diversify.

The literature agrees that, whilst malnutrition is still a problem, issues of under-nutrition are decreasing, and issues with overnutrition are becoming endemic (Tzioumis and Adair 2014; Popkin 2006). Obesity and other overnutrition related health concerns are more prominent amongst urban communities than rural (Popkin 2006; Taylor et al. 1992). Urban lifestyles, such as those in Waitākere, are significantly more sedentary than rural counterparts, resulting in less energy being burnt off and more being stored within the body. A second factor is the abandonment of traditional food sources which are higher in fibre and lower in simple carbohydrates and sugar (Popkin 2006; Taylor et al. 1992).

Issues of Food Accessibility

In the food security framework, food insecurity can be broken into differential types, namely; chronic, transitory, and seasonal. Seasonal food insecurity follows fluxes in seasonally produce food and will not be discussed further at this point. Transitory food insecurity is caused by an unpredicted event or shock to the system, the intricacies of which will be discussed below. Chronic food insecurity is directly related to the sensitivity of the system – what pre-existing vulnerabilities are present in the system which create ongoing food deficits for groups or individuals?

Vulnerability is – in its simplest form – conceptualised as actual or potential suffering by a group or individual (Barrett and Headey 2014; Eakin and Luers 2006; Kasperson et al. 2005; Jordan 2019; Adger 2006). It can be viewed formulaically as:

$$V = S \times E \times A$$

Where V is the level of vulnerability a group or individual faces before latent or manifest harm is caused. E is the exposure to a stress – it considers the intensity, frequency and duration of the stress. S is the sensitivity of the system and considers how the system is affected by the stress and what pre-existing weaknesses in the system give the stress a greater ability to cause

harm. Lastly, A is adaptive capacity and considers how capable the system is to respond to the stress, to reduce harm or redirect resources to change the system in a positive way – ultimately reducing vulnerability.

Vulnerability rhetoric is developed across three distinct paradigms as described by Eakin and Luers (2006). Risk hazard scholars follow lines of inquiry to draw parameters around absolute risks, and when and where they might eventuate. Ecological resilience aims to understand how and why systems change and what the capacities to respond are. The final paradigm – political ecology – aims to understand why people and places are affected differently, what determines their abilities to adapt and what the following consequences of this are. It builds on Marxist and Neo-Malthusianist lines. To gain a clear understanding of vulnerability to shocks in the food system, a complementary approach that overlaps multiple perspectives is best (Eakin and Luers 2006; Kasperson et al. 2005).

For the purpose of understanding the pre-existing sensitivities within the food system, a political ecology approach is taken. Political ecology within the vulnerability nexus began with the mission to understand commonalities between hazards of contrasting origins and their impacts on the social system (Adger 2006). Entitlement theory viewed vulnerability within a set of economic and institutional factors which – depending on class, social status and gender (amongst other things) determined the entitlements of the individual and ultimately their ability to reduce and avoid food insecurity (Sen 1981). This approach is able to perceive situations where chronic food insecurity is present but where there is no direct impediment on the availability of food (Adger 2006). It illuminates the pre-existing weaknesses that marginalise and weaken some groups ability to manage external changes and perturbations to the food system. This theory agrees with the work of Galtung regarding structural violence. Structural violence, Galtung argues, is violence built into societal structures where one group suffers from something which is objectively avoidable (Galtung 1969). The following discussion will focus on two such groups which have historically been marginalised within the food system – those within the low socioeconomic status, and women.

Stability

Any of the three pillars of food security – availability, accessibility, or utilization – can be destabilised by shocks. Over the past few decades, volatility within the food system has increased due to a number of driving factors including environmental change, population growth, and conflict (Anderson

2019). Thus, increasing the incidences of transitory food insecurity. Returning to the previously discussed formula, V=S x E x A, increases in severity or frequency of shocks to the food system increase the vulnerability of transitory food insecurity.

Conceptualising vulnerability through the exposure to shocks is best done through both the risk hazards rhetoric and the ecological resiliency lenses. These approaches are utilized by many food security volatility warning systems including Famine Early Warning System Network (FEWS NET 2020), FAO's Global Information and Early Warning System (FAO 2020), FAO's Early Warning Early Action Programme (FAO 2016), Integrated Food Security Phase Classification (IPC 2020), and Agricultural Market Information Systems (AMIS 2020).

Integrating exposure into the above conceptualisation of vulnerability must be done alongside the previously discussed factor of sensitivity. Sensitivity highlights areas of chronic food insecurity and of pre-existing weakness with less resilient capability to withstand shocks and perturbations. When the system is hit with a shock or hazard, the risk of insecurity is amplified. Placing this conceptualising into the food security nexus: issues of accessibility and chronic food insecurity create pre-existing weaknesses. When hit by a disruption, food insecurity can become transitory additional to its chronic state, exacerbating the food insecurity of those without access. Transitory instability has a way of illuminating pre-existing fragility within the food system (United Nations System Standing Committee on Nutrition 2020; Parvin and Ahsan 2013).

Socio-economic Status

The literature agrees, the lowest socio-economic groups have the highest vulnerability to being food insecure (Alaimo et al. 1998; Hadley et al. 2011; Lo et al. 2009; Parvin and Ahsan 2013; Beaumier and Ford 2010). After rent is paid, food is the largest household cost (New Zealand Statistics 2018), it is also the most flexible. As a coping strategy to manage a minimal budget, families – both in New Zealand and worldwide – reduce the quality and quantity of food (Page 2018; Garrett and Ruel 1999; Tzioumis and Adair 2014). This occurs in conjunction with the nutrition transition discussed previously, ultimately leading to low SES groups relying on foods with a discounted commodity cost and equally low nutrient value (Caraher and Coveney 2004; Gottlieb and Joshi 2010; Khoury et al. 2014; Crotty 1998; Phillips 2006; Popkin 2006).

According to an report released by the Organization for Economic Cooperation and Development (OECD), the top 10% of earners have nine and a half times the disposable income than the bottom 10% of earners (Keeley 2015). This disposable income allows opportunities to improve living conditions and to provide a barrier to protect from unforeseen shocks. Any failures in the food system which result in price hikes will put basic sustenance out of economic reach of the poor (Behnassi 2018; Brown and Funk 2008; Gregory, Ingram and Brklacich 2005; Gross 2013; Lobell et al. 2008; Müller et al. 2011; Schmidhuber and Tubiello 2007; Vermeulen, Campbell and Ingram 2012; Wheeler and von Braun 2013). Further, the projected increases in health issues resulting from both climate change and the globally changing diet will become saliently displayed through income inequality (Vermeulen, Campbell and Ingram 2012; Wheeler and von Braun 2013; Lake et al. 2020; Schmidhuber and Tubiello 2007).

This trend is reflected in New Zealand (Carter et al., 2011; Carter et al. 2010; Parnell et al. 2001; Russell et al. 1999). In the New Zealand context, race is also a significant determinant of food insecurity as it is heavily tied to SES. More than 15% of New Zealand families are food insecure, of this New Zealand Europeans showed the least level of food insecurity with 10%. Those of Pacific ethnicities showed the most with 38% of families being food insecure and New Zealand Māori were in the middle with 29% (Russell et al. 1999; Carter et al. 2010; Parnell et al. 2001).

Gender

Before continuing, a thorough review of the term ‘gender’ (and its relevance) is required. Gender roles have intense spatial and temporal variation; at their core they are social constructs, not innate biological differences (Merry 2009; O’Toole, Schiffman and Kiter Edwards 2007). Within the definition of gendered violence, any gender can perpetrate or victimize another, or even itself, hence the use of the term ‘gender,’ not women (Pilcher and Whelehan 2004; Merry 2009). For the purpose of this research, the terms ‘gender’ and ‘women’ will be used in parallel as this research focusses on the gender inequality and violence which disproportionately affects women.

Conceptually, gender groups individuals, providing power and resources to the authoritative group. Hegemonic masculinity – the widespread domination of men in the social, economic and cultural spheres – ultimately creates a power imbalance that leaves female, gender non-binary, or queer communities with disproportionately less resources (O’Toole, Schiffman and Kiter

Edwards 2007; Cranny-Francis and Waring 2003). Hegemonic masculinity further excludes diverse voices from decision making discussions and has been documented on issues including health and climate crises management (Alston 2013). Exclusion from these conversations removes women's ability to shape outcomes and ensure policies are resilient and just for all. This imbalance in resource allocation is important in the conceptualisation of the term 'violence.'

The literature agrees that violence usually has a direct component (Johnson 1998; Kelly and Radford 1998; Dobash and Dobash 1998; McWilliams 1998; Pilcher and Whelehan 2004; Merry 2009; O'Toole, Schiffman and Kiter Edwards 2007). This can be physical, sexual, or psychological, however, due to the multifaceted and overlapping nature, none of these acts or behaviours can be mutually exclusive or explored in isolation. The New Zealand Government's Ministry for Women defines violence against women as either intimate partner violence (IPV) or sexual violence against women. They also agree with the literature that aspects of violence cannot be explored in isolation as there are inextricable links between types (Ministry for Women 2020). As this definition limits itself solely to IPV and sexual violence it leaves much to be desired when looking for an applicable framework for this study.

Some scholars leave violence as solely the direct form whilst others take it to include structures within society that cause harm along gendered lines (Merry 2009; O'Toole, Schiffman and Kiter Edwards 2007). Structural violence is indirect and invisible, providing one group with more resources and harming those without (Galtung 1969; Scheper-Hughes and Bourgois 2004; Merry 2009; O'Toole, Schiffman and Kiter Edwards 2007). An example of structural violence in this sphere is the inaccessibility to reproductive and sexual healthcare, resulting in unwanted pregnancies or unsafe delivery.

In 1979, the United Nations General Assembly adopted the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) (United Nations Human Rights Office of the High Commission, 1979). It focused primarily on civil rights and legal status and is the second most accepted of the core UN human rights treaties. Despite this apparent success, it also has the highest number of party reservations – allowing local laws and practices which discriminate against women to prevail. Additional to this shortcoming, the CEDAW did not address violence against women. As a substitute, in 1992 the governing committee of the CEDAW released General Recommendation 19, stipulating explicitly that gendered violence is "any violation of human rights that is directed against a woman because

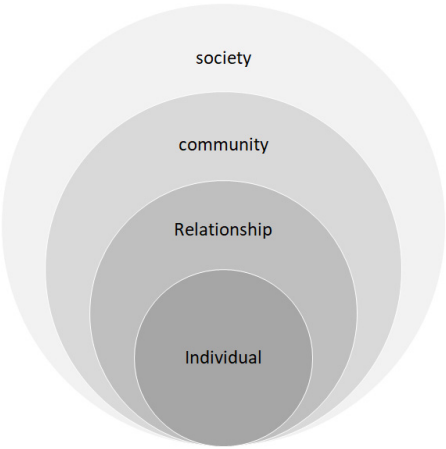
she is a woman, or that affects women disproportionately" (CEDAW 1992). As CEDAW stands, it lacks the recognition of violence against women. General Recommendation 19 grants this but is not a ratified section of the CEDAW, stripping it of the rigour that is necessary for implementation to garner long standing change (Simonovic 2014). A pertinent example of the limited reach in fostering change through this approach is that of Female Genital Mutilation/Cutting (FGM/C). CEDAW postulated the universal compulsion amongst governing bodies and civil societies to end this harmful practice in General Recommendation 14. Yet thirty years this, it is still a prevalent and debilitating event being carried out on some 8000 women and girls every day (WHO 2020).

Whilst having vague definitions creates space for misunderstanding, they also incorporate a far more complex reality of gendered violence in all its multiplicity and overlapping forms. Despite its ubiquity, the prevalence and typology of gendered violence varies greatly between situations (Dobash & Dobash 1998; Merry 2009). This is due to a host of things including kinship structures, history, colonization, societal stress and conflict (Dobash & Dobash 1998; McWilliams 1998; Merry 2009; O'Toole et al. 2007). Imposing universal standards on diverse situations is one of the downfalls of the previously discussed CEDAW and is a factor in many of the ratifying parties' reservations (Simonovic 2014). When exploring gendered violence, it is crucial to understand the cultural relativity within the complex social system.

One model which succeeds in conceptualising the multiplicity of interacting factors which contribute to gendered violence is the ecological model, initially put forward by Heise (1998) and later reconfigured by WHO (2010).

Here, each sphere within the ecological model is a level of influence on the risk of gendered violence. The first, individual, explores biological and personal factors which may affect the likelihood of the individual being a victim or perpetrator of violence. Outside this is the microsystem, which includes the closest relationships to the individual and which have the greatest impact on shaping the behaviours and experiences of the individual. These two circles sit within the exosystem or community context – such as schools, neighbourhoods, or workplaces. Analysis of these aims to understand the characteristics of these settings which are associated with increasing the likelihood of an individual becoming a perpetrator or victim of IPV. The macrosystem embeds broad level ideology about gender inequality, religious or cultural beliefs, societal norms and economic or social policies which sustain IPV.

Figure one: the ecological model of gendered violence



The core of this framework is centred on its understanding of the complex and dynamic interactions of all the factors within and between its four levels. This is reflected throughout the literature which agrees that gendered violence is not caused by a single factor but is the summation of many interacting events and contextual factors conflict (Dobash & Dobash 1998; McWilliams 1998; Merry 2009; Ministry for Women 2020; O'Toole et al. 2007).

A limitation of this framework is its explicit and confined focus on intimate partner violence. Gendered violence, as has been established, extended beyond this narrow scope, a framework needs to reflect this. Although there is no visual aid to pair, one suggestion is the sexual violence continuum put forward by Kelly and Radford (1998). This continuum enables the theoretical and experiential perspectives to collaborate in understanding two things. Firstly, there is a common characteristic that weaves through a range of elements. Secondly, this continuous series of elements may not be easily distinguished or prioritized in extremity.

In conceptualising this, hegemonic masculinity, or male dominance, may be the underlying character as it has been most broadly discussed throughout the literature on IPV, structural violence and exclusion from decision making spaces. Secondly, with omission of femicide, no prioritization can be made between the overlapping elements of gendered violence. One cannot easily discern which is most important as so many forms of violence interact and overlap.

For the purposes of this chapter, gendered violence will be conceptualised within the WHO model (WHO 2010), as adapted from Heise (1998). The same four sphere template can be transferred to any act which causes direct, psychological, sexual, or structural harm to women and is underpinned by male dominance – in accordance with the Kelly and Radford (Kelly and Radford 1998) continuum. It is understood that, within this continuum, no discernible separation of elements can occur, and any exploration into a sin-

gle behaviour or violence form will result in multiplicity of interacting factors and contingencies.

Food Security and Gender

The relationship between food and gender is a logical but complex one. Food security is largely discussed as a distribution issue, whilst feminism aims to understand and eradicate the layers of oppression and structural violence behind the ill-distribution. Inequality between genders is both a driver and a consequence of food insecurity. Being a woman creates new forms of vulnerability to food insecurity, additional to the choices and consequences they already face.

