

Reimagining Sustainability Science for Life beyond the Anthropocene

Multispecies Conviviality, Meaningful Postmodernity and politics of 'otherwise-than-power'

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Sustainability Studies



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Supervisor: Turaj Faran, LUCSUS, Lund University



The Treachery of Images (La trahison des image) Magritte (1929)

Abstract

Sustainability Science (SS) is known for aspiration to support societies towards ecologically sound trajectories – a fabulously reflexive, ultimately critical and deeply self-aware field with a diverse community of highly skilled and creative researchers of noble goals, rigorous training and active engagement with ‘real life’ (so we claim, or at least aspire for). We try hard to alter extinction of life as we know it and contribute to a flourishing planet, yet go behind startling trends, “losing the battle to save the earth from ourselves” (Woodruff, 2012, p. 16). This thesis elaborates few directions that might help us catch up – engaging, marrying and divorcing with the concept of the Anthropocene. I explore what the rise (and vanishing or collapse) of this increasingly dominant rhetoric may signify and lead to within ecological trajectories – looking into its narratives (*Aidosean, Promethean, Charitesian and Thanatosian*), and suggesting that it is at their plexus where we can find the unique gift of the Anthropocene, a possibility to escape the ontotheology of *enframing* and to path beyond the Anthropocene illusion.

Two overlapping trajectories for post-Anthropocene SS and politics – posthumanist and art-science I explore here for their striking promises and no less curious dangers. While posthumanist ideas are yet carefully considered by mainstream SS and my job is to offer them some more welcoming applause, witty invite and approbation (through exploration of how transcorporeality, posthumanist ecological community, multispecies conviviality, etc. could contribute to a post-Anthropocene SS and politics), the art-science initiatives for sustainability are greeted with great fervour, making second task more interesting – to explore how different relationships of art and science may lead us in most diverse directions – from (possibly) speeding up the ecocide (through attempting to harness arts for even better, yet increasingly surreal grip on reality), hinging their transformational potential (by reducing art to creativity or aesthetics) or helping us live out of the Anthropocene illusion into more liveable places around the planet (relearning to appreciate the openness of life, preparing for the worlds that come, along with less exquisite elaborations like transdisciplinary experiments). I suggest that posthumanist perspectives together with art-science may work as a politics of otherwise-than-power, nourishing multispecies conviviality for life beyond the Anthropocene, and with hope for a Meaningful Postmodernity, envisioned by Iain Thomson through Martin Heidegger’s philosophy of art. The thesis comes to its last pages with preliminary suggestions on how insights might benefit SS education and inspire further explorations.

Keywords: *Sustainability Science, the Anthropocene, Martin Heidegger, Ontotheology, Posthumanities, Art-Science, Multispecies Conviviality.* **Words:** 12 316

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Introduction

Every beginning supposes what preceded it, but at one point night gave birth to day and the daylight we find at Lascaux illumines the morning of our species. It is the man who dwelt in this cave of whom for the first time and with certainty we may finally say: he produces works of art; he is of our sort.

GEORGES BATAILLE, *The Cradle of Humanity: Prehistoric Art and Culture*

To the total dismay of many politically-minded French citizens, Haraway spoke mainly about learning how to behave politically anew from her dog. “From her dog! What does this have to do with politics? Tell us more about domination, inequalities, power struggles, elections, and revolutions”.

BRUNO LATOUR, *Some Experiments in Arts and Politics*

Sustainability science (SS) is known for aspirations to support societies towards ecologically sound trajectories – a fabulously reflexive, ultimately critical and deeply self-aware field with a diverse community of highly skilled and creative researchers of noble goals, rigorous training and active engagement with ‘real life’ (so we claim, or at least aspire for). We try hard to alter extinction of life as we know it and contribute to a flourishing planet, yet go behind startling trends “losing the battle to save the Earth from ourselves” (Woodruff, 2012, p. 16). Without offering panaceas, this thesis explores few directions that might help us catch up.

While I could start from talking about relevance for the field, it is better to do this a bit later, and suggest practical advice on approaching this work. The two parts into which the thesis is structured are not counterweights, but rather ethically and philosophically different ways to approach the issue. Each contains a trace of the other and my positions on the issue are quite straightforward, unfolding almost linearly. Still, it is up to the reader to find their way through the text, which might bring them to conclusions quite different from mine. Overabundant footnotes are there to clarify, deepen or direct the inquiry into a new stream; the longer ones are usually more interesting to read. This thesis is an unfinished project in respects too multiple to mention and for reasons too diverse to mourn over. Just consider this while reading and feel free to fill in the gaps, reinterpret arguments or criticize the shallowness whenever you wish so. Please do not disturb the author, unless it’s something interesting and important. Finally, I hope to have provided a palette of perspectives on art-science encounters, yet I preferred to be limited in examples because my perspectives on the issue are currently in the whirlpool of controversies. One question we need to stop asking:

May Anthropocene be the greatest art-work of SS so far?

Part I. In the Anthropocene

1.1 Setting the stage

... and that this creature thereby claimed for its whole species the status of the onomatopore, the name-bearer, of their planetary age; and when it had finished speaking, it struck its chest once, a sign which in some of our cultures signifies truth, in others pride, in others shame ...

BRONISLAW SZERSZYNSKI, *The Onomatopore of the Anthropocene*

1.1.1 Sustainability Science: emerging field and its challenges

SS is currently considered “a field that is defined by the problem it addresses rather than the discipline it employs” (Clark, 2007, p. 1737), overcoming traditional approaches of normal science and multiple methodological and philosophical boundaries (Stock & Burton, 2011) towards “essentially integrative” (Kates, 2011 p. 3), user-inspired (Clark, 2007), normative (Jerneck, 2014; Kajikawa et al., 2014), critical, reflexive and solutions-oriented research agenda involving civil societies, governments and businesses (Miller, 2013). As an emerging field, its challenges are in no shortage – bringing to life the ambitious transdisciplinary agenda (Stock & Burton, 2011), lack of general principles (Kajikawa, 2008), sustainability witnessing its entombment (Benson & Craig, 2014), insufficient contribution to ‘transformational changes’ and very limited discussion on the philosophical grounds (Salas-Zapata, Rios-Osorio & Trouchon-Osorio, 2013). As Ziegler & Ott (2011, p. 31) point out that: “neither funding nor a mere presumption to do science is sufficient to establish a scientific field. Sustainability science must continuously reflect on its practice and its key features if dogmatism is to be avoided“. According to Miller and his colleagues (2013, p. 281): “[t]he ways in which scientists construct the research agenda(s) for sustainability science will have implications for both the ability of the field to provide useful knowledge and for how sustainability is constituted in society“. It is these concerns about self-understanding and directions of SS that are at the core of this work. Among different ways to consider, frame and face sustainability problematiques in a unified, comprehensible and inclusive manner, Anthropocene is a young and increasingly influential concept with complex implications for the field, its relationships with life and the very possibility of its further existence – as it will become increasingly clear, a perfect candidate for my endeavour.

1.1.2. Thesis rationale and aspirations

And yet, why Anthropocene? Why not Ecological Crises, Plastic Cup, Civilization, Capitalism, Globalization, Climate Change, Modernity, or other more or less popular ‘Hyperobject’ of

contemporary life (Morton, 2013, Zylinska, personal communication, 2015, March 26th)? Why is this “charismatic mega-category” (Hartigan, 2014) so interesting and relevant for us? While not every sustainability-concerned person accepts the Anthropocene as an unquestionable reality (Baskin, 2014), and some articles reviewing progress in SS don’t even mention it (e.g. Kajikawa, Taco & Yamaguch, 2014), the concept is both implicitly and explicitly gaining prominence as the ground (philosophical, ethical, political, empirical) for major sustainability endeavours like *Future Earth* and integrative sustainability research in general (Palsson et al. 2013, Castree, 2014), most obviously – regarding international sustainability politics (Steffen et al., 2015; Dryzek, 2014; Bierman et al., 2012), inviting “weighty discussions between people who might otherwise not communicate often or at all – [...] CEOs and deep ecologists, nature poets and environmental lawyers, ethicists and celebrity environmentalists” (Castree, 2014, p. 235), also increasingly a key theme of the highest level international conferences and symposia¹. From personal experience, Anthropocene also plays a role in SS education². The diversity and intensity of fervour ignited by the Anthropocene is truly overwhelming, little doubt however remains that it “may soon be among the key signifiers that frame the thinking of societal decision-makers” (Castree, 2014, p. 233), a *lingua franca* for those engaged into sustainability debates of presumed planetary significance. Thus, this thesis is guided by two general aspirations: to explore the promises and dangers of embracing Anthropocene as the new reality within SS and politics, and how we could envision and enliven post-Anthropocene futures within these realms.