The literature agrees that women face greater vulnerability to food insecurity due to a lack of access to potential resources (Carter et al. 2011; Jost et al. 2016; Kakota et al. 2011; Kassie et al. 2015; Taylor et al. 2017; Tibesigwa & Visser 2016; Watson 2015; UN Women 2014). These resources, such as better education, government support, fair remuneration for labour, and equitable land rights, provide a buffer of opportunity which works to stave off food insecurity. This lack of access to resources and opportunity leaves women vulnerable to poverty and economic marginalization, ultimately making them more susceptible to food insecurity than men in a similar cultural and economic situation (Kassie et al. 2015; Taylor et al. 2017; Tibesigwa and Visser 2016; Watson 2015). In the New Zealand context, females reported significantly higher rates of food insecurity than males – 19% and 12% respectfully (Carter et al. 2010). The experience of poverty and resource accessibility differs greatly between rural and urban populations.

In many cultures there is a pre-existing expectation for women to be the primary caregiver of children and in the event of a relationship breakdown, for the mother to take sole responsibility for parenthood, this is reflected within the New Zealand context (Jost et al. 2016; Kakota et al. 2011; Carter et al. 2011). Furthermore, being unmarried or a single parent in New Zealand is a significant determinant for of being food insecure (Carter et al. 2010). The international literature agrees that female headed households have a greater probability of being food insecure (Kassie et al. 2015; Taylor et al. 2017; Tibesigwa & Visser 2016). Building on this Kassie et al. (2015) and Kakota et al. (2011) showed that even with the same access to resources (such as fertilizer and creditors), female headed farming households were less productive than their male headed counterparts. This was due to cultural expectations and prejudices restricting equal output and trade.

As women have a greater risk of being food insecure, the literature pays greater attention to the choices they must make during times of such insecurity. Reducing the quality or quantity of food are common gender-neutral coping strategies. However, the literature unanimously explores the concept of maternal buffering as a gendered coping strategy (Alston & Akhter 2016; Beaumier & Ford 2010; Briones Alonso, Cockx & Swinnen 2018; Carter et al. 2011; Maxwell 1996; Taylor et al. 2017; UN Women 2014; Watson 2015). Maternal buffering is a coping strategy where the women of the household, primarily the mother, will restrict her intake or refrain entirely from eating in order to ensure sufficient food for other family members (usually males or boy-children). Whilst there is no biological requirement for solely the mother to provide the buffer, Maxwell (1996) argues there is also no empirical evidence of paternal buffering. Most likely this is due to cultural expectation and social norms of feminine self-sacrifice and maternal instinct.

Anaemia, deficiency in vitamin A and iodine, and being underweight are some of the most common presentations of malnutrition which biologically affect women more so than men (Women 2014). This is particularly potent during times of higher nutritional need such as maternity; failure to achieve nutritional requirements is an increased risk of maternal and infant fatality (Watson 2015). Additional to this, Carter (2011) showed that New Zealand mothers endure greater mental trauma during times of food insecurity, linking it to negative perceptions of the self as a consequence of being unable to provide for her children.

The literature not only cites economic marginalization as a gendered vulnerability but also increases frequency and severity of negative outcomes (such as inaccessibility to relief, or to injury, and death) during and after humanitarian crises such as social and economic disruptions and environmental disasters (Neumayer and Plümper 2008; Aipira, Kidd and Morioka 2017; Watson 2015). There is increased risk faced by women, in that they may need to travel further to gather essential good for food provision, increasing their risk of sexual assault. Additionally, distribution of aid may not be done in safe locations, creating further risks for women (Inter-Agency Standing Committee and Global Protection Cluster 2015). When faced with the vulnerabilities set out previously, compounded by the need to provide for children, women and girls often have to sell sex for food or agricultural inputs, particularly during or after shocks to the food system (Inter-Agency Standing Committee and Global Protection Cluster 2015). During times of food instability, particularly transitory food insecurity caused by sudden shocks, domestic violence and IPV increases (World

Health Organisation 2017). This increase in domestic violence and IPV occurs in two waves, a primary wave during an event and a secondary wave during the aftermath (Alston 2013). This trend was observed in the aftermath of the 2011 Christchurch Earthquakes (Lynch 2011).

Climate Change as a Disruptor

The repercussions of climate change are not universal and exhibit significant spatial variability (Wheeler and von Braun 2013; Müller et al. 2011; Riegler 2018; Brown and Funk 2008; Lobell et al. 2008; Gregory, Ingram and Brklacich 2005; Vermeulen, Campbell and Ingram 2012). Predicting the exact consequences of climate change is monumentally challenging due to the number of climate assumptions necessary – such as emissions trajectories and climate model parameterizations (Müller et al. 2011; Kang, Khan and Ma 2009). This challenge is expanded when exploring the impacts of climate change on food security; the impacts of which depend on many other socio-economic factors. Regardless of the hurdles, the literature agrees that climate change will increase the number of people at risk of food insecurity (Schmidhuber and Tubiello 2007; Brown and Funk 2008; Wheeler and von Braun 2013; Müller et al. 2011; Behnassi 2018; Gross 2013; Gregory, Ingram and Brklacich 2005; Vermeulen, Campbell and Ingram 2012; Parry et al. 1999).

Availability of Food

Climate change will alter the agro-ecological conditions which modern food production is built upon (Schmidhuber and Tubiello 2007; Wheeler and von Braun 2013; Müller et al. 2011; Riegler 2018; Behnassi 2018; Gross 2013; Lobell et al. 2008; Gregory, Ingram and Brklacich 2005). A part of these changing conditions is the heightened prevalence of pests, pathogens, and weeds (Riegler 2018; Lake et al. 2020). Reigler (2018) postulates that for every 1˚C of change in global temperature there will be a 10-25% loss of grain crops – directly because of pest insect species. In a larger biodiversity sense, Pecl et al. (2017) showed that climate change will shift many of the ecotones faster than species will be able to redistribute themselves. This will ultimately cause the rapid collapse of ecosystems and their regulatory and provisioning functions upon which humanity relies (WWF 2018; Karki et al. 2018; IPCC 2019; Flannery 2005). This loss of biodiversity will affect those who have low SES, rural groups, and women most potently. This is due to their dependence on the provision of biodiversity for energy, mate-

rial, artisanal fisheries and subsistence agriculture (UN Women Watch 2011; Kakota et al. 2011).

The spatial variability of climate change will, in some regions (particularly in the high-latitudes), create novel prime conditions for food production (Schmidhuber and Tubiello 2007; Müller et al. 2011; Kang, Khan and Ma 2009; Parry et al. 1999), whilst other regions will suffer losses (Schmidhuber and Tubiello 2007; Wheeler and von Braun 2013; Gross 2013; Pecl et al. 2017; Kang, Khan and Ma 2009; Parry et al. 1999). The literature focusses on the plights of large swathes of Africa and Asia as pertinent examples of this (Godber and Wall 2014; Ewing 2016; Lobell et al. 2008; Parry et al. 1999; Gross 2013; Müller et al. 2011; Douglas 2009; Jost et al. 2016; Kakota et al. 2011).

Accessibility of Food

Resulting from the changing agro-ecological impacts of climate change, significant price hikes are predicted to detrimentally impact food accessibility, most potently affecting those who are already economically marginalised (Schmidhuber and Tubiello 2007; Brown and Funk 2008; Wheeler and von Braun 2013; Müller et al. 2011; Behnassi 2018; Lobell et al. 2008; Gregory, Ingram and Brklacich 2005; Vermeulen, Campbell and Ingram 2012; Gross 2013). Price hikes have the ability to create massive suffering and potential for political unrest and violence. A pertinent example of this is the food riots and associated violence seen in around the world throughout the 2006-08 global food crisis (McKie and Stewart 2008).

Sudden price spikes are in combination with economic downfall of sectors particularly affected by climate change. Women, rural, and low SES groups are most vulnerable to the financial hardships exacerbated by climate change (Douglas 2009). In New Zealand, the economy is heavily funded by both agriculture and tourism (Tourism New Zealand 2020). Tourism is expected to be affected through reduced air travel, and tourists fear of EWEs.

Women with low socio-economic status are especially affected by climatic changes in New Zealand. This vulnerability is heightened by women's increased likelihood of living below the poverty line and their inaccessibility to resources as previously discussed. Resource accessibility is reduced even further during disasters whilst the workload in care and food provision increases (Alston 2013; Neumayer & Plümper 2008).

Utilization of Food

Climate change is predicted to increase ill health and fatality. Sanitation is affected through droughts, flooding, and EWEs. The resulting water shortages, simultaneous with temperature rises, is predicted to cause an increase in vector-borne diseases and diarrhoeal diseases (Kakota et al. 2011; Singh et al. 2001; Vermeulen et al. 2012; Wheeler & von Braun 2013).

Diet is also affected by climate change. Shocks to the food system can result in consumption of famine foods which may offer little nutritional value, or increased food prices may lead to a decrease in both quality and quantity of food (Wheeler and von Braun 2013; Lake et al. 2020; Vermeulen, Campbell and Ingram 2012). This may exacerbate the previously discussed nutrition transition and associated negative health outcomes.

Lastly, the culminative negative health outcomes resulting from climate change will create additional strain to an already overburdened healthcare system (Neumayer and Plümper 2008). During times of crisis, sexual and reproductive healthcare resources are often redirected to managing the crisis. This reallocation leads to unwanted pregnancies and reduced healthcare for delivery and early childhood, ultimately causing an increase in maternal and infant mortality (Neumayer and Plümper 2008; Wenham, Smith and Morgan 2020). Neumayer and Plümper (2008) disseminate the mulitplicity of inter-lapping factors which lead to women's higher morbidity rates during natural disasters. Whilst some factors are biological – such as women's lesser strength and stamina particularly when pregnant – many were dependent upon cultural or social norms. Examples of these include educational values teaching only boys how to swim or climb, restriction of women's movement without a male chaperone, or expectations of mothers to stay in dangerous situations with their children whilst men search for help or resources.

Case Study Background

The Waitākere area which lies to the west of New Zealand's largest city, has a few names. For the purpose of this research, it will be called Waitākere, yet the statistics from central government divides the general area into three key parts: Henderson-Massey, The Whau, and the Waitākere Ranges. As the 'heart' of Waitākere is Henderson, this was selected to gather social demographics from the latest census, conducted in 2018.

Figure two: Waitākere area

Before the arrival of European settlers, the Māori people lived in Aotearoa, New Zealand, in iwis (similar to tribes). The original occupants of the Waitākere area, Te Kawerau a Maki, were – over time – forced to abandon their lands and traditional ways of life for eurocentric livelihoods (Paterson 2009; Taua 2009). Large swathes of land – under the guardianship of Te Kawerau a Maki – had been sold by Ngatiwhatua (another local iwi) without consent

or to the benefit of Te Kawerau a Maki (Alemann 1992; Taua 2009; Paterson 2009). These large land sales effectively disestablished the traditional migratory food systems of iwi, forcing them into smaller and more isolated sections until they were unable to survive and had to assimilate (Paterson 2009; Taua 2009; Alemann 1992).

The first land sales were to two Scottish men, MacFarland and Henderson (after whom the central hub of Waitākere takes its name) (Bishop, Burgess and Cole 2017; Alemann 1992). These were the first of many waves of migrants who have shaped and directed the development of Waitākere. Successive industries passed through the growing region. Firstly, timber mills boomed, pillaging the great Te Wao Nui o Tiriwa forest of its tall emergent trees. After this, gum digging, then agriculture and viticulture, primarily shaped by the new waves of Croatian and Lebanese migrants (Bishop, Burgess and Cole 2017). As the proximus city of Auckland grew in population, Waitākere transitioned from rural to urban. This transformation was heavily impeded by the Great Depression and reignited afterwards, peaking in the 1960s (Bishop, Burgess and Cole 2017; Delgrosso 1969; Munro 1964; Winn 1966).

The following data is from Statistics New Zealand (2018) from most recent census. The total population was just under 120,000 people, the average age of which is 33.1 years. Just under 47.8% of residents over 15 years old were married with a further 10% either separated or divorced. The median income was $31,4000 which is significantly less than the New Zealand median of $52,000. This has a significant gender dynamic, where women earn disproportionately less than their male counterparts and do significantly more unpaid work as can be seen in the following diagrams sourced from Statistics New Zealand (2018).

Figure three: total personal income for people in Henderson-Massey local board area and New Zealand, 2018 census

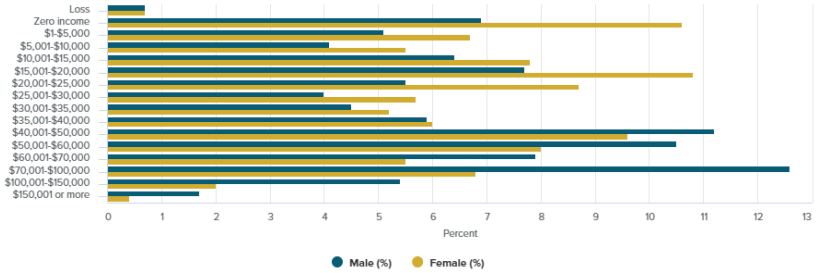


Figure four: total personal income, by sex, for people in Henderson-Massey local board area, 2018 census

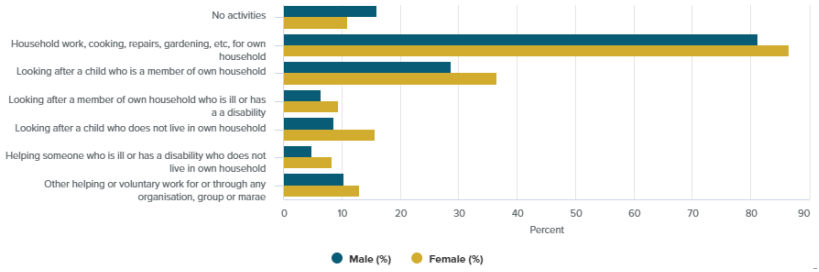


Figure five: unpaid activities, by sex, for people in Henderson-Massey local board area, 2018 census

Unpaid work here describes all work that is unpaid, including care and domestic work and volunteering. This reflects the global trend of females doing more unpaid work than males, but to a lesser degree than the calculation put forward by UN women suggesting women do two and a half times the unpaid work than men (UN Women 2020). Even though the unequitable distribution of unpaid work is not as potent in Waitākere as it is globally, it still reflects the time poverty women face when fulfilling their obligations to both paid and unpaid responsibilities.

In combination with this, whilst many living costs are relatively the same across New Zealand, the average rent per household in the Henderson-Massey area is $440 per week, $100 more than the New Zealand median. To combat the lower income and increased rent, many families co-inhabit the same house. The average number of people per household is increasing both in Waitākere and across New Zealand (Statistics New Zealand 2014; New Zealand Herald 2008; Tokalau 2018).