1.1.3. Thesis philosophy and methodology

The critical locus of my investigations into the Anthropocene springs from Heidegger’s philosophy – his understanding of ontotheology and critique of enframing and politics of power (Heidegger, 1982, 1995, 1977; Thomson, 2005, 2011; de Beistegui, 2007), which are uniquely useful for understanding this phenomena (see section 1.3). The thesis draws inspiration from *alethic hermeneutics* – not seeking “to find correspondence between subjective thinking and objective reality”, but “revelation of something hidden” (Alvesson & Sköldberg, 2009, p. 96), based on comprehensive literature review. Offering “polyphonous account of different interpretations” (p. 105) for an insightful inquiry

¹ “In June 2012, “Welcome to the Anthropocene”—a film about the state of the planet—opened the UN’s Rio+20 summit on sustainable development. The summit was the largest UN meeting to date” ... (WelcomeAnthropocene, 2012). Recent examples of conferences: Transformations 2015: People and the Planet in the Anthropocene; Anthropocene: Perspectives from the Humanities and Fine Arts, etc.

² Earth System Science course within LUMES program is built around the framework of planetary boundaries (see 1.2.2.1.). This serves for me as a reminder that things are often deeper than they may appear to be. Also Anthropocene appeared during some other courses (e.g. Governance for Sustainability).

with contrasting perspectives (elaborated as different narratives of the Anthropocene) and suggesting my own interpretation, neither final nor universal, but noteworthy.

I understand narrative as an “unfolding story with the potential to serve as a theoretical thinking tool and an empirical guide to promote practical action” (Jerneck, 2014, p. 15) and a mental model existing “as a form of bounded rationality or deliberate simplification” (Copestake, 2008, p. 589 in Jerneck, 2014, p. 16). The thesis is not value-free (Strunz, 2012, p. 114), coming in line with Barad’s (2007) articulation on impossibility of disintegrating issues of fact, care and concern. My personal views are made as clear as possible throughout the whole work.

1.2 Sustainability Science and Politics in the Anthropocene

1.2.1 One morning they woke up, and it was there

The genealogies of the Anthropocene may be traced to 1870’s Antonio Stoppanie’s ‘Antropozonic era’, and similar ideas throughout history – Anthroplithic, Psychozoic, Periode Anthropeian etc. Only recently however it appears to “have gained some scientific respectability and to have entered the zeitgeist”³ (Baskin, 2014, p. 3). One should also note the difference between the Anthropocene and anthropocentrism. Not everyone who believes we are in the Anthropocene are anthropocentric (Zylinska, 2014), and not every anthropocentrically inclined person uncritically embraces the Anthropocene – it may not be crucial for their identity, they somewhy reject realities of the assumed epoch (e.g. ‘climate change denialism’ [Dunlap, 2013]) or simply are unaware of the still novel concept. While the scope of meanings and critiques of anthropocentrism are at least to some extent established (Christ, 2014), the potential contours of the Anthropocene are just starting to emerge (Palsson et al., 2013). Discussions on whether anthropocentrism does and further should constitute an ethical foundation of SS (see Isaksen, 2012, p. 22, 34) may soon be overwhelmed by those on how the Anthropocene redefines the human, the field and directs ecological trajectories in multitude of ways. Through the thesis anthropocentrism will come to the surface occasionally, but it is the Anthropocene that is my key concern in this case, and even more – what’s behind and after.

³ One could recall the considerations on the ‘end of nature’ in the 90’s in writings of Bill McKibben, Frederick Jameson and Ulrich Beck, at that time contrasting to environmental discourses of previous decades, where nature remained “a powerful external force that stands as the essential antagonist of industrial modernization” (Ronda, 2013).

The formulated concept of the Anthropocene in contemporary sense came from scientists at the break of the millennium, suggesting it as a new geological epoch⁴ (Crutzen & Stoermer, 2000, p. 17). It is now considered to have started somewhere in between 50 000 and 50 years ago⁵ (Lewis & Maslin, 2015; Baskin, 2014; Zalasiewicz et al., 2015) with critical human impact at life on Earth (Clark, 2014, p. 20-21), which “may drive the Earth itself into a different state that may be much less hospitable to humans and other forms of life” (Steffen et al., 2004, p. 299). In a nutshell: humanity is increasingly likely to exhibit a story of “[e]arly brilliant success, a worldwide reach, and then a sudden death” (Zalasiewicz, 2008, p.102), foremost well documented by the atmosphere and fossils.

There are two broad views about when the Anthropocene actually started (Baskin, 2014). The ‘*Early*’ views go back to ‘*megafauna extinction*’ between fifty and ten thousand years ago (Lewis & Maslin, 2015) or agriculture and human settlements around ten thousand years ago (Ruddiman, 2005). The ‘*Contemporary*’ views turn attention to industrial evolution, steam engine and the “*Great Acceleration*” (Crutzen & Stoermer, 2000) – extreme changes that happened in speed-intensity of various ‘*Socio-economic*’ and ‘*Earth-system*’ trends since 1950 (Baskin, 2014), 1750 (Steffen et al., 2015); most recent suggestions – the colonial ‘*Orbis spike*’⁶ of 1610 or ‘*Bomb*’ of 1964 (Lewis & Maslin, 2015). While the earlier views support thinking of humanity as a whole in much more initially inclusive terms, the contemporary ones deal more with issues of precaution, risk and uncertainty, suggesting that we are now in and “exceptional time” that needs “exceptional responses” (Baskin, 2014, p. 5)⁷. Meanwhile, discussions over the concept have extended far beyond the stratigraphers’ circles⁸. All in all, there are at least following issues of consent: it claims planetary urgency and

⁴ The concept was used by Eugene Stoermer some years before he and Crutzen teamed up for very short time. Meanwhile, the concept didn’t attract much attention until stratigraphers got into it. There are also discussions on whether Anthropocene is the epoch, or an age (Castree, 2014; Haraway, 2014). I refer to it mostly as ‘concept’ or ‘presupposed epoch’.

⁵ Having visited Will Steffen’ (personal communication, May 15th, 2015) lecture on Anthropocene debates after submitting the copy of this thesis of events, I’ve learned that there also suggestions to date the beginnings of the Anthropocene back to the discovery of fire or first human imprint on Earth.

⁶ A dip in atmospheric CO₂ was caused by regeneration of forests due to abandonment of agriculture that happened after around 50 million people died in the ‘New World’ largely because of encounters within European diseases (Lewis & Maslin, 2015). For a recent insightful and brief overview on the science-dating of the Anthropocene see Zalasiewicz et al. (2015),

⁷ In this respect Anthropocene may be considered as “a counter-discourse to globalization—a narrative of its externalities, its risks, its unintended consequences, its limits which now require calibration” (Dibley, 2012, p. 141).

⁸ The potential for formalisation is currently investigated by the Working group on the ‘Anthropocene’ within Subcommission on Quaternary Stratigraphy of International Commission of Stratigraphy which is part of International Union of Geological Sciences “with a current target date of 2016” (Subcommission on Quaternary Stratigraphy, 2015).

significance⁹, it triggers reconsideration of the ‘our’ relationships with life, and it is increasingly popular. Anthropocene signifies “the collapse of the age-old humanist distinction between natural history and human history” (Chakrabarty, 2009, p. 201) and “a conjuncture: a moment pregnant with risks as well as generative opportunities” (Johnson et al., 2014, p. 440).

1.2.2 Gods, Titans, Lovers and Fossils: four narratives of the Anthropocene

As Buck notes, Anthropocene is not merely a concept, but rather a “a collection of multiple, related stories, each calling up the reference of another—People who liked this also read – the whole narrative assemblage adding up to something more than its pieces” (2014, p. 1). The stories of the Anthropocene can be grouped (building on Baskin [2014], and my reviews) into: humble, sometimes meritocratic *Aidoseans*, brave and provocative *Prometheans* (see Baskin, 2014, p. 6 on both), carefully enchanting *Charitesians* (Buck, 2014) and finally – euphorically mourning or seriously preparing for an apocalypse *Thanatosians* (Colebrook, 2014a). There’s also a growing tribe of those who question or fully reject the Anthropocene (‘Anthropocene denialists’?) without shortage of reasons, and whom I will also consider (leaving aside climate change denialists).

1.2.2.1 *Aidos: steering the Earth back home*

Aidos is the ancient Greek goodness of “shame, modesty, and humility” (Baskin, 2014), promoting reverence and restraining people from wrong. Aidosean view on the Anthropocene is best conceived through the concept of planetary boundaries advanced by the Stockholm Resilience Centre in 2009 (Rockström, et al.) and updated with some conceptual changes in 2015 (Steffen, et al.). Aidoseans aspire to estimate physical limits to human impact on the planet, crossing which would lead us into zones of uncertainty and grave danger – that is the Anthropocene¹⁰.

Aidosean thinkers are foremost concerned about the “need to manage a return to the Holocene or Holocene-like conditions” (Baskin, 2014) which “is the only global environment that we are sure is ‘safe operating space’ for the complex, extensive civilization that Homo sapiens has constructed” (Steffen et al. 2011, p. 747) and which represents a narrow range of planet’s ‘potential operating spaces’ (Clark, 2014, p. 27). While Rockström (2015) suggests that we need ‘growth within limits’ (for

⁹ In words of Johnson and her colleagues: “a rough place-holder for [...] a world whose social, political, and physical parameters are changing faster than our capacity to process and analyse them” (2014, p. 440-41).

¹⁰ As for January, 2015 Steffen and colleagues have suggested that four out of nine planetary boundaries have been crossed into zones of ‘increasing’ or high’ risks, including – “climate change, biosphere integrity, biogeochemical flows, and land-system change”. They also suggest other areas of concern, for which limits can’t be estimated but should be nevertheless considered.

rather political reasons), Aidoseans also can be found among heterodox perspectives like degrowth¹¹, with planetary boundaries (not exclusively though) providing “scientific and ethical foundations of the rule of ecological law” (Garver, 2013, p. 316). The optimism of some Aidoseans about miraculous roles of science and technology for dealing with the Anthropocene (however far unbound) is incomparable to the one of *Prometheans*.

1.2.2.2. *Prometheus: embracing the Titan’s quest*

The narrative is most eagerly promoted by the fellows of the ecomodernist and ecopragmatist think-tank the Breakthrough Institute¹², calling for expansion of nuclear energy, intense experimentation with GMOs, geo-engineering and bio-adaptive technologies, production of animal-free meat, further urbanization of human settlements, along well-managed rewilding, and generally high-tech solutions with “romantic love for nature and pragmatic use of technology and development” (Breakthrough Staff, 2014) using “our extraordinary powers to shrink our impact on nature [...] while supporting universal human dignity” (Breakthrough Institute, 2015). Emerging trend is also human engineering, “potentially less risky than climate engineering”¹³ (Liao, Sandberg & Roache, 2012). Transhumanism or leaving the Earth for other planets¹⁴ may be seen as potential pinnacles of the narrative.

Prometheans define themselves in opposition to ecological-boundary thinking, seeking to steer our way towards ‘a better Anthropocene’. The story goes: recovering the Holocene “is no longer possible, sustainable or even desirable. It is no longer Mother Nature who will care for us, but us who must care for her [...]. In the Anthropocene we are the creators, engineers and permanent global stewards of a sustainable human nature” (Ellis, 2011), “the first responsibility of a conquering army is always to govern” (Lynas, 2011, p. 11-13 in Baskin, 2014, 6). Or briefly: “Nature no longer runs the Earth. We do” (Lynas, 2011, p. 8 in Baskin, 2014, p. 3). Some Prometheans are ready to imagine different Anthropocenes, that would account for ‘ideological diversity’, also staying open to non-Anthropocene futures¹⁵ (Breakthrough Institute, 2015), in not necessarily Aidosean sense¹⁶.

¹¹ See Special issue “*Degrowth: the Economic Alternative for the Anthropocene*” in *Sustainability*.

¹² Not exclusively though, see Collard, Dempsey & Sundberg (2015, p. 323) for some other examples.

¹³ Authors explore possibilities for modifying humans with night vision to reduce energy demands, making them smaller or killing the appetite for eating animals with drugs; meanwhile see authors’ rebuttal to the fire of critiques (Hickman, 2012).

¹⁴ See Hughes (2012) on the short history of transhumanism and its contemporary ‘flavours’, involving various techno-utopists and secular catastrophists. Transhumanism can be seen as one of the ‘zones of indeterminacy’ between Prometheans and Thanatosians. For quite modest transhumanist-cosmist philosophizing see Goertzel (2010).

¹⁵ It is hard to say what perspectives will be explored at the next Breakthrough Dialogue (2015), where one can witness some fierce public critics of the Anthropocene like Clive Hamilton and the Anthropocene ‘referee’ Andrew Revkin, yet no geoscientists (see Dalby, 2015).

*Charitesian*¹⁷ perspectives can be considered as an attempt to offer one branch of such alter-Anthropocene opportunities, both agreeing with Prometheans on some points and radically contrasting on other.

1.2.2.3 Charites: love in the Anthropocene

Planetary gardening and rewilding again constitute the re-enchantment story told by Holly Jean Buck (2014) and her ecofeminist, ecomaterialist (MacGregor, 2006) and postcolonialist colleagues (Collard, Dempsey & Sundberg, 2015) who however critically emphasize politicizing and not instrumenting or romanticizing love for the Earth beyond “stories about calculability or control, as well as stories of despair and tragic guilt, which have a sublime fascination and enchantment of their own” (Buck, 2014, p. 8) not so much aimed at criticizing the narratives of others, but use the increasing popularity of the concept and explore “[h]ow could a better retelling happen?” (p. 4).

Charitesians do not aspire for a postmodern simulation, illusion, loss of reason or a new “romance with nature as object” (Buck, p. 4), but for enchanting ‘humans-in-nature’, overcoming ‘fear framing’ and ‘ultimate alienation’ of “you did this and you didn’t know” (p. 5). Gardening is understood as “passionate, intimate and material relationships with soil, and the grass, plants and trees that take root there” (Hitchings, 2003, p. 667 in Buck, 2014, p. 7), undoing the feminization and privatisation of the capacity to care. Biophilic cities are “places where encounters happen” and not merely “city-nature hybrids” of green urbanism (p. 6). The emphasis is put on nurturing of the “greater sensitivity” to consequences (p. 8), “the real meaning of what it is to live in the Anthropocene” (Latour, 2013)¹⁸, which allows to avoid the dissolution of the humanity into ‘collectively bland actant’ (Buck, 2014, p. 2) of a “sublime yet simultaneously rationalised era” (p. 3).

Still, as Holly Buck herself notices, appealing to Baudrillard’s work “tonality of disenchantment is itself enchanted” and therefore “we are trading one sense of enchantment for another” (Buck, 2014

¹⁶ One example might be a recent paper by a leading social theorist on ecological citizenship John Dryzek, for whom “[r]ecognition of the Anthropocene means that ecological limits or even boundaries no longer provide a sufficient frame for thinking about global environmental affairs”, we now need dynamic and ecosystem-reflexive institutions “as antidote to path dependency” and to “static criteria (such as efficiency, co-ordination, robustness or even respecting global ecological limits) (2014, p. 2). Institutional models and comparative statistics are no longer sufficient – “[r]eflexivity means that the reference point for processes of reconstruction is where we are now in real situations” (2014, p. 7). Dryzek seeks to explore human and non-human life in their co-evolving, mutually constitutive agencies, while appealing to the discourse of resilience, politics of listening and readiness to be differently, rather than simply act differently. He works across the boundaries of at least three narratives and thus resists my classification.