Document Analysis

Issues in the Food System in the Waitākere Area

There is rising concern across New Zealand around the 'working poor.' Working poor are defined as those who are in full time employment yet cannot cover their household costs, primarily due to the previously discussed low wages and increases in housing costs. After rent is paid, food is the largest household cost (New Zealand Statistics 2018), it is also the most flexible. As a coping strategy to manage a minimal budget, New Zealand families reduce the quality and quantity of food (Ibid., 2018). In accordance with the literature on the subject, this occurs in conjunction with a trend towards a more homogenous globalised diet, relying on a reduced variation of food sources, characterised by being dense in calories, protein, and fat (Caraher and Coveney 2004; Gottlieb and Joshi 2010; Khoury et al. 2014; Crotty 1998; Phillips 2006). This has led to an increase in non-communicable diseases such as diabetes, obesity and high blood pressure both internationally (Tanumihardjo et al. 2007; Caraher and Coveney 2004) and locally in Waitākere (Ministry of Health 2018; Waitemata District Health Board 2017). This subjugation of health outcomes for commodity cost has been capitalised by a handful of powerful conglomerates who target neighbourhoods with higher economic deprivation (Cummins, Mckay and Macintyre 2005; Gottlieb and Joshi 2010; Caraher and Coveney 2004) a salient example of which is Lincoln road – a primary arterial way through the Waitākere area which has the most fast food outlets of any street in New Zealand (Braunias 2017).

Income Inequality in Waitākere

During the great depression, the difference of experience between New Zealand's rich and the poor was keenly felt (McKinnon 2016). Whilst the richer families were sheltered from depravation, many of the poorer families were only able to get by due to their own food production on semi-urban plots, most of which have since been developed into metropolitan hubs. Since the 1990's, income inequality has drastically increased in New Zealand (Keeley 2015). This occurred in conjunction with the fall of the welfare state, greatly adding to the financial pressure faced by working class families (The West Auckland Women's Centre 1994). As previously stated, the most recent census confirms that this economic marginalization has not improved in Waitākere.

The degrees of overcrowding, previously mentioned, have severe impacts on both mental and physical health. Baker et al. (2012) found significant increases in prevalence of contagious diseases in correlation with income inequalities. Drivers of this correlation were over-crowded, poor quality homes and an inaccessibility to healthcare services.

Gender Issues in Waitākere

Throughout its development, Waitākere has always held an element of isolation. From the 1970's, women presented at the local hospital with unprecedented levels of depression (The West Auckland Women's Centre 1988). This was attributed to the mass movement of young families to the fledging urban area. The men went to work and, without substantial social services, accessible public transport, or being nearby their friends and extended family, the women were left alone to raise the children.

The overcrowding previously mentioned has severe consequences for mental and physical health of families in Waitākere (Council 1998; Baker et al. 2013). It is also one of many complex contributing factors responsible for the high levels of domestic violence in the area (Moore et al. 2017).

The consequences of the fall of the welfare state are still felt today. Women felt expected to combine paid and unpaid work and often became marginalised in the workplace (The West Auckland Women's Centre 1994). These issues are still reflected in the Waitākere area with the significantly gendered wage gap and the salient difference in levels of unpaid work undertaken between the genders (Statistics New Zealand 2018).

Discussion

The purpose of this chapter is to establish the presence, or lack thereof, of food security in the Waitākere area. The combination of high living costs, below average income, and a housing crisis would indicate a degree of financially driven food insecurity (Statistics New Zealand 2018). As was previously discussed, food provision acts as a buffer: once rent is paid, food is the largest and most flexible expenditure. In order to maintain limited budgets, families will often decrease the quality or volume of food consumed (Leahy 2018; Page 2018). Scoping food insecurity solely through circumstantial finances disregards the other three aspects of food security: accessibility, utilisation, and stability (Maxwell 1996; Barrett 2002, 2010; Pinstrup-Andersen 2009; Webb et al. 2006). Supporting the assumption of Waitākere having food insecurity is the fact that the rates of coronary and non-communicable diseases associated with poor diet are higher in this

community than in many other parts of New Zealand (Baker et al. 2012, 2013; Waitemata District Health Board 2017). This is in agreement with the globally changing diet, characterized by an over consumption of poor quality food (Phillips 2006; Khoury et al. 2014; Wheeler and von Braun 2013) and would agree with the assertion of food insecurity through lack of utilization due to poor diet resulting in poor health outcomes.

Women in Waitākere are more likely to be financially dependent upon men. This is understood through their lower income than men (Statistics New Zealand 2018). Additionally, they work less paid hours and do more unpaid work which, since the fall of the welfare state, is not financially viable. Their dependence can keep them without means of combatting food insecurity; it can also keep them trapped in the abusive relationships which are all too common in Waitākere.

From the beginning, women in developing Waitākere were subjugated to degrees of gendered violence and gender inequality. This has continued and evolved into the current day, characterised by income inequality, social isolation, and domestic violence. Similarly, the food system (despite a brief time of plentiful orchards and gardens) is now foundered on fast food and low-quality sustenance for its growing population of working poor families. How will these features be affected in the future? As a community in the largest city of a country which touts being the second most peaceful country in the world (Boyt 2019), should we expect more?

We expect climate change to increase poverty through a number of direct and indirect mechanisms (Schmidhuber and Tubiello 2007; Vermeulen, Campbell and Ingram 2012). With this understanding, an increase in poverty will exacerbate the already high degrees of overcrowding and negative health outcomes as families try to adapt to rising costs. This would drive greater vulnerability to increases in domestic violence and other forms of conflict and crime within communities. This requires further study and analysis to understand the intricate relationships which may link climate change to increased domestic violence.

In this Anthropocene time, characterised by the globalised capitalist economy and humanity's ability to change the capacity of our planetary boundaries, the food system in Waitākere is no less vulnerable than any other developed community. Any international price hikes or staple crop failure will have an impact on the food system locally. Whilst much of the food in the community is produced within New Zealand, it is priced at international market prices, hence the local reflects international geo-political contexts.

Conclusion

The literature shows that women with low socio-economic status are more likely to be food insecure, with harsher consequences. The structures which affect them are not new and have been present since the initial development of the Waitākere community. Bringing climate change into consideration here, there is great likelihood of further gender inequality and potential for increased rates of gendered violence. Further research must be undertaken to critically understand the food security of women in the Waitākere area and the vulnerabilities they face to climate change. It would be hoped that this understanding would provide recommendations to strengthen the food system and reduce women's vulnerability to further inequality and violence.

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Part III

PROSPECTS FOR NEW VOCABULARIES OF SUSTAINABILITY

SUSTAINABILITY DIMENSIONS OF BLOCKCHAIN TECHNOLOGY

Boris D. Grozdanoff

The last several years witnessed the emergence and the immense growth of blockchain technology (BCT), both decentralized and centralized. Two questions regarding blockchain technology as one of the state-of-the-art digital breakthroughs, the others being quantum computing, quantum encryption and artificial intelligence, seem more pressing now than ever. The first one is whether blockchain will persist into the future as a technology that can deliver products which others cannot or cannot deliver so well. The second one is, if the answer to the first question turns out to be positive, what would be some of the leading social dimensions of the future blockchain technologies.

We see that blockchain technology spreads much like a virus to many and new domains: from strict decentralization, met in the boom of the cryptocurrencies, through the smart contract functionality, which gave a new and increasingly growing layer of persistence to the implementation of the technology in banking services, administration, government management and cloud and database services. It is overwhelmingly obvious that the BCT is here to stay and evolve. Thus, the question now is what would make blockchain sustainable through the future. Here I would try to list the conditions for such sustainability and from them draw the framework within which the technology would evolve, while serving global society a purpose that cannot be served by other technologies and in a way that would satisfy its constantly growing digital needs.

First, we need to see the comparative value of BCT and where it goes ahead of competitor solutions. Those features of BCT are difficult if at all possible to be delivered by a different technology:

1. Guaranteed history of inscriptions

2. Security of structured data – the price for breaking the security of a well devised BC with secure architecture is impractical if at all mathematically and physically possible

3. Speed and functionality of service

Only the conjunction between (1 – 3) would preserve non-trivial and original social functionality of blockchain technologies in the future.

The Guarantee of History

The broad society in virtually all of its main dimensions today, from financial and governance, to legal and social activist, has never had before the chance to appreciate the power of blockchain secured history of inscriptions as it has today. History of anything, events like the death of Napoleon or data, like John having a thousand dollars in his crypto wallet, is worth nothing if *does to correspond to facts*. To illustrate, if it is not John who has the dollars in the wallet, but Jane, or if it is not anymore the case that John has the dollars, but a hacker, the difference would be highly non trivial not just for John, but for all related agents and the participating service infrastructure like banks, legal archives, media and others. Or, if it was not Hitler but, say, Churchill who invaded the Soviet Union in WW2 the difference again would have been extremely highly non-trivial from a myriad of aspects.

The value of history is in the true ordered description of facts, not of fact-candidates or worse, fake facts. It is the truth of the historical descriptions that gives history its value, and only then comes the order of the descriptions. Yet, both are at the core of a valuable for the society history and a true history. Here I will certainly do not deviate in a specialized semantic-epistemic debate about which theory of truth and knowledge is the one to follow. I prefer to use as a working definition of truth the one by Frege,[1] which in a modern phrasing would have somewhat of the following form:

A true statement (TS) is a syntactically and semantically well-formed statement that has in an outside to it reality its referents satisfying its sense.

One of the virtues of this definition is that it is also not incompatible with Alfred Tarski's influential *Semantic Theory of Truth*.[2] Yet, for my purposes here, a lose framework of history, as an ordered set of syntactically well-formed statements, that have meaningful interpretation on the meaning horn

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[1] Gottlob Frege "On Sense and Reference" (1948) in *TPW*, 56–78, also in *CP*, 157–77, and *The Philosophical Review* (1948), 57: 207–230, and as "On Sinn and Bedeutung" in *FR*, 151–71.

[2] Alfred Tarski "The Semantic Conception of Truth and the Foundations of Semantics" in *Philosophy and Phenomenological Research*, 4 (1944): 341-395; reprinted in Tarski 1 *Collected Papers*, v. 2: 665–699, Basel: Birkhäuser.

of semantic interpretation, and *successful reference*, in the state of affairs that they describe, should be sufficient to explicate the relation between history and its embedding as sets of inscriptions within a blockchain ledger.

Thus, history should be, ideally, comprised of ordered TSs. Order of TSs and truth of statements of history are thus necessary conditions for *a* history, and thus for *any* history; for if a statement in a "history" is not true, say, if a history statement affirmed that Hitler ordered the murder of Trotsky, and not Stalin,[3] the reality described by it would not have satisfied the description and would thus render the statement false and not true. As false such a statement cannot be a part of any *history*, for by definition a history is a description of actual events that factually took place.

The vulnerability of history now becomes evident. The one who writes the history has the power to select the descriptions of the incorporated events, to order them as one likes or in accordance to one's agenda, if such exists; and to use the constructed history for a variety of purposes. Deliberate fake histories are one manifestation of this vulnerability. Another, perhaps much more oftenly encountered, is the *non-deliberate false histories*, where false descriptions figure in the chain due to imperfect construction, lack of crucial information and the like. All of the last are all too well familiar to professional historians, who struggle to recover true descriptions of events that eventually took place sometimes thousands of years ago, and the informational paths to them are, least to say, scarce and fragile.

The most important challenge before any history is the guarantee that it indeed is a history of real events and data, and not a false one. This challenge is a function of two main factors: first, is the factor of the very availability and access to the events and data, to be ordered in a history narrative with a structure that has well defined temporal and causal chains. Second, is the factor that once constructed this history, being a history, would not be changed along the path from real facts to false facts. The first factor represents a scientific and a moral challenge. The second, however, is a factor of control and good ethics in its exertion. The society needs some sort of a criterion, a guarantee that a written history remains as it was written with no malevolent mutations. The technology of blockchain delivers exactly this guarantee.

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[3] Historically, it was Stalin who ordered and arranged the murder of Leon Trotsky, for detailed history see the work of Bernard Patenaude, *Stalin's Nemesis* (Faber Publishing, 2009).

What Is an Invariant Structure of a Blockchain?

A blockchain is a ledger of inscriptions, that are chained linearly in a progressing structure. Each inscription is included in a segment of the chain, called block. This block contains many such inscriptions and after the block is filled (its size being determined by the planned structure of the blockchain) it is subjected to a hashing operation, which is a mathematical way of guaranteeing the uniqueness of its hash value, effectively a string of symbols of fixed length, that is the output of the hash operation; the block (set of inscriptions in it and some other data, like time stamps, etc.) being its input. This hash is taken to be plugged in as one of the inputs of the hash of the *next* block. Thus, the chain structure is created. Code of blockchains is usually written in an object-oriented programming language, such as the illustrative SWIFT code below:

```
1.  var hash: String!
2.  var data: String!
3.  var previousHash: String!
4.  var index: Int!
5.  func generateHash() -> String {
6.  return NSUUID().uuidString.replacingOccurrences(of: "-", with:
    "")
7.  }
8.  var chain = [Block]()
9.  func createGenesisBlock(data:String) {
10. let genesisBlock = Block()
11. genesisBlock.hash = genesisBlock.generateHash()
12. genesisBlock.data = data
13. genesisBlock.previousHash = "0000"
14. genesisBlock.index = 0
15. chain.append(genesisBlock)
16. }
17. func createBlock(data:String) {
18. let newBlock = Block()
19. newBlock.hash = newBlock.generateHash()
20. newBlock.data = data
21. newBlock.previousHash = chain[chain.count-1].hash
22. newBlock.index = chain.count
23. chain.append(newBlock)
24. }
```

Sample blockchain code, written in the programming language SWIFT[4]

Code in line (1) declares a programming object of the variable type that is the mentioned hash function. Effectively, the executed hash, filled with all its values, that vary from block to block (with exception to the very structure of the hashing algorithm, such as the widespread SHA256,[5] soon to be replaced in its footsteps by SHA3), carries the great load of security. Security is based on the (alleged, as it is worth to note in 2020) irreversibility of the input even if an attacker knows the output and the hashing algorithm itself which more often than not is open source and not secret.

Thus, we see that security of once inscribed in a block set of inscriptions: the only way to change them is to *rewrite the whole blockchain* from the first or genesis block (defined on line (10) as a programming object of invariable or constant type). Without delving into discussions of the role of the so-called consensus protocol, which regulates the agreement between miners on decentralized blockchains employing the proof of work, we immediately see that the bigger and richer in date the blockchain, which implies the greater number of blocks, the more difficult it is to compromise. On the opposite, a mere history, ordered freely without any quantified security, is completely accessible for mutation and substitution by the administrator of the text. In modern society these are typically people and institutions, sometimes companies, in an effective socially powerful position.

We are presented with a new paradigm of security, that is *purely mathematical and technological and not in the sphere of social power*. Even the most powerful dictators in history, such as Hitler and Stalin, cannot bypass or violate the laws of mathematics and the natural laws of physical world: those are not of the category that would made them susceptible to physical

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[4] The sample code is taken from Sai Kambampati's online article "Building Your First Blockchain App in Swift" from 2018, last accessed on 29.04.2020 at https://www.appcoda.com/blockchain-introduction/ last accessed 5.05.2020. The code is freely accessible online and is used here just for illustrative purposes due to its simplicity and ease of understanding of the blockchain architecture even from non-programmers. SWIFT is chosen for the same reasons, besides for its ability to provide robust, secure and clear code foundation of blockchain environments.

[5] See the information of approved SHA family algorithms at the web site of NIST: https://csrc.nist.gov/projects/hash-functions#Approved, last accessed 5.05.2020; for in-depth information about their structure, differences, albeit not entirely up to date vulnerabilities see the FIPS Publication https://nvlpubs.nist.gov/nistpubs/FIPS/NIST.FIPS.180-4.pdf, last accessed 5.05.2020.

abuse, blackmail, torture or murder. No human can negotiate with those laws and hence their transhuman and from our earthly perspective – absolute power. Their only vulnerability opens at the threshold of their *implementation*. Therefore, their implemented security does not, unfortunately, inherit the absolute security of aptly chosen hash functions and encryption algorithms (for example the method of the so-called *one-time pads* in cryptography is considered till today provably unbreakable). Yet, a good implementation can render *practically impenetrable* structures.

Blockchain, actually only few of them, due to variations of a rich nature, including the choice of the hashing algorithm, is one of the most prominent candidates of modern digital society to deliver security of data and history of data. It is therefore potentially invaluable from ethical and social standpoints, should societies manage to harness its power for their own prosperity.

In fact, all that is written, in segmented blocks in the chain, could be considered some sort of a *history*, due to the time-arrow like structure of the chain. This could be, as it most often is today, a history of financial transactions of a sender to a receiver. The finances could be not only the notorious cryptocurrencies, sprung like in an explosion after Satoshi Nakaomoto's white paper,[6] that gave the principles, which found the functionality and main properties of the digital currency, bitcoin, that took over the world in an impressive way. But the inscriptions can, of course, contain any sort of data: events, texts, dates, descriptions, and also conditional or smart contracts, where a programmed code is executed by the blockchain once certain required software conditions are fulfilled beforehand. We can thus write the history of Ancient Rome or the history of WW2 in the structure of blockchain. And given its chained hashed structure, protected by the strength of the encryption algorithms, employed by the hash function,[7] as well as by some highly non-trivial properties of the usually, but not necessarily decentralized network that drives it (like the so-called consensus protocol and the power of the mining efforts, invested into security in cases of proof-of work protocol based systems), this history, consisting of the concrete semantic and epistemic values of the ordered inscriptions, is not easy at all to change. To illustrate: in ex-communist states, and actually not just in them by far,

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[6] Satoshi Nakamoto "Bitcoin: A Peer-to-Peer Electronic Cash System Original" (2009), a paper, submitted to the cryptography mailing list at metzdowd.com. Available at https://bitcoin.org/bitcoin.pdf, last accessed 5.05.2020.

[7] Like the open source and industry standard of SHA256, soon to be replaced in its family of hash algorithms by the SHA3.

their version of history might disagree on some historical events with history of other countries. Say, the death of Hitler was depicted as currently described by historians of WW2 as one by suicide. But suppose in a different country's history, a participant in the war, Hitler's death was substituted by his fled to, say, a South American country.[8] In real life, what we call history is more often than not the disputed output of a multitude of interpretations, many of which loaded with ideological, nationalistic or other non-scientific bias, or simply, less than perfect descriptions of events, for which the historians do not have scientifically good enough access to recover the *actual historical event* that took place, no matter any interpretation.

This dispute of interpretation eventually reaches some sort of a prevailing and accepted balance where the huge majority of specialists in the field agree on one of the interpretations. But imagine now, that a new dictator emerges and he does not like this version of the history. All he needs to do in order to feed society his preferred version of the same event or sequence of events, is to rewrite them and distributed them, while at the time erases the previous agreed upon version. After a few generations, even the best of the last historians would probably not know at all about the previous version and would take as the history one or another version of the initial false narrative of the dictator.

In the blockchain version of a history that is not as easy as the above simple rewrite. If the events were written in a blockchain system with great encryption of hashes and enormous mining power, say, contributed worldwide as in the bitcoin mining global phenomenon, the dictator would have several, purely technical and mathematical obstacles to rewrite an inconvenient fact. He would have to take over the network of the blockchain (depending on the type of the protocol it employs) and only then he would be able to rewrite the first or the genesis block of the chain. Then, he can either change all information, or portions of it and run new hashes for each new block, thus incorporating along the way his preferred version of history. Only so he can change the blockchain written history. Otherwise, it would simply remain there; and given access to it, which in some states, even today (North Korea springs to one's mind, among others) is lacking, opponents of

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[8] As, for example, argued in a recent book, published as a trilogy in Harry Cooper *Hitler in Argentina: The Documented Truth of Hitler's Escape from Berlin* (*The Hitler Escape Trilogy*) (2014), revised Edition, Publisher: CreateSpace Independent Publishing Platform (March 7, 2014). This version is given here for illustrative purposes only and I certainly do not find sufficient reasons to accept it as the actual history of the case.

the dictator and in fact any member of the society with an access to it can first, read the hash-coherent history of inscriptions in the blockchain and second, can verify, that the chain of hashes is genuine and not compromised.

Thus, the task of formulating, disseminating and maintaining a history *shifts its field of resolution from the field of mere power, political, administrative or scientific to the field of technology*. The difference could not be more non-trivial: with principles of mathematics and laws of nature even the most powerful ruler, dictators and autocrats, could not negotiate and could certainly not give orders to them. Computers are inherently insensitive to political power. They follow laws of nature and principles of mathematics and logic. Thus, only agents, who are in a position to control and manipulate the latter's implementation, and certainly not their content, can by virtue of this ability of theirs elevate themselves to a position of power. A power over the computers, but also a power over societies that are regulated by technology.

The shift in power fields from mere politics to technology changes radically the profile of the anticipated agents, mentioned above. Such an agent can only be a technology expert, say a blockchain or an AI expert, and not a politician, elected or not, democratically or not. The latter would have one of two choices: to be actually able to rationally comprehend and follow the exponential growth of technology or to trust experts who can and do this. The former is very difficult to conceive of: any politician, even a top technology expert before assuming an office, would simply have to refocus to administrative obligations and tasks, none of which tolerates overlooking and postponing. Thus, he would lose very fast invaluable time for monitoring the constant growth and evolution of technologies. It is thus practically impossible for even a best of technology expert to continue to be such an expert and to thus be in a position to function as one when becoming an operating politician.

The latter comes in two forms: trust without exerting power over the expert, say, trusting the information, expertise, decisions and advices, or "trust" in power over an expert, that is typically based on instilling fear in him. In totalitarian regimes the latter type of trust was and still is much more prevailing than the "free" trust. Dictators trust that their experts would do what they can in order to satisfy them out of fear. Amazingly, this "strategy" had much success in history of technology. But this trust is not in the expert, but in its regimented behaviour and judgement. The lack of rational comprehension remains: the dictator still cannot understand the technology he desires to operate. Typically, he only has a limited understanding of a portion of its

architecture and functionality. Thus, the true space of possibilities, opened by a technology, say a blockchain or an AI, remains inaccessible to the ruler. All trust in authoritarian cases is trust in fear of experts.

Lack of real time expert comprehension of a certain technology limits the governance analyses and decisions that employ it. Four illustrations of contemporary technologies provide good case studies: artificial intelligence, blockchain technology, quantum computing and quantum encryption. We can distinguish them with respect to its mutual applicability, which seems like a useful criterion to define possible directions for their evolution and usage. Only two of those, blockchain and quantum encryption can provide an impartial control over the others.

Quantum encryption renders an objective physical security of communications that cannot be negotiated with and at least from a contemporary scientific point of view, cannot be compromised at its core, if its implementation is adequate to its potential. Even an AI cannot break the laws of quantum mechanics. It can only learn how to avoid some of their limitations, if any. But even then, an adversary AI can learn how to implement quantum encryption better, thus giving a push of a process of technological evolution of the technology, that could not have been done by the much more simplistic artificial evolution, commanded by human experts.

Blockchain relies on principles of mathematics and again, those are impossible to negotiate with and order to. A properly devised blockchain would harness the power of hashed blocks, forming a chain, that is immutable and thus guaranteeing the security of its history and the inscriptions in the blocks, as well as their order. If the technology elevates the security of its hash algorithms to the level of physical security delivered by quantum encryption, that is, if a blockchain emerges that embeds quantum encryption to secure the hashes and the chaining of the blocks, this technology would be an extremely interesting hybrid between a mathematical security and physical security blended in.[9]

The Chain Structure as a Rich Ground for Growth of Novel Functionality

Typically, every history, given its foundational dependence on the temporal arrow of time (as taken from classical and non-relativistic physics) is com-

[9] At present the only known prototype of a quantum encrypted blockchain is being developed by the company Qaisec. For details see www.qaisec.eu.

prised by descriptions of events and an order of interpretation that holds among them. It is therefore quite natural to extract the underlying structure of the "arrow of time" and to use it when we attempt to order historical descriptions formally, as in blockchain inscriptions. Of course, most if not all historical events have much richer topology of relations, for example causal, where causes of event b and c might figure in non-adjacent to their blocks of inscription. But for concrete tasks, like structuring a history of financial transactions, for example, the one-dimensional temporal order arrow is very well expressible in a blockchain structure.

The history thread is only one of many that can be embedded in the technology. Another is the executive functionality, often more familiar under the term "smart contract". Effectively, this is the secure conditional execution of a program, when before specified conditions of its execution are defined and coded. Thus, they reminisce the logical form of the conditional of the form "if x then y". The non-trivial difference with mere logical form, available via the blockchain, is that the antecedent and consequent sides of it are represented by an actual software action. This functionality is effectively limited only by imagination and skills of blockchain programmers, as well as by required hardware resources. But as we see, the increasing popularity of smart contracts follows a remarkable growth. Blockchain guarantees that if condition x is met subsequent action, y would be executed. Conditions might be defined as virtually of any kind: a legal condition, like a notary document being uploaded, financial condition, like certain amount of funds being sent to a certain recipient, political condition, like a candidate being selected after a certain number of secure votes is reached, and many more.

This functionality has an enormous potential for the modern digital society. Its merits are speed, transparency, effectiveness, certainty and security. None of them are rivalled by traditional human actions. The main challenge is again the well devised structure of the concrete blockchain. But also, the *integrity of its code* and the *security of its functionality*.

The last dimension of sustainability for blockchain technology is the ethical dimension. High level ethical (unlike low level ethical values, norms and rules; like ones expected to be embedded in ethical systems, developed for pressing technology needs like the ones of artificial intelligence) norms, values, principles, consequences and rules can be embedded in a blockchain both on the level of code and on the level of functionality and execution of software actions. For example, impartiality, lack of fraud, lack of corruption, unjust preference avoidance, discrimination and the like can all be

relatively easily encoded and followed *strictly* by the system with merciless mathematical and logical rigour, impossible to find in even most benevolent humans and quite unlike the human operated administrative reality. The challenge here is to formulate an accepted by the society ethical system of norms, values, rules, consequences and principles, that are indeed *ethical*. This, of course, is not a task for a blockchain engineer, but for ethicists and software system architects.

The ethical dimension is here as in many other places, a double edge sword. If a blockchain is, let us suppose, malevolently devised, say, we encode in it the opposites of positive ethical values, but it manages to harness the power of immensely secure hashing algorithms, power of network and secure code, it would become an engine for rendering subtle and impossible to overwhelm false histories and data orders. If those are used for malevolent political, social or financial purposes this engine would be an insurmountable obstacle, that would need to be attacked from the only vulnerability vector: its (various levels of) implementation. On the contrary, if a blockchain is devised with encoding benevolent and actually positive ethical values, norms and principles, it can produce enormous benefits for society, again, if used wisely by good ethical agents. Thus, we can see that the ethical dimension of blockchain can be sustainable in more than one sense: it can perpetuate the technology because it is so effectively malevolent or, it can perpetuate it because it is so effectively good.

With great opportunities come great responsibilities. Both architects and administrators of well devised blockchain technologies, no matter the social sphere of its implementation, need to plan in depth and well before the deployment of the operating system. For if the system lacks security or carries negative ethical effects, it would simply defy its purpose and potential for social prosperity.

THE ROLE OF 'STRONG' ETHICAL GRADUALISM IN BUILDING INTRA- AND INTERGENERATIONAL JUSTICE. SOME PROSPECTS FOR A COMMON VOCABULARY OF ECOLOGICAL JUSTICE

Silviya Serafimova

Introduction

Mapping the Background

The examination of intra- and intergenerational justice is a relatively new topic in the debates about sustainability, although its importance cannot be reduced to that of environmental sustainability alone. Some potential conflicts between intra- and intergenerational justice have already been outlined (Adams et al. 2004; Langhelle 2000; Wissenburg 2006; Glotzbach and Baumgärtner 2009, 2). However, as Glotzbach and Baumgärtner relevantly argue, they concern the exploration of particular cases such as the conservation of biodiversity, as being related to the eradication of poverty in protected areas rather than focusing upon "the fundamental objectives of intra- and intergenerational ecological justice" (Ibid., 2-3).

The methodological necessity of providing a complex analysis of some mutual relations and potential conflicts regarding intra- and intergenerational justice becomes apparent in the dilemmas underlining the discussions about 'weak' and 'strong' sustainability scenarios whose proponents advocate different policies regarding the non-declining level of different types of capital. While the proponents of 'weak' sustainability "advocate policies devoted to securing a non-declining level of total capital", those of 'strong' sustainability "are said to advocate policies devoted to securing a non-declining level of natural capital in particular" (Holland 1996, 7). Surprisingly, looking for some long-term solutions by giving preference of 'strong' sustainability scenarios over ones with 'weak' sustainability turns out to be only a necessary condition for building environmental sustainability. As Holland relevantly argues, the impression that 'strong' and 'weak' positions

differ in principle is misleading, since they both advocate for "the maintaining of a non-declining level of welfare" (Ibid.).

Furthermore, it turns out that both 'weak' and 'strong' sustainability scenarios encourage a certain type of 'selective' understanding of intra- and intergenerational justice which requires further clarifications. Before trying to reveal the implications of the aforementioned 'selective' understanding, some preliminary words about justice, as evaluated from the perspective of environmental sustainability should be said. At first sight, the justice in question can be described as being a distributive justice. However, one should still keep in mind that the concept of justice is not specifically coined for the field of environmental sustainability (Aristotle 1998; Rawls 1973).[1] Extrapolating the debate into the field of sustainability, it would mean that distributive justice assumes the distribution of goods, or at least, some "common claims to scarce goods" to be made on side of the recipients (Glotzbach and Baumgärtner 2009, 6). This assumption raises the issue of what the potential moral (social, political etc.) agents exerting the aforementioned type of justice should look like, as well as how their moral, social and political responsibilities should be defined.