¹⁷ Charites in Greek mythology were “minor goddesses of charm, beauty, nature, human creativity, and fertility” (Charites, 2015)

¹⁸ Charitesians embrace Latour’s argumentation very selectively; see Collard, Dempsey & Sundberg (2015, p. 324).

p. 8); enchantment doesn't "substitute for structural, institutional, and political changes on various scales" (p. 5). She however considers the stakes "too high not to experiment" (p. 8) for the habitable Anthropocene to remain a possibility. Relationships with the Anthropocene are not necessarily a love-story with a happy end, but may include comedy or the sense of uncanny (Buck, 2014), which brings us to the forth narrative.

1.2.2.4 *Thanatos: learning to go extinct*

For whom do we leave the fossils to find? Three previous narratives are clearly 'life-affirming' attempts to continue making sense of the Anthropocene in a 'positive' manner (even though the apocalyptic rhetoric is critical contributor to their stories). Repeating the exercise, *Thanatosians*¹⁹ however do not hesitate to explore the potential annihilation of humanity up to the very end.. "[g]leefully inventive when it comes to eradicating human civilization" (Rull, 2009), often inviting much of the other life alongside. Edward Osborn Wilson invokes 'Ereozoic' – "an Age of Loneliness and Emptiness" (Baskin, 2014, p. 7) to truly emphasize with the extinction we part – "if we were to use any of these terms then the implicit diagnosis is different, and clearly a different set of normative solutions or prescriptions suggest themselves" (Baskin, 2014, p. 8).

The stories within this narrative are incredibly diverse, and include various unpleasant resolutions of *Aidosean* concerns and *Promethean* myths – humanity learning to survive in the nature gone truly wild or particularly after some massive catastrophe / pandemic, devolving into more primitive states, being replaced by transhumans or dissolving itself into the flux of yet incomprehensible technoorganic matters, as well as finally – rapidly or slowly going extinct, with almost unquestionable follow-up recovery of the biosphere (Colebrook, 2014a; Rull, 2009; Weisman, 2007). Inevitably, as any other species we will go extinct, as Bronislaw Szerszynski notes: "it is important to realise that the truth of the Anthropocene is less about what humanity is doing, than the traces that humanity will leave behind" (2012, p. 169) or in Roy Scranton's words "[t]he biggest problem we face is a philosophical one: understanding that this civilization is already dead" (2013). Are you still waiting for solutions?²⁰

¹⁹ Thanatos is the Ancient Greek "daemon personification of death" (Thanatos, 2015); In similar line Eileen Crist has suggested to name the age 'Shiva-cene', "in spite of the "deity's characteristics as 'destroyer' and 'transformer'" (Crist 2007, p. 52 in Baskin, 2014), p.7), While end of the world scenarios are common to worldly religions, the idea of extinction has come to science through 18th century paleontologist George Cuvier (Dalby, 2015, p. 11).

²⁰ To do justice, Thanatosian solutions are in no shortage - learning crafts and survival skills, praying or mourning, reconsidering our most basic assumptions about the world, living every day as the last one etc. See Scranton (2013); Colebrook (2014a) for examples.

1.2.3 Common critical encounters with the Anthropocene

I focus this short overview on primarily (not exclusively) the first two narratives, since they are currently more involved into shaping SS and into critical shootouts; which meanwhile allows to explore major concerns about the concept and move to my own interpretation, tapping into the relations among all four narratives.

1.2.3.1 *The new romance of science and politics*

Similarly to other normative sustainability pursuits, Anthropocene as an *'emerging apparatus'* (Dibley, 2012) allows sides to push their interest in many directions; with noble ideals and nimble-witted communications. A clear transition however comes from urgency, uncertainty and high stakes, already common to SS (e.g. van der Leeuw, Wiek, Harlow, & Buizer, 2012) to rigid allegations of *'manufactured emergency'*, when the "exceptional conditions of the emergency or disaster are being invoked with such frequency that they risk being normalized" (Clark, 2014, p. 11). In this sense we can witness a "generalized condition where potentially catastrophic events might suddenly irrupt in any form, at any moment, anywhere in the world [...] to justify sweeping new measures of surveillance, ordering and regulation, to the point of undoing hard-won political freedoms" (p. 28-29)²¹. In the context of the Anthropocene such statements get a profound level-up in terms of both the potential scale and impact of responses. Unsurprisingly, Promethean and Aidosean camps don't find great pleasure in dealing with each other – e.g. Prometheans are actively accusing Stockholm Resilience Centre fellows in 'power grabs' "closing down debates over policy and asserting the preeminent roles of experts in charting a course for future global development" thorough the promoting of 'planetary boundaries' and 'sustainable development goals' (Pielke, 2013), which obscure actual sustainability challenges (Ellis, Brook, Blomqvist & DeFries, 2015 in Revkin, 2015), usually receiving cold responses from Aidoseans – as in the case of updated planetary boundaries: "[s]ome argue that humanity can now survive, and even thrive, in a rapidly destabilizing planetary environment, but that is a belief system based on supreme technological optimism, and is not a reasoned scientifically informed judgment" (Steffen, 2015 in Revkin, 2015). Meanwhile, according Baskin they differ "over the direction and goals of planetary management rather than the need for it" (2014, p. 12), meanwhile those that "seem to be declaring the death or end of nature in an empirical

²¹ As Ben Dibley (2012, p. 141) has put it: "a security contingent on a metrology of the Earth system that prepares it for the market" and "the antithesis of a politico-ontological condition central to modernity: freedom" (both quotes appeal to the Aidosean imaginary). The dark version (hyper-Aidosean) would lead to 'ultimate securitization' or 'technological lock-ins' (Buck, 2014). Stacy Alaimo would note: "who has time for philosophical questions, social and political analyses, historical reflections, or literary musings when the world is rapidly heating up and "resources" are running out?" (2012b, p. 560).

sense, given that it is so heavily shaped by humans [...] simultaneously cling to the idea of Nature in the conceptual sense” having put it “into a colonial dependency of humanity” (p. 10; also see Swyngedouw, 2013a,b).

Although these considerations might be, as Holly Buck notes in ironically disregarding fashion “the legacy of the Boomer generation, who grew up in an era of polarizing conflict and epic storylines – and who are thus enabled to continue carrying (for a few more years)” (2014, p. 3), or in Latour’ words (2013, p. 88) – “Atlas’s malediction,” the “weight of the Globe, this strange Western obsession, the true ‘White Man’s burden’”²², they are nevertheless critically shaping contemporary SS and politics. Beneath megalomaniac aspirations, are still the actual capacities for action.

1.2.3.2 The limits of planetary stewardship, the infinity of hysteria

David Archer’ considerations serve as invitation (2009, p. 95 in Chakrabarty, 2014, p. 6): “The IPCC forecast for climate change in the coming century is for a generally smooth increase in temperature.... However, actual climate changes in the past have tended to be abrupt ... Climate models ... are for the most part unable to simulate the flip flops in the past climate record very well”. In the words of Nigel Clark: “the Earth sciences disclose material conditions that not only defy prediction, but reveal the precarious existence of those beings who are asking questions of it [...]. And yet, scientists continue to go to the ends of the Earth, literally, in search of evidence about the past, present and future operation of Earth systems”²³ (2014, p. 21). Or more precisely, “geoscience finds itself confronting ‘an abyss whose reality becomes increasingly uncanny, not less, the more scientific instruments are able to probe it’ (Morton, 2012a, p. 233)” (Clark, 2014, p. 21).

Meanwhile, the seemingly unstoppable urge for more knowledge and evidence, more precise probabilities about hardly imaginable futures, however idiosyncratic those pursuits increasingly reveal themselves may not only be a misery, but as Malcolm Miles (personal communication, 2015, March 25th) puts it, precisely due to the overabundance of evidence on strange ecological changes and exposure to elusive apocalyptic imaginaries, we are increasingly less prone to consider them seriously enough to do something in face of real threats. Increasing number of people are “suffering from apocalypse fatigue” (Buck, 2014), addiction to endless stimuli doesn’t however easily pass away. According to Swyngedouw (2013a) we can see deeply entrenching and simultaneously

²² An insightful and provocative read is Pascale Bruckner’s *The tyranny of guilt: an essay on Western Masochism* (2010).