The main concern about the role of intra- and intergenerational justice within the framework of the general debates about sustainability is that morality and exerting justice in particular are inevitably concerned with hu-

[1] See also the interpretation of Glotzbach and Baumgärtner who examine in detail how Aristotle's conception of justice can be modified according to the objectives of distributive ecological justice concerning the conservation and the use of ecosystem services (Stefanie Glotzbach and Stefan Baumgärtner, "Determinants of Goal Conflicts and Synergies in Sustainability Policy." *Working Paper Series in Economics*, 141: 6). In turn, one should also keep in mind that Rawls does not include animals in his theory of justice. Specifically, he argues that humans can have moral duties of compassion and humanity, but not duties of justice to sentient animals. However, expanding a vision of animal justice which makes room for human-animal relations (Nicholas Low and Brendan Gleeson, *Justice, Society and Nature: An Exploration of Political Ecology* (London: Routledge, 1998); Brian Baxter, *A Theory of Ecological Justice*. (London: Routledge, 2005); Teea Kortetmäki, "Justice in and to Nature. An Application of the Broad Framework of Environmental and Ecological Justice." (PhD diss, University of Jyväskylä, 2017)) is merely a necessary condition for revising the application of justice theory. Specifically, neglecting the role of moral concern, as being related to the role of justice, leads to ungrounded ethical formalism even within the interhuman discourse of social interactions. Furthermore, even if moral considerations may not necessarily invoke corresponding obligations, the argument goes the other way round as well, namely, obligations missing a strong moral ground cannot be institutionalized as a matter of rights.

mans as being moral agents. In this context, the question is that when applying intra- and intergenerational justice one can avoid the pitfalls of ethical anthropocentrism as a form of speciesism (Skirbekk 2016, 233) which promotes the agency of humans with a capital letter. Specifically, the issue is how humans can avoid the narrow intra- and intergenerational justice to present and future human generations to be recognized as being the only one type of justice.

Examining the difficulties in clarifying what a just treatment of nature should look like, one can refer to Low and Gleeson's distinction between environmental justice (understood as justice on environmental issues amongst the human population) and ecological justice (recognized as justice between humans and the rest of the natural world) (Low and Gleeson 1998).[2] In turn, Schlosberg points out the role of three mutually related features of ecological justice in addition to that of distribution, namely, those of recognition, capabilities and participation (Schlosberg 2007, 158).[3] However, providing the distinction between environmental and ecological justice is not an objective in itself, but only a necessary condition for outlining how these two types of justice can be examined as being mutually complemented for the sake of broadening the idea of ecological reflexivity. The justification of the latter is underlined by what Schlosberg defines as a project whose objective is "to expose a common language of justice, an overlapping set of discourses" and "a shared toolbox" for addressing issues of both environmental and ecological justice (Ibid., 130-131).

Introducing the concept of intra- and intergenerational justice to the aforementioned debates would contribute to further avoiding the reduction of environmental and ecological justice to the process of distribution as such, which is understood as an (un)just exploitation of natural sources. Otherwise, there is a risk that some meritocratic principles encouraging human

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[2] In addition to Low and Gleeson's distinction between environmental and ecological justice, Schlosberg discusses many other definitions including that provided by Dobson. According to Dobson, while environmental justice displays the environment as "an ingredient of justice", ecological justice sets environment or parts of it as "a recipient of justice" (Andrew Dobson, *Justice and the Environment: Conceptions of Environmental Sustainability and Dimensions of Social Justice.* (Oxford: Oxford University Press, 1998), 240-241).

[3] Schlosberg provides "a four-dimensional view of justice" by combining a capabilities-based approach to justice with a so-called trivalent approach which includes the elements of redistribution, recognition and representation (Kortetmäki, "Justice in and to Nature", 29).

strives for consumption and exploitation are misrecognized as being just in principle.

Certainly, one should apply a given principle of differentiation because neither intra- and inter-human relations nor human relations to nature can be described as homogenous relations between homogenous (in moral, social, political and cultural senses) agents. It is also important to emphasize that not every single differentiation or gradualism can be called ethical gradualism, namely, gradualism which is intrinsically related to intra- and intergenerational justice, as concerning both human and non-human generations.[4]

Against the background of the aforementioned specifications, I refer to, and then, extrapolate Skirbekk's conception of ethical gradualism which is understood as regarding the way in which given members of the human species should represent other humans on their behalf in a fairly moral manner (Skirbekk 1994, 81-82).[5] On a macro-methodological level, the normative validity of gradualism in question is gained due to its methodologically mediating position between Brundtland's anthropocentrism and Næss' deep ecology (Skirbekk 2016, 226).

Objectives

In this article, I aim to clarify some of the main benefits of introducing a particular type of ethical gradualism which enriches the concept of ecological justice in Schlosberg's sense, as refracted through the lens of intra- and

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[4] A good example displaying the differences between ethical gradualism and empirical gradualism can be found in Gunnar Skirbekk, *Krise og medansvar. Politiske Småskrifter* (Oslo: Res Publica, 2016), 230.

[5] In turn, speaking 'on behalf of nature' is not a completely new phenomenon regarding the strives for finding some alternative ways for the representation of non-human beings which cannot speak for themselves (Baxter, *Ecological Justice,* 2005; Dobson, *Listening for Democracy: Recognition, Representation, Reconciliation*. (Oxford: Oxford University Press, 2014)). However, what is of crucial importance, while arguing for a relevant representation of such beings, concerns the way in which humans as moral agents should not make decisions and statements on their behalf alone, but also for their own sake. That is why listening to the signals of nature and their appreciation (Dobson, *Listening for Democracy*) is only a necessary condition for justifying a moral agency which assumes the just treatment of those who do not have a voice. Regarding the political representation of non-human beings, speaking on other's behalf faces problems similar to these which take place in the interhuman interaction, namely, similarly to the unheard human voices, non-human ones are suppressed by the human noise on the political arena (Ibid.).

intergenerational justice. For the purposes of demonstrating why arguing for either environmental or ecological justice alone would not lead to finding satisfactory methodological solutions how intra- and intergenerational justice could be applied to both human and non-human generations, I will examine two paradigmatic cases.

The first one concerns the exploration of intra- and intergenerational justice, as displayed within 'weak' and 'strong' sustainability scenarios, which exemplifies some difficulties when grounding environmental justice. In this context, I try to demonstrate why not every single form of gradualism can be called ethical gradualism, as well as justifying the methodological contributions of what I call 'strong' ethical gradualism by extrapolating Skirbekk's conception.

Regarding the second case, I aim at revealing how elaborating upon Schlosberg's understanding of ecological justice can be conducted by introducing the principle of 'strong' ethical gradualism and thus, reaching a new level of ecological reflexivity. Specifically, the focus of the current investigation is put upon the opportunities of rearranging the methodological relations between the features of recognition, capabilities and participation in Schlosberg's sense so that one can find some relatively unquestionable normative grounds for the moral treatment of the heterogenous group of non-human beings as moral subjects. I also try to demonstrate that when rearranging the relations between the aforementioned features by giving priority to the feature of capability, as well as specifying which moral ability is appropriate for giving such a priority, one can outline some alternatives for the moral self-transformation of the heterogeneous group of moral agents in the process of moral treatment.

On a macro-methodological level, I explore why ecological reflexivity is achievable by building morally graduated intra- and intergenerational justice for the heterogeneous groups of both human and non-human beings. In this context, I examine why only if one chooses such a moral ability that can make moral agents cultivate their sensitivity towards otherness, one can clarify 'what it means to be in someone else's shoes' when the other is not only not, but could never be like, the self in moral terms.

The Role of Gradualism for Environmental Justice

The Case of 'Weak' Sustainability Scenarios

Both 'weak' and 'strong' sustainability models can be interpreted as embodying some different understandings of justice. The supporters of 'weak' sustainability scenarios argue that it "does not matter whether the current

generation uses up nonrenewable resources or dumps CO2 in the atmosphere as long as enough machineries, roads and ports are built in compensation" (Neumayer 2003, 1). This definition gives me some good reasons to argue that such supporters encourage 'selective' intragenerational justice which underrates the role of distributive intergenerational justice to a form of 'appropriate' exploitation. Thus, the principle of distribution is simplified to that of compensation where by compensation one understands a process provided by humans to humans. Probably such a form of environmental justice could be called 'weak' environmental justice. The latter apparently demonstrates how the principle of what I call 'weak' gradualism (understood as a matter of prioritizing human non-vital needs) has less to do with ethical gradualism which addresses the vital needs of future generations of both humans and non-humans. That is why 'weak' sustainability scenarios can be recognized as supporting an intergenerational justice for humans only if the latter is evaluated from the perspective of a particular type of radical ethical anthropocentrism.

The Case of 'Strong' Sustainability Scenarios

Disenchanting the gist of 'weak' environmental justice is a relatively easy methodological task. A more complicated case is that of clarifying the role of 'strong' sustainability scenarios which try to encourage, so to speak, 'strong' environmental justice with a particular focus upon intergenerational justice. The main problem with the proponents of 'strong' sustainability scenarios is that they argue for the implementation of justice to future generations in a rather abstract manner: "Today's generation cannot ask future generations to breathe polluted air in exchange for a greater capacity to produce goods and services. That would restrict the freedom of future generations to choose clean air over more goods and services" (*UNDP* 2011, 17). Presumably, it would mean that first we should have a homogeneous concept of intragenerational justice, which encompasses both human and non-human species. Consequently, such justice is supposed to guarantee the exertion of intergenerational justice, which should be also recognized as being a homogeneous concept, in so far as it is assumed to address the future generations of both humans and non-humans.

On a macro-methodological level, what I called 'weak' gradualism in the previous sub-section can be extrapolated to a certain extent to the gradualism which is adopted in 'strong' sustainability scenarios, namely, to establishing a given type of abstract gradualism. I would argue that the latter relies upon the vague way of establishing a gradual transition from intra- to intergenerational

justice by presupposing the higher value of the future human generations alone. However, adopting such a broad assumption is possible merely in theoretical terms, since in practice, we do not have homogenous groups of moral agents and moral subjects which are to be recognized as homogeneous addressants and addressees of intra- and intergenerational justice, nor can we avoid that fact that moral agency is a strictly human agency.

For the purposes of exemplifying some of the difficulties regarding intra- and intergeneration justice in an interspecies context, let us look at one extreme example concerning weeds and pests. Due to climate change many pests and weeds are now present in areas that would have been too cold for them to live before (*The New Normal* 2016). From the perspective of 'selective' intragenerational justice, the question of whether we should appeal for intergenerational justice for the pests which threaten human lives would not be raised at all. The more thought-provoking question concerns what the advocates of 'strong' sustainability would propose as a solution to the aforementioned problem, as well as whether or not they would also end up with some difficulties in specifying a certain non-declining level of both capital and justice.[6]

Specifically, the necessity of providing a given differentiation within the groups of moral agents and moral subjects is driven by the cases of confronting vital human needs with other beings' vital needs. The problem which concerns the confrontation of different beings' vital needs requires the justification of a basic minimum of justice in both intra- and intergenerational terms, or, in the language of 'weak' and 'strong' sustainability scenarios which argue for a non-declining level of different types of capital (either natural or human, or both, as is claimed within 'strong' sustainability scenarios), it concerns the existence of a certain non-declining level of justice.

The risks of preserving a given number of beings, while examining the requirements of intra- and intergenerational justice can be explained by referring to Holland's statement that the non-declining level of capital is due to clarifying the non-declining level rather than the minimum of a given capital.

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[6] The necessity of clarifying why the category of non-human beings is not a homogeneous category can be exemplified by mentioning some of the mainstream discussions about the status of the recipients of justice. The argument goes mainly in two directions, namely, whether or not by recipients one understands individual representatives, populations or both, as well as whether or not these representatives and populations (entities) include living, non-living entities, or both under given circumstances. Cf. Low and Gleeson, *Justice, Society and Nature*; Baxter, *Ecological Justice*.

However, even in this case, it is not clear why humans should be obliged to maintain the existing levels of natural capital (Holland 1996). Extrapolating Holland's statement to the debates about intra- and intergenerational justice in an interspecies context makes some concerns apparent such as whether or not we should talk about a critical minimum of justice with respect to a maximum of both human and non-human beings (Serafimova 2017).

Some Reasons for Questioning 'Weak' Gradualism

Relying upon 'strong' sustainability scenarios, one can try to guarantee a basic minimum of justice, but adopting such an approach raises the following complications. Firstly, basic justice might be something different from the minimum of justice if the latter is interpreted in quantitative terms alone. Secondly, it is unclear what can make humans morally obliged to take care of other beings by guaranteeing the basic minimum in question if it contradicts the necessity of preserving what they value as a basic minimum of justice for themselves. In this context, the proponents of what I called 'weak' ethical gradualism, as displayed in both 'weak' and 'strong' sustainability scenarios, although in a different manner, would face the challenge of how to guarantee the existence of minimum people and minimum representatives of other beings. Furthermore, this challenge concerns how one can avoid the destruction of the biospherical equilibrium by justifying the normative validity of basic intra- and intergenerational justice for people, as well as encouraging a basic intergenerational justice for other beings, at least. Certainly, this is a difficult task which cannot be solved easily, regardless of the chosen moral perspective, but especially, if the latter is based upon understanding intra- and intergenerational justice as homogenous concepts.

Some potential solutions can be found if 'weak' gradualism is replaced by a gradualism which is grounded in the objective of elaborating upon the principle of advocatory representation not only in human, but also in human-non-human terms. The reconsideration of the principle is needed, since humans, being moral agents and moral discussants, should be aware that it is not only other beings who cannot become moral agents and moral discussants, which can defend their moral rights and accept moral obligations, but also that not all humans can do so either. Thus, revealing the gist of heterogeneity regarding not only moral agency, but also the diversity of moral agents as such, makes room for raising the next question as a logical consequence of this moral differentiation. In other words, this specification requires raising the question of how to ground the normative validity of the differentiated moral duties and moral responsibilities, so that the different

moral subjects (both humans and non-humans) are treated in a relatively unquestionable moral manner.

As it is obvious by the way in which the question is raised, there is no only one answer. However, it does not follow that there is no answer at all. On the contrary, what 'strong' ethical gradualism can contribute with is to provide an alternative by demonstrating how some humans can cultivate their sensitivity[7] towards other beings so that the latter are treated not only on their behalf (which is possible by adopting the argument of sentient being rights, that of animal asymmetrical rights in respect to humans and/or the basic principle of advocatory representation), but also for their own sake.