²³ One could also mention critiques of climate change framing from other perspectives of science and technology studies (Goeminne, 2013; Szerszynski, 2010) – which would in turn be quite relevant for the Anthropocene critiques, but these, although relevant are to larger extent beyond my inquiry.

disempowering “‘ecologies of fear’ on one hand and series of decidedly populist gestures on the other” (p 3). Enthusiastic planetary stewardship by some combined with dispassionate apocalyptic hysteria among others may become new ‘normal’ modes of comprehending ecological strangeness within late modern societies – freshly enchanting, amazingly addictive and highly profitable (see Dibley, 2012, p. 146).

1.2.3.3 Whose Anthropocene is not?

Another serious concern of the Anthropocene critics is about humanity “made one with modern Enlightenment man, the man for whom ‘progress’, ‘growth’ and ‘development’”. The Indian subsistence farmer or the African herder, or the Peruvian slum-dweller, become part of one ‘humanity’, with the inhabitants of the rich world, despite clearly being very differentially responsible for ecological devastation and planetary overshoot” (Baskin, 2014, p. 8). In this way: “the Anthropocene reveals the power of humans, but it conceals who and what is powerful and how that power is enacted” (Baskin, 2014, p. 8) – hiding inequalities and neglecting diversity of lifestyles around the planet, while naturalising particular ways of being human. Malm & Hornborg (2014) take this argument further, claiming that it is rather the gravest inequalities throughout human history that have made the very concept of the Anthropocene possible, along with specific technologies that have led us into this mind-set and those that allow us to track the unfolding of the presupposed era. We however still consider “‘technological progress’ as nothing but the magic wand of ingenuity which, with no necessary political or moral implications elsewhere, will solve our local problems of sustainability” (Malm & Hornborg, 2014, p. 3). The distribution of life-boats in this “geopolitical myopia that facilitates wishful thinking” (Dalby, 2015, p. 8; also see Malm, 2015, Malm & Hornborg, 2014, p. 5; Dibley, 2012 p. 147, Dalby, 2011,) remains unequal. Meanwhile, increasing commitment to techno-scientific pathways may critically subvert opportunities for socio-political transformation (Clark, 2014; Dryzek, 2014).

1.2.4 Between concept, ideology, industry and gift

Regarding two major narratives, Gregory Baskin concludes that the concept can be summarized to employ “some of the features of an ideology, although perhaps not yet a hegemonic one in the Gramscian sense”, “more obviously compatible with, rather than potentially disruptive of, the dominant political ideology and power structures of our time”, providing “the ideational underpinning for a particular view of the world, which it, in turn, helps legitimate” (2014, p. 3) – a

“paradigm dressed as epoch”²⁴ (p. 7), possibly more realistically captured by concepts like Capitalocene (Moore, 2013), Econocene (Norgaard, 2013) or Misanthropocene (Patel, 2013). But who would like to see Misanthropocene in the geology textbooks? And doesn’t Capitalism receive enough critique even without being inaugurated as a world-ecology? Or maybe the true value of the Anthropocene is in being a new opium for academia²⁵ and masses (Swyngedouw, 2013b), also coined by Claire Colebrook (2014b) an ‘emerging industry’ of the last three years? In all this labour and rigour, Tom Cohen (2012) sees the concept as “funny, opportunistic [...] and wonderfully stupid”. Or is it not?

The sketch of different narratives helped to show that the new concept is a *diagnosis* that may be used to justify or suggest almost anything, yet a much different *anything* than which was possible within previous sustainability debates. Potentially undermining (and reinforcing?) basic commitments of SS to diversity and justice²⁶, Anthropocene may increasingly shape the field’s agenda, inspiring much more radical and desperate, sophisticated and unpredictable engagements – neither solemnly good, nor bad but rather an *ugly* politics of the Anthropocene (Dalby, 2015). Precisely in those opportunities I see the greatest promise of the Anthropocene. As Nigel Clark notices: “[p]erhaps, rather than excoriating physical scientists for conjuring up concepts which bolster their ‘god-like powers’, we might deign to see the idea of the Anthropocene as an overture towards the world of social thought and action: something in the nature of a rift-bridging offering or gift” (2014, p. 27). The last important clue comes from Claire Colebrook: “the Anthropocene should tell us absolutely nothing” (2014b). Much of the text left here is dedicated to exploring this possible gift of the Anthropocene, one which nevertheless should have nothing to tell us.

1.3 Anthropocene, the end of Ontotheology?

[L]ife is a domain which possesses a wealth of openness with which the human world may have nothing to compare

MARTIN HEIDEGGER, *The Fundamental Concepts of Metaphysics*

²⁴ Among most interesting ways to interpret Anthropocene I didn’t explore: Aura in the Anthropocene by Thomas Ford (2013), the Scale Critique for the Anthropocene by Derek Woods (2014).

²⁵ Inspired by the two discussions – on addictiveness of apocalypses and on the ‘freedoms?’ of academic life in the context of Anthropocene at the Visual Culture: Environment and Nature symposium at Lund University, March 26th, 2015

²⁶ See Jerneck for some recent argumentation on why/how SS should work for multiple sustainabilities, globalizations etc. (2014)

According to Martin Heidegger²⁷, Western humanity²⁸ is guided and sustained by metaphysics – “Metaphysics grounds an age, through a specific interpretation of what is, it gives the age the ground of its essential form” (Heidegger & Lovitt, 1977, p. 115); “[e]verything is, so by changing our understanding of what “is-ness” itself is, metaphysics can change our understanding of everything” (Thomson, 2011, p. 7), establishing “both the basic conceptual parameters and the ultimate standards of legitimacy for history’s successive epoch of unified intelligibility” (Thomson, 2005, p. 8). *Ontological historicity* suggest that our “basic sense of reality changes over time” (Thomson, 2011, p. 8), experienced through series of “distinct but overlapping *ontohistorical epochs* – “pre-Socratic, Platonic, medieval, modern and late-modern”, serving as “historical constellations of intelligibility”, providing “temporarily unshakable” understanding “of *what is* and *what matters*” (p. 8-9), the epoch’s *ontotheology*²⁹: “ontotheologies that catalyse epochal shifts in our history often do so by generalizing discoveries from subdomains [...] of our knowledge. Ontotheologies can rapidly accelerate pre-existing historical trends by moving them from the periphery to the centre of our culture’s historical self-understanding” (p. 32) Ontotheologies doubly – “ontologically ‘from the inside out’ and theologically ‘from the outside in’” (Thompson, 2011, p. 10) ground “the truth concerning the totality of entities as such” (Thomson, 2005, p. 146), leading us away from “immediately felt experiences of genuine meaning and toward a cognitive demand for a kind of detached intellectual certainty regarding some entity standing outside this world” (Thomson, 2011, p. 38). Neither eternal, nor easily forgotten; ontotheologies overlap throughout the history of being, where “the only way out of the historical understanding of being is to think it through to its end and so to path beyond” (Thomson, 2011, p. 30). Heidegger considers contemporary, late modern ontotheology as *enframing*, where everything becomes increasingly understood as intrinsically meaningless ‘*standing reserve*’ (Heidegger & Lovitt, 1977) to be endlessly optimised and effectively utilized³⁰ by *will-to-will* – the “eternally recurring will-to-power” (Thomson, 2011, p. 18).

²⁷ In exploration of Heidegger’s ideas I mostly refer to Iain Thomson’ interpretations through his two books - *Heidegger on Ontotheology: Technology and the Politics of Education* (2005) and *Heidegger, Art and Postmodernity* (2011).

²⁸ Multiculturalism, globalisation and glocalisation are beyond this inquiry. Although cross-penetrations of most cultures are almost indubitable (as Jerneck notes – “[w]hile modernity is rooted in Western thinking as one prime model, globalization embraces multiple world views [2014, p. 20]), I assume that late-modern technological ontotheology is increasingly captivating or at least encroaching the planet (along with Thomson, 2005; 2011). I further prefer referring to ‘late modern societies’ – those that are particularly / increasingly accustomed to revealing through *enframing*.

²⁹ Ontotheology is understood in Heideggerian, not and not Kantian sense, see Thomson (2005 p. 7-11) for terminological insights discussing which is not necessary here.