I argue that it is the moral requirement concerning the mode 'for their own sake' that makes ethical gradualism so challenging and fruitful at once, specifically, in terms of enriching Schlosberg's vision of ecological justice, as well as his clarifications of the features of recognition, capabilities and participation (Schlosberg 2007). In this context, introducing what I called 'strong' ethical gradualism can contribute to expanding both the normative validity and the implications of all of the three features. Consequently, the gradualism in question can extend the normative validity of intra- and intergenerational justice in respect to ecological justice which cannot be examined as a separate phenomenon from that of environmental justice.

The Contribution of Ethical Gradualism to the Debates about Ecological Justice

Some Challenges in Grounding the Role of Recognition, Capability and Participation

The moral implications of the features of recognition, capabilities and participation (Schlosberg 2007, 158) will be examined from the perspective of building a common vocabulary of ecological justice. In this context, I will firstly try to point out some methodological problems which derive from Schlosberg's interpretation of the features in question and then provide some solutions by relying upon the application of 'strong' ethical gradualism. For instance, the theories of recognition, as displayed by Schlosberg, which are based upon similarities between human and non-human nature

[7] I deliberately argue for sensitivity and not for a moral obligation alone, since the former is what can make humans as moral agents willing to oblige themselves to treat other beings in a just manner.

such as sentience, agency, integrity and so on (Ibid., 131) are not necessarily applicable even to all sentient beings.[8] In turn, Schlosberg's criticism towards liberal justice theory, which neglects the underlining of social, cultural and political issues regarding the recognition of nature (Ibid., 132), cannot significantly benefit the clarification of the vital needs of non-human beings, unless one relies upon a certain form of radical anthropocentrism.

Schlosberg's own preference for Fraser's model of recognition (Fraser 1998) which addresses the social status, specifically, the treatment of recognition as a matter of *status injury* based upon social mis- or malrecognition (Schlosberg 2007, 139), could be interpreted as contributing to the justification of environmental justice rather than ecological justice. The features intended to constitute the recognition such as the general practice of cultural domination, practices producing invisibility as a lack of respect etc. cannot be extrapolated by default even to sentient beings, as mentioned above, since it remains problematic whether all of them, as well as all of them in a similar manner, can develop a highly differentiated social behavior. In other words, even if the status-injury approach can move "beyond the atomistic language of liberal rights and justice" (Ibid., 140), it is unclear how it can contribute to enriching nature's potential and integrity on a larger scale. This is due to the fact that such a recognition cannot be unproblematically applied even to some higher species, unless it is based upon the principle of moral and political replication with humans.[9]

Correspondingly, expanding the theory of capabilities, as defined by Nussbaum, is an important issue if one wants to include it into the framework of ecological justice.[10] Schlosberg relevantly outlines that Nussbaum's idea of

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[8] Nor is Baxter's suggestion of justifying the access to the community of justice by relying upon the candidates' interests (Baxter, *Ecological Justice*) (David Schlosberg, *Defining Environmental Justice: Theories, Movements and Nature*. (New York: Oxford University Press), 134) sufficiently useful because even then, the question of exact criteria, while comparing basic needs and interests, remains open.

[9] Schlosberg explicitly argues that Fraser does not address the status of nature in this context (Schlosberg, *Defining Environmental Justice*, 160 n9).

[10] However, if one agrees that "one of the main advantages of the capabilities-based view of ecological justice is that it can be used as an approach to minimal rather than full justice" (Kortetmäki, "Justice in and to Nature", 35), there is a risk one to fall into the trap of already discussed 'weak' gradualism which results from the difficulties in relating basic to minimum justice in both qualitative and quantitative terms. Furthermore, the realization of related capabilities in non-conflicting ways (Ibid.) is not an outcome of the capabilities as such, but rather the way in which the relation between them gets its normative validity. This means that Kortetmäki's example that one's joy of recreation is not necessarily dependent

dignity (Nussbaum 2006: 351, 383) should be elaborated upon, in so far as it raises the concern how dignity differs across species (Schlosberg 2007, 146). However, his own suggestion of striving for integrity or flourishing should be elaborated upon as well. If it is taken for granted, one still faces the moral dilemma that the flourishment of one species or even of its representatives may depend upon the annihilation of others.[11]

On a macro-methodological level, one of the main issues is how to set already discussed problem of basic minimum of justice.[12] Schlosberg himself suggests that "the capabilities approach is applicable to both individual animals and larger systems – as long as we are free to define capabilities differently for each entity under consideration…" (Ibid., 150). Such a definition raises two important methodological concerns, at least, namely, who decides and how it is decided when individual vital needs and rights confront those of the systems, as well as what guarantees human free choice to avoid its own deviation into moral arbitrariness.[13] Furthermore, the latter specification raises the

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upon enjoying hunting endangered animals does not explain how to reduce the cases when one's joy is driven mainly by hunting such animals. Considering the moral dilemmas arising from the cases in question, I would argue that we need to encourage the adoption of an approach of differentiated moral capabilities rather than that of capabilities in general.

[11] In this context, Nussbaum's suggestion of developing species norms for each species' capability (Nussbaum in David Schlosberg, *Defining Environmental Justice*, 153) in order to judge whether or not "a particular creature has decent opportunities for flourishing" (Ibid.) is probably applicable to some sentient beings alone. In addition, the problem is that beings of one and the same species differ in their abilities to flourish. Furthermore, these species and their representatives may flourish in a way in which they cannot be recognized and evaluated by humans as flourishing. The other difficulty is that developing species norms cannot be extrapolated to building inter-species norms by default, in so far as in the inter-species interaction, the norms of one species can contradict those of another.

[12] Nussbaum provides such a distinction by trying to limit "harm-causing capabilities" of animals (Marta Nussbaum, *Frontiers of Justice: Disability, Nationality, Species Membership*. (Cambridge, MA: Harvard University Press, 2006), 369) (Schlosberg, *Defining Environmental Justice*, 151). She suggests allowing a lion's capability to exercise a predatory nature, while avoiding the harm exerted upon smaller animals (Nussbaum, *Frontiers of Justice*, 370). Adopting such an approach, however, raises the concern about a basic minimum of justice which is grounded in the physical comparison between 'big' and 'small'.

[13] The other "attraction" of a more system-based approach which "concerns giving priority to concepts such as preservation, restoration and system integrity" (Ibid.), as recognized by Schlosberg, also raises the issue of how to differentiate intra- and intergenerational justice on an intra-group level.

issue of who defines, and consequently, how one defines the basic minimum of justice, so that one to avoid a bad infinity in moral terms.

In turn, the "political participation of the non-human" (Ibid., 158)[14] is determined by Schlosberg as concerning human political responsibility towards non-human worlds which is embodied within different decision-making processes. It does not mean to introduce votes for animals (Ibid.), as Schlosberg relevantly outlines. However, the main methodological issue is how to determine the normative validity of the principle of advocatory representation in political terms, which is applicable in both a general and particular manner, since all animals cannot be treated equally in between in any sense whatsoever, nor does nature consist of animals alone.

A possible methodological opportunity can be found by looking for a crossing point between the fields of morality and politics, in so far as political recognition can be referred to the field of morality by justifying the idea of intrinsic value. Thus, introducing what I called 'strong' ethical gradualism can clarify the role of the value in question by differentiating (in the language of discourse ethics) the moral duties and moral responsibilities of the moral discussants, moral agents and moral subjects. These responsibilities can be extrapolated to the agents of the political discourse, namely, arguing for political discussants, political agents and political subjects who should carry out political duties and responsibilities.

Some Methodological Benefits of Adopting 'Strong' Ethical Gradualism in the Field of Ecological Justice

The first challenges regarding how 'strong' ethical gradualism can contribute to enriching the normative validity of ecological justice in Schlosberg's sense concern the fact that the features of recognition, capabilities and participation differ in their rank, viz. there are two processes (recognition and participation) and one feature (capabilities). Rearranging the mutual rela-

[14] See what Fraser defines as a participatory parity against the background of the idea of procedural justice, as based upon political parity (Nancy Fraser, "Recognition without Ethics", *Theory, Culture, and Society*, 18 (2-3): 27) (Schlosberg, *Defining Environmental Justice*, 157). The crucial difference with Skirbekk's interpretation (of the enriched principle of advocatory representation) is that Fraser's theory of participatory parity assumes reaching "a full status as a partner or peer" (Fraser, "Recognition without Ethics", 27), while the advocatory representation provides suggestions regarding how fairly to represent others, taking into account that they are not able (for one reason or another) to fully represent themselves. It is understandable why Fraser herself does not address the political state of non-human nature.

tions between the aforementioned features, I suggest shifting the focus towards finding such a moral ability that can guarantee coupling the processes of recognition and participation for the purposes of building ecological justice. I also try to prove how, by adopting 'strong' ethical gradualism, one can justify the normative validity of certain types of empathy as being a moral ability which can encourage humans as moral agents to recognize and morally treat other beings as moral subjects.

Beginning with the feature of recognition, I argue that it can be evaluated by relating two crucial issues, namely, those of rethinking the role of animal asymmetrical rights in respect to human rights (animal rights are nothing but duties for humans, since animals cannot have duties by themselves) and modifying the principle of advocatory representation, as displayed in medical ethics (Skirbekk 2016, 227-228). The revision of the latter is particularly important when it is applied to intra- and interhuman contexts because one of the main methodological difficulties is that there are cases when the advocatory concern about the forthcoming generations relies upon the presumption of non-individualized, hypothetical people which are statistically registered (Ibid., 229).

In turn, the role of participation can be interpreted as concerning the group of moral agents who are supposed to exert justice to other beings in a morally justifiable manner. Specifically, 'strong' ethical gradualism contributes not only to clarifying what moral agents and moral subjects should look like beyond the argument concerning sentient being rights, in so far as not all humans can be both reasonable and responsible moral agents either,[15] but also to building a moderate ethical anthropocentrism. The latter should be justified without denying the role of moral agency, as exerted on human side, taking into account that humans are the only potential moral agents and moral discussants.

Applying Gradualism towards Animals. The Arguments of Incomplete Induction and Human Potential

On a macro-methodological level, applying a certain type of ethical gradualism for the purposes of morally treating non-human beings raises the follow-

[15] For instance, mentally retarded people and babies cannot behave as moral agents. Correspondingly, there are some animals (such as chimpanzees) which may demonstrate higher abilities than particular groups of humans in moral terms. See Gunnar Skirbekk, "Ethical Gradualism, beyond Anthropocentrism and Biocentrism?" in *The Notion of Sustainability and Its Normative Implications*, ed. Gunnar Skirbekk (Trøgstad: Scandinavian University Press, 1994), 79-126.

ing difficulties. Firstly, moral evaluation, which is based upon human-non-human approximation regarding the interplay of different criteria, leads to providing an incomplete induction on the level of both intra- and interspecies norms. In turn, the induction in question extrapolates the ambiguity concerning moral treatment to the levels of intra- and intergenerational justice as well. For instance, if one or ten dolphins are recognized as being both more rational and more willing to save a person in danger compared to one or ten human babies, it does not follow that we can give preference to dolphins, as being 'more developed' species in moral terms over the group of the babies. Furthermore, incomplete induction cannot explain when exactly the number begins to matter nor can it guarantee that all 'uncounted' representatives of a given species can empirically prove that their helping behavior is moral at all. If so, one would have been able to solve the problem with the basic minimum of justice, as displayed in the 'strong' sustainability scenarios.

As is demonstrated with the aforementioned specifications, the difficulties derive from the inconsistences regarding some arguments which raise similar problems, while being adopted for clarifying the status of humans as moral agents. As an illuminative example concerning the application of the incomplete induction, I would point out that of coupling the argument of sentient being rights with the argument from potential.[16] It is the use of the latter in an inter-species context that demonstrates why these two arguments cannot significantly contribute to the grounding of intra- and intergenerational justice for both some humans and sentient animals, as being part of the group of moral subjects. In addition to disenchanting the argument from potential, by revealing that being a human is only a necessary condition for becoming a moral agent, the adoption of the principle of human-non-human approximation[17] shows that empirical gradualism is not a necessary and sufficient condition for building 'strong' ethical gradualism.

Relying upon the aforementioned clarifications, one can reveal why the restrictions regarding intra- and interspecies criteria are so strongly intermin-

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[16] The argument from potential is used mainly in the field of bioethics as being one of the most famous arguments against the morality of abortion. It concerns the fetus' potential to become a person, as well as the right of enjoying a similarly valuable life. In this article, the argument is adopted in a more general sense underlining the role of human potential for development.

[17] One of the most serious concerns against adopting such an argument is that it reduces the group of non-humans to these species and/or representatives which can be compared with humans on the basis of some similarities in both social and moral terms.

gled that one cannot find universal solutions of how to build ecological reflexivity. That is why the best thing one can do is to try to build a common vocabulary for some relatively clear methodological cases, at least.

Empathy Based upon 'Strong' Ethical Gradualism

Regarding the specificities of the ethical instrumentarium, there are, at least, two alternatives for choosing such a moral capability that can 'mediate' the processes of recognition and participation towards building ecological justice in normative terms. Practically speaking, it would indicate the cultivation of a certain type of empathy or sympathy for the purposes of clarifying what it means 'to be in someone else's shoes'.[18] In this context, one of the first difficulties concerns the challenge of distinguishing between different types of empathy and sympathy, since some definitions of sympathy used to be applied to empathy and vice versa. For instance, so-called empathic concern is what many philosophers and psychologists describe as a matter of sympathy (Maibom 2014, 1-2). In turn, the initial methodological differences determine the respective differences in understanding what exactly 'stepping into another's shoes' should look like. [19]

Without going into detail about the debates regarding the definitions of empathy and sympathy, I restrict my general choice to the cultivation of empathy by relying upon the following specifications. Comparing and contrasting the moral consequences of showing empathy and sympathy, [20] as defined by Maibom, is carried

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[18] For the different ways of simulating the state of being in other's shoes, see Heidi Maibom, "Imagining Others." *Atelier de l'Ethique,* 5 (1): 37-38.

[19] For instance, assuming that sympathy displays "a special type of empathy", Chismar examines the way in which one "steps into another's shoes" not as an expression of empathy (the usual way of coining empathy), but rather as an expression of sympathy to that other. See Douglas Chismar, "Empathy and Sympathy: The Important Difference." *Journal of Value Inquiry* 22 (4), (1988): 257, 263-264.

[20] Empathy is understood as (affective) empathy according to which S empathizes with O's experience of emotion E in C if S feels E for O as a result of believing or perceiving that O feels E, or of imagining being in C. In turn, sympathy is exemplified by the following case: S sympathizes with O when S feels sad for O as a result of believing or perceiving that something bad has happened to O, or S feels happy for O as a result of believing or perceiving that something good has happened to O (Heidi Maibom "The Many Faces of Empathy and Their Relation to Prosocial Action and Aggression Inhibition." *Wiley Interdisciplinary Reviews: Cognitive Science* (*WIRE*), 3 (2012); Maibom, *Empathy and Morality*, 3). Specifically, Maibom outlines three "routes" within the process of categorizing affective empathy, namely, she points out the role of so-called perceptual, inferential and imaginative routes (Maibom, *Empathy and Morality*, 10-12).

out for the purposes of demonstrating that sympathizing, understood as a matter of feeling corresponding sadness or joy, is not a sufficient condition for both successfully modifying and applying the principle of advocatory representation to the others who are not like those who feel sympathy (Serafimova 2019, 86).[21]

In addition, if one understands not only humans, but also representatives from other species as addressees of empathy and sympathy, the problem is whether or not these who feel empathy or sympathy towards others are able to gain an adequate knowledge of others' situation, others' feelings and their motivation in a moral sense (Ibid.).