³⁰ Intrinsic meanings of nature in late modern societies’ are recognized as ones that matter if they are already enframed, epistemologically grasped by science and/or representationally acknowledged through human politics, language, culture (see Smith 2009; Youatt, 2014; Collard; Dempsey & Sundberg, 2015)

Power is a trait of being, into which human is almost inescapably implicated as it seduces to exploring beings in their ‘machinability’ (“effectiveness and efficiency”, “producibility, productivity and reproducibility” [de Beistegui, 2007, p. 93]). As de Beistegui notes (2007, p. 93): “The Last Man, or the Man of the end of the first beginning” ... “is the being who lives under the constraints and demands of total power. He is the mechanized, technologized man, or the being ‘who is prepared to embark on the absolute domination of the globe’ [Heidegger, 1982, p. 9]”. However, in the plexus of its narratives and critiques, their opening ‘*element of indecision*’³¹ (Dibley, 2012), Anthropocene is much more indeterminate than Heidegger’s pessimistic note might seem to suggest (Heidegger, here along with Kuhn, would have probably seen Anthropocene as something of a “gestalt switch” (Thomson, 2011, p. 66); a so far greatest³² disclosure of being as power (but closing to the truth of being) through proclamation of ‘humanity’ as the source and giver of all meaning to the life on Earth³³ is yet an unconcealment – of an abyss will-to-will has led us into, of life’s fragility, its interdependence and our potential extinction (which some so readily envision). Anthropocene states an ultimate crisis and potential end of the late modern ontotheology. If we understand it as the pinnacle of enframing that has disclosed its critical inconsistencies, how do we deal with it? Can ontotheology come to its end without crushing us all along?

Following Thomson (2011), I consider the most promising way to overcome enframing (and pass beyond the Anthropocene) to not aim at its overcoming (which would get caught into its logics), but to live beyond will-to-will and “transcend it from within” (p. 56). By resisting turning itself into an ‘object of knowledge’ – “for such is its force and shock that it dismantles the very platforms from which we apprehend reality” (Clark, 2014, p. 21-22) Anthropocene (almost paradoxically) may mark a transformation of intelligibility that allows us to question power in its blind machinability and enframing in its hiding of violence and forgetfulness of being, a critical encouragement for the late modern societies to (re)learn appreciating life in its “wealth of openness with which the human world may have nothing to compare”^{34,35} (Heidegger, 1995, p. 225) and to find ways beyond will-to-

³¹ “[I]s this the epoch of the apotheosis, or of the erasure, of the human as the master and end of nature?” (Szerszynski, 2010, p. 16)

³² Neither have we conquered the Universe, nor ‘overcome’ mortality, so far. See Bishop (2010) on interpretation of transhumanism as ontotheology.

³³ Prometheans attempt to sustain infinite enflaming – rejecting empirical boundaries, but caught in it through proclaiming humanity the god-species existing for its own endless betterment and stewardship of all the other life; Aidoseans meanwhile aspire not to let this obstacle shine in its ultimate self-erasure and posit the second inescapability of inauguration into the ‘happy enframers’ tribe (as Iain Thomson, 2005, would call them –see p. 57 n. 19) – optimizing conditions for the planets infinite functioning according to ‘human’ aspirations.

³⁴ I do not get into the discussions on controversies and multiple interpretations of Heidegger when these are not relevant or feasible here. One should however note for example the different uses of some terms in these discussions, e.g. posthumanist authors like Donna Haraway prefer to develop their own understanding of

will and the politics of power³⁶ (de Beistegui, 2007), if we want to live on meaningfully for some more years to come^{37,38}. In fact, Anthropocene signifies the end of its own illusion; it unconceals the world that, borrowing from Claire Colebrook has always been “post-Anthropocene” (2014b).

There are two ways that I suggest may allow SS to undo itself from the Anthropocene, when its rhetoric seems to become inescapable, yet often inverse to what it possibly reveals. The first way lies in unsettling and reconfiguring the late modern ways of relating with life through posthumanist perspectives. The second – in (re)learning to experience the openness of life and appreciate its meaningfulness beyond our recognition through the help of arts and art-science collaborations (here I can only cover the art-science aspect). While both trajectories might be helpful for the compelling enriching of SS (and so they already do to some extent), cross-pollination may be as promising as problematic. I hope the next chapter to provide interesting insights on some of the emerging relationships and suggest the ways they may fruitfully unfold (not necessarily reconcile). These two trajectories may help us envision and enliven possibilities for SS that contributes to life beyond the Anthropocene.

‘open’ as “getting it” in contrast to, what she calls Heidegger’s possibility of “profound boredom” (see Haraway, 2008, p. 367-368, n. 28).

³⁵ Clark puts this in a bit different way by his interpretation of the Anthropocene (based on Blanchot) – as an ultimate disaster. This supports my line of thought: “as the disaster overwhelms our taken-for-granted senses and sensibilities, it also challenges us to try and begin sensing, thinking, acting in new ways. It ends the world, and begins it turning anew” (2014, p. 21-22).

³⁶ de Beistegui (2007, p. 88) claims that Heidegger’s political contributions can be “extracted only from a position that is itself essentially non-political”, since what we currently perceive as politics is already a politics of power, a “total politicization of life”.

³⁷ According to Iain Thomson both modern *subjectivism* and late modern *enframing* can be understood as “symptoms of Western humanity’s continuing inability to accept our defining existential finitude” (2011, p. 75). Thanatosian perspectives attempt to prepare us for the acceptance of this finitude, tirelessly over and over collapsing ontotheology.

³⁸ Charitesians (and sometimes Thanatosians) may be seen as post-Anthropocene narratives, yet, I will further talk much less about narratives, and more about particular posthumanist concepts relevant for this endeavour.

Part II. Beyond the Anthropocene: Posthumanist perspectives for Sustainability Science and Politics

2.1 Posthumanist but not posthumanism, posthumanist yet not posthuman

The diversity of posthumanist scholarship over recent decades has been truly amazing (e.g. see Ferrando, 2013; Callus, Herbrechter & Rossini, 2014; Roelvink & Zolkos, 2014). This inquiry is limited to the concepts I find most relevant to SS for trajectories beyond the Anthropocene. After a brief introduction to posthumanist studies, I explore Agential Realist ethico-onto-epistemology (Barad, 2007), multispecies (Hartigan, 2014; Broglio, 2013; Haraway, 2008), transcorporeality (Neimanis & Walker, 2014), posthumanist affect (Roelvink & Zolkos, 2014) and posthumanist ecological community (Smith, 2013) in relations to the concept of Anthropocene. I suggest that posthumanist apparatus and its conceptualisations of ecological conviviality may support more open, sensitive and responsive ways of worldly relations through SS than if it embraces paths of governing the Anthropocene. More precisely, building on posthumanist perspectives and with the help of Heidegger's philosophy I seek for ways of thinking for SS that make thinking through the Anthropocene impossible, yet which are also aware of and work as otherwise to it³⁹.

2.1.1 Posthumanist studies: introduction

A relatively young child of science and technology studies, post-structuralism, phenomenology, feminist, postcolonial, critical, queer and critical race theories, a nomadic friend of new materialisms, cybernetics, biosemiotics, critical animal studies and environmental humanities in general, current posthumanist scholarship⁴⁰ may be "uniquely equipped to help rethinking our 'mode of humanity'"⁴¹ (Roelvink & Zonkos, 2014, p.1), letting us painfully stumble into the poverty of enframing, and expand sensitivity, responsiveness and respect to the multiplicity of realities life entails. I distinguish

³⁹ Ontotheology of enframing remains my key reference and I will continuously come back to thinking through it. The thesis further intertwines three languages – posthumanist, Heideggerian and of SS, not without any trouble, yet aspiring to avoid irresolvable clashes.

⁴⁰ As Mick Smith notes: "although not posthumanism, in the sense of a single unified over-arching theoretical and/or ideological perspective to rival and replace humanism" (2013, p. 26 n. 19). Also *posthumanist* and not *posthuman*: where latter "applies to a broad field of studies, including advanced robotics, nanotechnology and bioethics" and former mainly "to a shift in the humanistic paradigm and its anthropocentric Weltanschauung" (Ferrando, 2012, p. 10). Finally, Donna Haraway some years ago said: "I am not a posthumanist; I am who I become with companion species, who and which make a mess out of categories in the making of kin and kind" (2008, p. 19). I'm also not quite satisfied with posthumanities; it's not all about -humanities. Still it is used in keywords as most common reference. Throughout the work I usually refer to posthumanist studies / perspectives because no better word has come around so far, and even though *posthumanism* is used by some author's (e.g. Barad, 2007) I mention further.

⁴¹ ... "no specific type of human can symbolically represent humanity as a whole" (Ferrando, 2012, p. 12).

posthumanist perspectives from transhumanism and antihumanism, which are sometimes considered under common posthumanist umbrella⁴². Dealing with the Anthropocene, posthumanist ideas may work not only as “inventor-discloser” and “deconstructor-critic” of geoscience’ and other megalomaniac claims through ‘engaged analysis’ (Castree, 2014)⁴³, but also alter our basic ways of relating with life.

In this thesis posthumanist concerns are understood as a “set of questions confronting us, and way of dealing with those questions, when we can no longer rely on “the human” as an autonomous, rational being who provides an Archimedean point for knowing about the world” (Pollock, 2011, p. 208) and as “a refusal to take the distinction between ‘human’ and ‘nonhuman’ for granted, and to found analysis on this presumably fixed and inherent set of categories” (Barad 2007, p. 32). While, posthumanist scholars diverge in ways too complex to describe here (concerns, language, assumptions etc.) their intertwined and often different views may contribute to fresh and enchanting sustainability imaginaries (Alaimo, 2012b). Posthumanist perspectives can be described as post-centric and post-exclusivist, not aiming to replace human primacy with any other and aspiring for “reconciliation of existence in its broadest significations” (Ferrando, 2013, p. 30). Posthumanist apparatus “foregrounds entanglement over radical exteriority; mutuality over causality; and emergent responsivity over certainty of ‘right response’” (Neimanis, 2014, p. 22). The post-centralizing aspiration recognizes multiple interests and viewpoints, treating them as nomadic and multi-layered, while dismissing “the centrality of the centre in its singular form, both in its hegemonic as in its resistant modes” (Ferrando, 2013, p. 30; and esp. Ferrando, 2012, p. 13-16). Posthumanist scholars referred to here, unlike antihumanist folk do not dismiss humans, but emphasize and explore their relationships as always beyond merely human. In a post-hierarchical, post-dualistic approach they aspire to depart with awareness of and appreciation for the relational becoming with the world in a responsible, sensitive and respectful manner (Barad, 2007). I further explore posthumanist perspectives relevant for nourishing SS and politics that can contribute to life beyond the Anthropocene, mainly those of Karen Barad, Mick Smith, Donna Haraway and Astrida Neimanis among others⁴⁴.

⁴² For concise exploration of relationships among posthumanism, transhumanism, antihumanism, metahumanism and new materialisms see Ferrando (2013). Article also introduces their genealogies, which I can’t afford exploring here.

⁴³ Suggested by Noel Castree for Environmental Humanities in general (2014), of which (critical) posthumanities can be seen as some of the wings (Åsberg, Neimanis, & Hedrén, 2015).

⁴⁴ This inquiry (inclined towards feminist wings) however can’t do justice to the diversity of posthumanist studies (e.g. philosophical, cultural and critical posthumanism – see Ferrando, 2013) and doesn’t nearly exhaust posthumanist trajectories, also including work by Bruno Latour, Andrew Pickering, Peter Sloterdijk, Katherine

2.1.2 Posthumanist apparatuses for undoing the Anthropocene

2.1.2.1 *Agential Realist ethico-onto-epistemology, intra-activity, phenomena*

The very relationship with the other is the relationship with the future.

EMMANUEL LEVINAS, *Alterity & Transcendence*

Karen Barad's attempt to provide ethical pathways for intelligibility within humanities and sciences can be seen as the otherwise of enframing⁴⁵. Drawing inspiration from and continuing the project of Niels Bohr's philosophy-physics Barad posits an unbreakable entanglement of matter and meaning and the inherent liveliness of all matter⁴⁶. Matter and meaning are impossible to disintegrate since they are "mutually articulated" (Barad, 2007, p 152). Matter is not a thing, it is the process of mattering, where "relata do not pre-exist relations" (p. 140), but emerge through intra-active phenomena (and agential cuts), which allow further unfoldings. Agency "is 'doing' or 'being' in its intra-activity" ... "the enactment of iterative changes to particular practices – interactive reconfigurings of topological manifolds of spacetime-matter relations" (p. 178). Meaning emerges through "ongoing performance of the world in its differential dance of intelligibility and unintelligibility" (Barad, 2007 p. 149). Phenomena do not simply "mark the epistemological inseparability of observer and observed, or the results of measurements; rather, phenomena are the ontological inseparability/entanglement of intra-acting 'agencies.' That is, phenomena are ontologically primitive relations- relations without pre-existing relata" (p. 139), made sense of through apparatuses – dynamic and open-ended worldly reconfigurings constituted through material-discursive practices, which "produce differences that matter" (p. 146). Within intra-active posthumanist phenomena agencies and ethics are possible to explore and consider before / beyond the conventional species and subjectivist lines⁴⁷.

Hayles and many others. They are too diverse to make sense with in this short inquiry; some of their elaborations, e.g. Actor-Network theory are already making its way into SS (see Dwiartama & Rosin, 2014).

⁴⁵ Although Karen Barad herself rarely mentions Martin Heidegger, her ideas are very much a continuation to the trajectories of his thinking. I suggest the connections of their ideas which Barad doesn't articulate and would not necessarily or fully agree with. The most vivid difference between Heidegger and Barad is that latter grounds herself in physics, yet still drawing much from Heidegger indirectly through post-structuralism and science-and-technology studies.

⁴⁶ A trademark of new materialists: "electrical grids, earthworms, food and climate change are players in a kind of political life where they hold, at least, a power to disrupt human politics, if not to co-constitute new forms of collective life among humans and nonhumans" (Youatt, 2014, p. 208), this has been also referred to as simply material agency by Stacy Alaimo or its "'independent sense of humour'" by Donna Haraway (see Neimanis, 2014, p. 20 for more inventive acrobatics)

⁴⁷ While not treating (borrowing from Clark's [2014, p. 26] complaint) "natural and social agency as sliding points on a linear scale, analogous to a tug of war in which one side gains as the other loses", which he admits as still common in social science and humanities – "after all the interrogations of the nature-culture binary of

In Agential Realism, the ethico-onto-epistemology that has just been briefly introduced, intelligibility escapes the logic of *subjectivism* and *enframing*, being understood as an “ontological performance of the world in its ongoing articulation” and a “feature of the world in its differential becoming”⁴⁸ (Barad, p. 149). Agential Realism counters objectification and externalisation of the world by explicating yet de-framing the mechanism by which ontotheologies have worked, releasing science into responsibilities where violence becomes much harder to keep unnoticed. Culture and language are not presumed to provide primary criteria for intelligibility, responsibility and imagination and thus, one may go as far as claim that from Agential Realist perspective Anthropocene as such becomes an ethico-ontological impossibility⁴⁹. Comprehending this impossibility in greater depth is possible with two other concepts – multispecies and transcorporeality.

2.1.2.2 *Multispecies and transcorporeality*

Particularly enthusiastic are posthumanist authors at challenging anthropological machine⁵⁰, which is also an extension of attempts to end ontotheology (Dickinson, 2011). While most of the international politics takes human as a primary point of reference, who and what count as human-enough is already political⁵¹. With a different starting point, posthumanists consider human as already always a transcorporeal (“the substance of the human is ultimately inseparable from ‘the environment’” [Alaimo, 2010, p. 2 in Neimanis, 2014, p. 18]) multispecies “comprised of masses of nonhumans— internal swarms of bacteria, viruses, and fungi vastly outnumber our human cell by a ratio of about 9 to 1” (Hartigan, 2014). What we are used to see as individual human is an “utterly entangled in

recent decades” . Thinking through Haraway’s naturecultures doesn’t aim to collapse the categories, but supports appreciating entanglements and helps to “multiply attention to differences at all levels” (Smith, 2013, p. 27).

⁴⁸ Working beyond narrow sensibilities of anthropocentrism; more questionably whether beyond anthropomorphism and appropriation.