For the purposes of avoiding the side effects of the possible human-non-human moral replication, as well as taking into account that many beings are not sentient and do not have feelings (or at least, there are no empirical proofs for that), I focus upon the methodological benefits of so-called by Deigh "mature empathy". Mature empathy is defined as a moral capability which minimizes the methodological disadvantages of both emotional contagion[22] and 'accurate' recognition[23] without denying the moral responsibi-

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[21] The idea of correspondence also has some mutually related implications in respect to different types of empathy and sympathy. An additional methodological difficulty arises from the lack of agreement between the researchers about the role of distress which is ascribed to both sympathy and empathy under different circumstances. For instance, Maibom argues that some research on empathic responding concentrates upon sympathy and personal distress, although there is also research that is focused upon the effect of empathic emotions regarding behavior (Maibom, *Empathy and Morality*). Specifically, affective empathy is defined as addressing either a distressed subject or a distressing situation, regardless of how both of them are represented (Maibom, *Empathy and Morality*, 9-10). However, adopting such a definition does not provide particular hints how to interpret the cases of empathic joy which can also trigger affective empathy. In turn, some definitions of sympathy make room for considering the joy of the other, but they are limited to the process of co-feeling and do not provide suggestions for how the self can understand the other's joy if the appreciation goes beyond the process of co-feeling as such.

[22] Yet Max Scheler makes a distinction between emotional contagion, fellow feeling and emotional identification (Max Scheler, *The Nature of Sympathy*, (Hamden, Conn: The Shoe String Press, 1973), 8-36). Regarding one of the contemporary definitions of emotional contagion, see the following definition provided by Maibom: "S's feeling E is a case of emotional contagion if S feels E as a result of believing that O feels E, perceiving that O is *T-ing*, or of imagining being in the C of O" (Maibom, *Empathy and Morality*, 3).

[23] Similarly to the pitfalls regarding the argument of sentient being rights, the methodological problems of empathic accuracy concern the risk of falling into the trap of moral replication. Thus, one can neglect all forms of awareness that do not meet the requirements of humans who have developed cognitive empathy.

lity of humans as moral agents, as well as without setting the search for minimum justice towards bad infinity. In an inter-species context, the benefits of encouraging mature empathy can be sought in its preventive functions, specifically, in developing conflict sensitivity towards non-human beings which humans do not have good reasons (understood in the sense of empirically justifiable proofs) to treat morally.[24] Furthermore, I try to clarify how developing mature empathy can contribute to specifying the participation of humans as moral agents in maintaining the well-being of the non-human beings in question. This contribution can be achieved by elaborating upon the idea of pro-social behavior understood as a matter of concern for rights, feelings and welfare into what I call pro-species behavior recognized from the perspective of intra- and intergenerational justice. Certainly, the implications of pro-species behavior vary depending upon the representatives of the species involved. For instance, we may argue that pro-species behavior of some sentient animals can meet to a certain extent the requirements of human pro-social behavior, while for beings such as pests and weeds, the pro-species behavior concerns mainly the right of self-preservation within certain morally acceptable limits.

Another issue is that, similar to the moral implications of inter-human behavior, those of human-non-human interaction are determined by the difficulties in clarifying the methodological relations between motivation and action. For instance, empathy-based altruism is not necessarily moral (Batson 1994; Batson 1997), since there are many factors which may lead to an action meeting the formal requirements of a moral action, but being driven by secondary thoughts such as these concerning the expectations of rewards and punishments. In addition, a crucial role is played by so-called empathic distress for the distressed other (Maibom 2014, 4) which may affect the legal regulation under given circumstances (Hoffman 2014, 71-72). In many cases, the distress in question is inseparable from so-called personal distress when the self is personally distressed by the other's experience. However, the main difference with empathic distress is that when feeling personal distress, the self is worried for itself, and not for the other (Maibom 2014: 3). In turn, helping behavior, as demonstrated by some animals, but also towards humans, such as the already discussed dolphin's helping behavior, cannot be unquestionably

[24] As one of the methodological benefits of developing mature empathy on a meso-level, I would point out the opportunity of expanding the network of positive and negative duties towards nature where by expansion I mean differentiation of the duties in question depending on the vital needs of the beings involved.

evaluated as a morally intended helping behavior due to the fact that we do not have proof that a dolphin's motivation is unquestionably moral.

The Role of 'Strong' Ethical Gradualism for Mature Empathy

Arguing for the processes of embodiment and disembodiment, one should try to avoid the risks of simplifying ethical gradualism to empirical gradualism (Skirbekk 2016, 230).[25] One should also pay attention to the fact that being embodied creatures, which gain their experience by interacting, since they have feelings, emotions and other bodily related experience, humans cannot be abstracted from their social, moral, political and cultural experience.[26] Specifically, the risk regarding the overestimation of empirical gradualism may result into imposing already discussed radical ethical anthropocentrism.

In this context, the real challenge regarding the 'embodied' representations of 'strong' ethical gradualism is to find such a way of 'being in others' shoes' so that these others are firstly *recognized* as having an intrinsic value in themselves, and are secondly morally respected by being subjected to different forms of morally (and eventually, politically) grounded *participation* (*agency*). However, 'being in someone else's shoes' does not mean one to

[25] See also Schlosberg's interpretation of nature's 'bodily integrity' as assuming the recognition of nature's potential for development, its autonomy, resilience, or a respect to autopoiesis (Schlosberg, *Defining Environmental Justice*, 136). One of the differences with Skirbekk's approach is that Schlosberg examines the integrity in question from the perspective of system theory, namely, as having the qualities of a self-directing, self-regulating and self-correcting entity of a system. The latter cannot provide some suggestions what to do if the existence of a system is dependent upon the annihilation of another system. In this context, I argue that if nature's 'bodily integrity' is justified as a self-reliant factor for building ecological justice, it can provide some ontological, but not necessarily moral reasons for grounding the justice in question.

[26] In this context, determining the objectivity of moral judgements is an issue which requires further elaboration. Maibom argues that perspective taking and affective empathy or sympathy are not required in order to make moral judgments. This is due to the fact that the belief in a universal order, (God's will, practical rationality etc.), can guarantee the normative validity of such judgments (Maibom, "Imagining Others"). On the other hand, according to Deigh's definition, preventing conflict sensitivity can be interpreted as a result of justifying normative rather than descriptive moral judgments. This in turn requires one to be not only objectively aware of the potential contradictions, but also personally engaged with their particular prevention as a matter of one's developed moral sensitivity towards other's particular intrinsic value.

become that being and then, maintain being that other. Otherwise, the self will be forced to 'disembody' itself from the richness of its existential experience including its accumulation of feelings, emotions, knowledge, social experience etc.

Broadly speaking, ethical gradualism could be 'embodied' in a way in which it provides normatively grounded regulations which are applicable, at least to a certain extent, to conflict situations when different beings' vital needs are at stake. Developing conflict sensitivity so that moral treatment to be extended from the addressees, who are similar to the selves (providing the treatment in question), to these whose vital needs matter, regardless of whether or not they are recognized as being similar to the selves' vital needs. This assumes that a very particular (moral) ability has been developed, viz. that of already mentioned mature empathy in Deigh's sense (Deigh 1995, 760). According to the latter, every single moral agent who is able to develop such an empathy can formulate moral judgments about what one should do in order to prevent "the outburst of conflicts between subjects" (Ibid., 763). In this context, mature empathy can be interpreted as turning into a general criterion due to which we can balance the harmony between contradictory objectives (Ibid.).

Regardless of the fact that by conflicts between subjects Deigh understands interhuman conflicts, the preventive functions of mature empathy can be extrapolated to non-human beings as well because such an extrapolation does not contradict the development of recognition and participation, as understood by Schlosberg. In other words, if human moral agents develop mature empathy towards some non-human beings which they consider as less valuable, it would mean that they should *recognize* the existence of non-human beings whose vital needs are (or might be) at stake, as well as that the misrecognition of human vital or non-vital needs is maybe a reason for posing such a threat. In turn, a human moral agents' *participation* can affect the particular implications of *preventive* activities and policies for the sake of maintaining the balance between contradictory vital needs on both intra- and interspecies levels. However, the problem again is how to justify the minimum of harmony which can make the balance not only possible, but also stable in normative terms.

A methodological hint in this respect can be found in introducing 'strong' ethical gradualism which instead of promoting an abstract idea of equilibrium would contribute to elaborating upon some different visions of harmony in Deigh's sense. These visions should be underlined by the conception of treating non-human beings on their behalf for their own sake in a

morally differentiated manner. The manner in question should guarantee that the normative validity of ecological justice as such will not be questioned by the multiple representations of the equilibrium on an intra-methodological level. In other words, it would mean that mature empathy, coupled with 'strong' ethical gradualism, can support building ecological justice "on a larger scale", as Schlosberg suggests. It can happen if the justice in question is recognized as a process of looking for unity without uniformity where the preventive functions of mature empathy consist in avoiding the denial of the different non-human vital needs.

Exemplifying the benefits of mature empathy for intra- and intergenerational justice

Regarding the status of non-human beings which do not have bodily experience including feelings, emotions, social experience etc. such as pests, one can develop a certain sensitivity towards respecting some of their vital needs, at least. [27] For instance, a human moral agent can develop basic em-

[27] Regarding some examples such as that with the pests, one can find an alternative model in the capabilities-based approach, specifically, in the capability to adaptive capacity which determines the possibility for continued existence and the maintenance of viability (Kortetmäki, "Justice in and to Nature", 42). Certainly, human-induced extinctions and species endangerments concern violations of species capabilities (Ibid.). However, neglecting the role of the complex relations between vital and non-vital needs of both humans and non-human beings still raises the issue that the violation of species capabilities is not so unproblematic when vital and non-vital needs of the species in question are set as being mutually exclusive in an imperative manner (e.g. it does not give an answer what to do when one faces human-induced extinctions and species endangerments at once) nor does it make clear what one can do as a moral agent when facing the violation of different individual capabilities at once. The issue regarding the individual capabilities brings us back to the discussions about basic and minimum justice. Furthermore, accepting the thesis that different kinds of organisms may have different moral weights if they, for instance, belong to an endangered species (Baxter, *Ecological Justice,* 149) (Kortetmäki, "Justice in and to Nature", 44), is only a necessary condition for making room for just treatment. For instance, it does not make clear how to decide whether or not to kill an endangered animal in order to feed a child, who will otherwise die of starvation (Silviya Serafimova, "Mapping (Un)Common Space of Ethical Gradualism in the Era of the Anthropocene." *TRACE ∴ Journal for Human-Animal Studies* 5 (September 2019): 89, 93. https://doi.org/10.23984/fjhas.77853). Regarding the use of the argument of the greater moral weight of psychologically possessed capacities (Baxter, *Ecological Justice*, 151) (Ibid.), I would argue that it brings us back to the difficulties deriving from the argument of sentient being rights (Serafimova, "Mapping (Un)Common Space," 89).

pathic accuracy[28] which can be gradually developed into a low form of mature empathy if possible. Practically speaking, it would mean that one should develop certain (moral) sensitivity as a matter of awareness for how the preservation of other beings' vital needs in a situation should look like if these beings were able to protect the needs in question by themselves. In the case with beings such as pests and lower species, I would argue for a modified type of an empathic accuracy which focuses not upon moral subjects' emotions, but upon preserving their vital needs, as embodied within a situation and due to the specificities of the moral subjects involved. Consequently, the role of the low mature empathy could be found in the way in which it can contribute to reducing the potential conflicts between the vital needs of different moral subjects and moral agents (e.g. those between the vital needs of pests and human beings). In this context, the cultivation of mature empathy, with its preventive functions, can be recognized as a grounding principle in building intergenerational justice to both human and non-human generations within certain limits.

In turn, if one assumes that the development of a given type of sympathy is possible towards pests or other beings of a similar rank, sympathy on their behalf should look like as a sympathy concerning the possibility of survival again, but in different respects. Specifically, such a sympathy would be directed not towards building the relation with the beings into a situation, but towards their survival into the situation in question, as is felt by the moral agents.

On a macro-methodological level, the requirements for building intra- and intergenerational justice for the aforementioned beings, which relies upon a certain type of mature empathy rather than sympathy, would be focused upon achieving a preservation in short terms and, as much as is possible, in long terms as well. However, since humans as moral agents rely upon more differentiated criteria of what vital needs look like, there is a risk that a human's own criteria can be disconsidered as being more valuable due to their higher degree of differentiation than other being's criteria. Thus, there is a risk while cultivating the aforementioned types of empathy and sympathy, one to develop unintended speciesism. As a result of this speciesism, the basic minimum of justice will be determined by being evaluated from the human perspective of distributive justice.

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[28] Empathic accuracy concerns human "ability to accurately infer the specific content of another person's thoughts and feelings" (William Ickes, "Empathic Accuracy," *Journal cf. Personality* 61 (4) (December 1993): 588).

A possible solution in this respect is for humans to start looking for and gaining a more precise knowledge about other beings by referring to natural sciences whose outcomes can be used as a basis of providing a more accurate evaluation of other beings' vital needs.

Developing Proto-sympathetic Empathy to Sentient Animals. Some Prospects for Ecological Reflexivity

Regarding proto-sympathetic empathy, the difference with the general process of sympathy is exemplified by Darwall in the following cases: (a) imagine what someone would feel if he were to lose his only child and (b) imagine what it would be like for that person to feel that way (Darwall 1998, 270). The first case involves simulating someone in the imagined circumstances in order "to identify what feelings the situation would apparently warrant when so viewed" (Ibid.). It does not assume paying attention at all to what it would be like for the person to have those feelings or to suffer that loss. "To comply with the second request, however, one would have to simulate, not just a person with the relevant feelings, but someone conscious of his feelings…" (Ibid.). Darwall calls empathy of this latter case proto-sympathetic empathy – "proto-sympathetic" because it brings the other's relation to his situation into view in a way that can engage sympathy on his behalf. Proto-sympathetic empathy assumes developing projective empathy, "but goes beyond it in not being felt entirely as from the other's standpoint (or, at least, not without projected self-consciousness)" (Ibid., 271).

Developing a modified version of proto-sympathetic empathy towards sentient animals as moral subjects, one can clarify how the attempts at morally treating some non-human beings in a just manner is both limited and not limited to some of the problems faced, while discussing the argument of sentient being rights.

Extrapolating Darwall's example with the grieving parent to a sentient animal would mean that a grieving animal parent is aware of his or her feelings in a similar way to how a human parent grieves.[29] Another difficulty derives

[29] Some arguments in favor of this thesis can be found in de Waal's theory who claims that animals' emotional contagion can be developed into empathy or sympathy (Frans de Waal, *Primates and Philosophers: How Morality Evolved?* (Princeton: Princeton University Press, 2006)). The development in question can be exemplified with the cultivation of parental care and concern on side of animals. In this context, de Waal finds the origin of the human-non-human correspondence in the distress accompanying parental care.

from the fact that grieving human and animal parents are not homogeneous categories. This in turn means that drawing such correspondences is conducted with an immense degree of uncertainty based upon some behaviorist similarities which expand upon the principle of analogy to moral similarities (Serafimova 2019, 93).

On the other hand, one of the methodological advantages of introducing proto-sympathetic empathy is that it can provide some hints in building intra- and intergenerational justice by grounding how imaginative projection, which concerns moral agents' awareness, is extended to the idea of perspective taking, as adopted for the purposes of showing empathy. Going back to Darwall's example, it would mean firstly, to explore the behavior of the grieving animal parent by being aware that not all grieving animal parents demonstrate one and the same behavior on both intra-species and individual levels. Secondly, one could try to provide an intra-species evaluation based upon biological (understood in a broader sense) behavior, in so far as the forthcoming empathy on the human side requires the engagement with perspective-taking into a situation. In turn, the embodiment of the perspective-taking in question may include biological, social and other behavioral features depending upon the individual and species' behavior of the examined being. Thus, the second phase would address human recognition of the parameters of non-human evaluation by relying upon different indications of non-human behavior. In this context, human evaluation, which is grounded into the previous recognition with the full awareness of the methodological uncertainty such an awareness brings with itself, would have projective components which constitute the perspective-taking, without displaying a process of exact mirroring.[30] Furthermore, it could still function as something more than being just a search for a basic empathic accuracy because understanding the involvement of the being into its situation can make possible not only feeling empathy for it, but also on its behalf.

Regarding the implications of intra- and intergenerational justice, Darwall's example can be elaborated upon in the following way. If a given human as a moral agent can imagine what it would be like for a particular sentient animal to grieve for its child (i.e. to develop a relevant recognition of the sentient animal being into a situation, as refracted through the lens of empathic perspective-taking, but being irreducible to it), the human in question may think about introducing some policies whose aim is to reduce the killing of

[30] For the role of mirroring which is irreducible to the operation of mirroring neurons, while arguing for empathy, see Maibom, *Empathy and Morality*, 11.

young animals. In turn, the just treatment can be expanded to the grieving parents as well, taking into account their intra- and inter-species features and individual specificities. Thus, the practical embodiments of the treatment can be found in different solutions concerning how one prevents the feeling of grief which is provoked by the children's loss at a policy level as well. On a macro-methodological level, the two perspectives of grounding the just treatment of animal parents and their children is one of the illuminative illustrations why environmental and ecological justice cannot be examined separately nor can they be justified in an intra- or intergenerational perspective alone.

The Methods of Utilitarian and Discourse Ethics as Means of Encouraging Ecological Reflexivity

What are the benefits of discourse ethics compared to utilitarian ethics whose aim is the minimization of pain and the increase of animals' well-being, as evaluated from the perspective of interspecies justice? I would suggest that the encouragement of the principle of imaginative projection, which grounds the cultivation of moral sensitivity towards otherness, has more apparent self-transformative moral implications when determined within discourse ethics than within utilitarian ethics. While utilitarian ethics is focused upon the effects to moral subjects (either good or bad), adopting the methods of discourse ethics can contribute to achieving self-transformative moral behavior on side of the moral agents as well. That is why I would argue that shifting the focus towards the agents in question would benefit restricting the difficulties which derive from the process of incomplete induction, namely, to accept that similar to human parents and children, not every single animal parent and child grieve when they experience a loss.

Consequently, enriching mature empathy by introducing the principle of 'strong' ethical gradualism can positively affect building ecological justice on a macro-methodological level as well. It means that one can set the objective of looking for ecological justice not as a teleological process whose main target group is moral subjects alone, but as a dialectical process. The latter cannot be justified, unless moral agents and moral subjects are recognized as being involved in an interplay which has a dialectically grounded potential. Furthermore, this interplay should be considered as a process rather than an objective in itself which can be fulfilled once and for all. In other words, it is important that humans, being moral agents, look at ecological reflexivity as a commonly shared process of moral development

rather than as being a completely fulfillable objective. Thus, they can make room for further investigations of the relationships between humans and non-humans.

Conclusion

Certainly, not every single form of gradualism can be considered as being appropriate for expanding the normative validity of ecological justice. On a macro-methodological level, one of the most serious challenges is how to avoid replicating inter-human moral agency, while discussing the moral status and the moral treatment of non-human beings. The risk consists in the fact that the replication could lead to imposing a certain type of radical ethical anthropocentrism due to which other beings would be morally mistreated if they do not share similar features with humans such as sentience, particular type of agency, integrity, capacity etc.

In this context, I try to clarify how adopting what I called 'strong' ethical gradualism, by developing Skirbekk's theory of ethical gradualism, can contribute to avoiding both the risks of falling into the trap of moral atomism, while looking for justifying "an overlapping sense of discourses" in Schlosberg's sense, as well as guaranteeing the normative validity of a broader concept of ecological reflexivity. Specifically, applying 'strong' ethical gradualism gives some hints about how humans, as being moral agents and moral discussants, can oblige themselves to act morally on behalf of other beings for their own sake, taking into account the implications of intra- and intergenerational justice to both human and non-human generations, as much as possible.

The hypothesis of why not every single gradualism is considered as being equally appropriate for clarifying the non-contradictory application of intra- and intergenerational justice to both human and non-human beings is exemplified by outlining the implications of what I called 'selective' intragenerational justice in 'weak' sustainability scenarios. Furthermore, I argue that the 'selective' justice in question can also be defined as a 'weak' environmental justice. Regardless of the apparent benefits which 'strong' sustainability scenarios demonstrate in revising the application of intra- and intergenerational justice compared to 'weak' sustainability scenarios, I claim that the main methodological difficulty they face concerns the examination of the role of intergenerational justice which implicitly addresses future human generations alone. Thus, one ends up again with the problems concerning the application of what I called 'weak' gradualism. I also argue that neglecting the introduction of ethical gradualism raises many concerns

when vital needs of human and non-human beings are at stake. The lack of justifying the normative validity of what I called 'strong' ethical gradualism affects the issue of how to guarantee a basic minimum of justice in both intra- and intergenerational terms, in so far as the qualitative implications of what basic justice is do not necessarily coincide with the minimum of justice in quantitative terms.

For the purposes of overcoming some of the aforementioned dilemmas regarding the justification of the normative validity of intra- and intergenerational justice, I examine the methodological advantages of introducing 'strong' ethical gradualism. The latter is explored in respect to the expansion of the ecological reflexivity by elaborating upon the normative validity of the features of recognition, capability and participation, as understood by Schlosberg.

Regarding recognition, I argue that Fraser's model of *status injury*, which is prioritized by Schlosberg, could be addressed towards building environmental justice rather than ecological justice. This is due to the fact that its key features such as cultural domination, practices producing invisibility as a lack of respect etc. cannot be applied even to all sentient beings by default, since they are illuminative for a high level of social and political interhuman interaction. In turn, examining the constructive role of capabilities from the perspective of being freely defined in respect to both individuals and larger systems brings us back to the issue who and how decides when individual vital needs and rights confront the systems' ones, as well as what guarantees that human free choice will avoid its own deviation into moral arbitrariness. Consequently, the third feature of participation, as being related to that of recognition in Schlosberg's sense, could be reconsidered by looking for the moral grounding of participatory parity in the field of political representation, specifically, as having enriched the principle of advocatory representation. However, such a methodological extrapolation also has its limitations, namely, it could be relatively successfully applied to particular sentient beings alone.

Furthermore, applying 'strong' ethical gradualism for the purposes of justifying a potential macro-evaluation of Schlosberg's three features can contribute to providing the following suggestions. The process of recognition can be determined by rethinking the aspects of animal asymmetrical rights in respect to humans, as well as these of the principle of advocatory representation, by entirely modifying the advocatory concern about the forthcoming generations which relies upon the presumption of non-individualized, hypothetical people who are statistically registered. Secondly, the feature of

capabilities is elaborated upon in moral terms, since the argument from potential is not applicable to everyone in a similar manner within the representatives of humankind nor is universally valid. This means that the state of being a person does not necessarily imply that one will become a moral person. In turn, the clarification that ethical gradualism is irreducible to empirical gradualism does not indicate that a certain degree of bodily integrity is not needed if one wants to argue for interaction, including a moral one. Schlosberg's third feature, that of participation, also exemplifies the necessity of adopting 'strong' ethical gradualism which makes possible some morally aware and sensitive agents to provide a morally differentiated approach to some other differentiated moral subjects so that the latter to be morally treated even if when they cannot become moral agents.

Elaborating upon the debate within the field of ecological justice, I would argue that the risks of providing 'accurate' recognition, when referred to the differentiated sub-groups of non-humans and particular groups of humans which constitute the group of moral subjects, could affect the normative validity of the moral evaluation, making it irreducible to the process of empathic accuracy as such. The risk is that the evaluation in question could be based upon approximation affecting the interplay of different criteria which encourage the application of the principle of incomplete induction on the level of both intra- and interspecies norms. The main methodological disadvantage of adopting such an approach is that supporting the induction in question, one increases moral ambiguity of both intra- and intergenerational justice by looking for mirroring correspondences between moral agents and moral subjects, namely, one encourages a certain type of moral replication, while arguing for the cultivation of sensitivity towards otherness. As an illuminative example of incomplete induction, I would point out that of coupling the argument of sentient being rights with the argument from potential, since the use of the latter in an interspecies context demonstrates why the two arguments cannot contribute much to grounding intra- and intergenerational justice for both human moral agents and non-human moral subjects.

Similarly to ethical gradualism, not every single form of empathy is appropriate for being coupled with 'strong' ethical gradualism in order to clarify the normative validity of intra- and intergenerational justice to both humans and non-humans. In addition to the methodological difficulties when discerning some forms of empathy from these of sympathy and minimizing the risk of reducing the understanding of otherness to emotional contagion or to so-called cognitive empathy, human-non-human interaction raises some new concerns.

For the purposes of trying to minimize the complications of grounding 'strong' ethical gradualism into particular types of empathy, in so far as both the group of humans as moral agents and that of non-human beings as moral subjects are heterogeneous, I choose mature empathy. Its mechanisms of building conflict sensitivity can be extrapolated towards non-human beings which do not share similar features with humans, as well as proto-sympathetic empathy, which may provide some clues in building intra- and intergenerational justice for sentient animals, at least.

Regarding the methodological benefits of adopting mature empathy in respect to intra- and intergenerational justice, I argue that it can provide some suggestions in modifying the application of pro-social behavior, as concerning the rights, feelings and well-being of given individuals or groups, into building what I called pro-species behavior of non-human beings which do not have similarities with humans. In other words, the implications of intra- and intergenerational justice for the beings in question, which are intrinsically dependent on human moral treatment, can be found in the examination of how mature empathy as a moral ability can encourage pro-species behavior as a form of moral agents' participation in Schlosberg's sense. Practically speaking, developing mature empathy would mean to address the preservation of other's vital needs into a situation by imagining what the latter should look like if this other was able to protect the needs in question in the best possible way. Consequently, developing sympathy in this context would be examined as directed not towards building the relation with the other into a situation, but towards other's survival into the situation in question, as is felt by the moral agents. A possible solution to reducing the difficulties in understanding otherness can be found if one tries to gain more precise knowledge by referring to natural sciences whose outcomes could be used as a basis of a more accurate evaluation of other beings' vital needs.

In turn, the choice of proto-sympathetic empathy is grounded in the assumption that the imaginative projection into someone else's shoes can provide some hints in addressing sentient animals as belonging to the group of moral subjects and thus, to avoid the pitfalls concerning the argument of sentient being rights. The projection in question, understood as a matter of perspective taking, requires not only developing a particular type of awareness, but also awareness of others' feelings as a matter of embodied experience which guarantees its moderate position between empathic accuracy and emotional contagion. In this context, justifying the benefits of developing proto-sympathetic empathy is considered as an attempt at 'coming a step closer' to Schlosberg's idea of ecological reflexivity "on a larger scale", where by "larger" one should understand a more differentiated scale,

as much as it is possible, of course, but not a bigger scale in quantitative terms. Otherwise, one can lose the positive effects of applying 'strong' ethical gradualism.

At first glance, adopting mature empathy and proto-sympathetic empathy point towards the methods of utilitarian ethics which looks for the increase of well-being and the minimization of moral subjects' suffering as a matter of preserving some basic needs of all beings involved. What I find as a main methodological difference between utilitarian ethics and discourse ethics is that while utilitarian ethics addresses mainly the state of moral subjects, discourse ethics encourages the moral development of moral agents and moral subjects at once. That is why I would argue that adopting the methods of discourse ethics in an interspecies context would minimize the risk the idea of basic minimum of justice to be identified with human vision of distributive justice.

Judging by the aforementioned investigations, I would claim that it is the recognition of treating particular moral subjects 'on their behalf' 'for their own sake' that can contribute to the gradual development of the cultivation of empathic sensitivity towards otherness. The latter can mediate the transition from intragenerational to intergenerational justice by emphasizing the role of both individual and collective moral self-obligation on side of moral agents.

How can we extend the concept of ecological reflexivity, then? A possible solution can be found in elaborating upon the idea of embodiment with its specificities as playing a crucial role in building one's awareness on three mutually related levels. On the first (grounding) level, one should take into account the role of empirical gradualism in respect to features such as agency, integrity and so on, without assuming that they are necessarily similar to these of humans. Thus, one potential empirical investigation of firstly, examining the aforementioned features in themselves by adopting the methods of the appropriate sciences (e.g. neurobiology, ethology etc.) can provide a relatively objective basis, as much as possible, for further evaluations within the framework of social sciences which constitute the second (meso-) level. The last, third (meta-)level would address the particular evaluation, as provided from the perspectives of intra- and intergenerational justice to both humans and non-humans. It would be used as a basis of expanding the realm of ecological reflexivity in Schlosberg's sense, in so far as reflexivity in question will encourage building a relevant diagnosis. Specifically, the aim of the diagnosis in question is the elaboration of regulations regarding the normative validity of the processes of recognition and participation.

They concern the exertion of heterogeneous intergenerational justice which is intrinsically coupled with the gradual differentiation of the concept of intragenerational justice in moral terms. In this context, adopting the methods of discourse ethics would contribute to ecological reflexivity being recognized as a valuable project whose most important feature is the feature of being into progress. That is why such a process should be understood as a process of a constant self-development by adopting 'strong' ethical gradualism which goes beyond the principle of simplified human-non-human moral and political replications.

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