⁴⁹ Which however: 1) doesn’t disregard changing ecologies, partial awareness of which contributes to the Anthropocene argumentation; 2) doesn’t disenchant posthumanist authors from using concept in conceptualising research programs and naming conferences; e.g. consider the Anthropocene feminism held in 2014, or Åsberg, Neimanis & Hedrén (2015). In all these for and in the Anthropocene, rarely one comes along the studies titled *after* (Johnson et al, 2014) or *post-Anthropocene* (Colebrook, 2014b); 3) doesn’t make the proclamation of the Anthropocene impossible in first place, since intra-activity (in our case – technologies of enframing) may create practices of mattering that are deeply entangled with the world in particular ways and simultaneously (often elusively) cut in others.

⁵⁰ In most simple interpretation: “the asking and answering of questions such as what is human and what is animal is precisely what generates the idea of the human (or ‘man’ for Agamben)” (Youatt, 2014, p. 214).

⁵¹ “In the ongoing politics of indefinite detention, the killing of presumed terrorists by drones and the discursive machines behind liberal forms of war on behalf of humanity, the boundary of who counts as human, and who has political standing, shifts. At the same time, nonhuman life is increasingly being figured as a political subject in international life. Ranging from the new constitutional rights for nature in Ecuador to the growing disagreements over animal rights and plant dignity, to the more subtle biopolitics of triage for endangered species, some nonhuman life is figured in ways that seem to grant it more political standing than some humans” (Youatt, 2014, p. 208).

copious folds of nonhumans, without which we would not exist” (Hartigan, 2014) – “to be one at all, you need to be a many, and it’s not a metaphor” (Haraway, 2014)⁵². Thinking through Haraway’s naturecultures doesn’t aim to collapse the categories, but supports appreciating entanglements and helps to “multiply attention to differences at all levels” (Smith, 2013, p. 27).

While multispecies turns attention to mutual unfoldings of life, transcorporeality traces the actual material flows “across, through and between bodies of all kinds, and the effects engendered by such transits” – “mother’s milk to a hungry infant, pharmaceutically laced urine to a plumbing system, tears of grief, or elation, to a growing garden” ... “Cloud becomes rain becomes puddle becomes frog becomes bird becomes human becomes river ... to become all over again” ... “falling rain can become a flash flood in a matter of minutes” (Neimanis, 2014, p. 18). Transcorporeality and multispecies do not erase the body, but make an emphasis on how those lively flows change us beyond intentionality or recognition, leaving memories, scars and traces ‘I’ would be never aware of. Every endeavour, however human-driven we would like it to conceive is complexly constituted through more-than-human.

Neimanis and Walker (2014) suggest an imaginary of relationships with climate as *weathering* – “a feminist ethos of responsivity toward climatic phenomena” (p. 558), a possibility for becoming otherwise than two dominant climate change narratives of “controlling the future” or “saving the past” (p. 558) that are amazingly effective in shutting down real responsivity. Employing the notion of *‘thick time’* – a “nonchronological durationality” (p. 561)⁵³ foregrounded by “a transcorporeal stretching between present, future, and past” (p. 558) they suggest to reimagine human bodies “as archives of climate”, also “making future climates possible” that are neither “masters of the climate” nor simply “spatially ‘in’ it”, but ‘weather bodies’ intensely “thick with climatic intra-actions”(p. 558). In this imaginary it is not some wild and fierce beast of climate threatening our existence nor we *are* the makers of the weather, but it us *weathering* through and along the climate, becoming something different – something more of the new climate, which is no longer *out*, but *has come home* through and into ecological spacetime of our (always more than and not only ours) viscosly

⁵² Based on her elaboration of ‘multispecies becoming with’ Haraway (2014) suggests that the concept of Chthulucene, much more realistically than Anthropocene or Capitalocene apposing us to the complexity of entangled becomings that make our increasingly fragile coexistence possible. It is really not easy to understand what she means by the Chthulucene, better look yourself.

⁵³ Not to reject linear, spatialized time on which climate science and negotiations rest, but draw “urgent attention to the very human-bodied power politics at play in climate change” (Neimanis & Walker, 2014, p. 570), to problematize and counter it.

porous⁵⁴ transcorporeal bodies⁵⁵. Neimanis and Walker hope that these formulations can open and inspire relevant opportunities for ethico-political engagements: “a politics of possibility and ethics of responsibility” (p. 561)⁵⁶. The aspiration for attunement that cuts across these imaginaries brings us to the notion of affect.

2.1.2.3 *Posthuman(ist) affects*

While some cognitive and semiotic intra-actions may be critical for coexistence and making sense of the world, they constitute only a narrow range of possibilities for the unfolding phenomena. Anthropocene is based on the assumption that cognition already grasped reality and defined the wholeness of *what is* and *what matters* on this planet and that specific semiotic apparatus (language, science) is sufficient means to explicate the essential aspects of this wholeness. Positioning of the Anthropocene is made possible through particular instruments mainly dealing with aggregated geo-bio-physical parameters. Late modern technological and science apparatuses used for articulating the Anthropocene are particularly good for revealing changes in matters that happen not without their participation. They are also very good in making these changes temporarily invisible through their participation – by focusing on the fragments that have been considered relevant within the apparatus and becoming less sensitive to others (Irwin, 2010). Some of these presumably hidden aspects can be made better aware of (not exclusively though) through the notion of posthumanist affect⁵⁷, gathering increasing attention since the ‘affective turn’ in humanities and social theory at the break of millennia. Affect, is widely understood as “force or forces of encounter” that involve “sensual and somatic experiences of feeling, touching and smelling and so on, and that increase (or decrease) a subject's capacity to act, move and think” (Roelvink & Zolkos, 2014, p. 2) and are “independent of signification and meaning” (Vermeulen, 2014, p. 122). While emotions are aspects of semiotic apparatus that “function as defensive moves that reterritorialise these unregimented forces onto a human subject” (Vermeulen, 2014, p. 122), affect is “a bringing to full expression a

⁵⁴ In Nancy Tuana’s terminology – “neither fluid nor solid”, yet resistant to changing form (in Neimanis & Walker, 2014, p. 564).

⁵⁵ Neimanis and Walker (2014, p. 561) make particularly interesting points on how academics are bound to elusively “keeping the weather out”, ‘protected’ from living the weathering imaginary authors propose.

⁵⁶ Another worthy example is Neimanis (2014) on water imaginaries. Considering imagination as critical for nurturing different kinds of intra-activity we might need “multiple imaginaries to attune ourselves to the multivalent and complex ways in which we relate to water, and in which we are also bodies of water in a watery world” (Neimanis, 2014, p. 22). In this respect consider Lisa Meaney’s (2013) summer experiments of collaborative engagements with water that changed her relationships with both water and design, e.g. reconsideration of water (from substance and fuel/resource to process in which she participates and emerges) changed understanding of herself as “part of an extended material-semiotic web” and transformed “the attitude with which she designs and the places within herself she designs from” (p. 6).

⁵⁷ While affect is often conceptualised in regards to posthuman or inhuman (e.g. in Vermeulen, 2014), I preferred to stay with *posthumanist*, not to overcomplicate it, but a deeper inquiry wouldn’t afford this.

prehumanity of the human. It is the limit-expression of what the human shares with everything it is not: a bringing out of its inclusion in matter” (Massumi, 2012, p. 128 in Vermeulen, 2014, p. 122). Here I however do not seek for the rearticulation of the subject (as it is often used for [see Roelvink & Zolkos, 2014, p. 2]), but more interested in affect as transpersonal-transcorporeal (within, between and through bodies) and non-cognitive (escaping immediate signification, codification and representation) (Buser, 2014), and thus the relational affective unfoldings of ecological phenomena we part (the closest notion could be *‘affective atmospheres’* [Anderson, 2009; Buser, 2014] or *‘affective habit ecologies’* [Dewsbury, 2012]⁵⁸), memories, traces and marks they produce.

Every scientific endeavour is always already involved into certain affective politics, so it is interesting what kinds of affective politics posthumanist scholarship could help in formulating. Technologies of enframing exempt participants from particular kinds of ethical responsivity by reducing everything to, in Heidegger’s words, *‘standing-reserve’* (1977) of geo-bio-politics. Engaging with them through affect allows problematizing and irritating those trajectories. Vermeulen articulates more-than-human sensibility (through affect) as “an emotive scenario that opens up unformed potentialities” (2014, p. 124). A longer quote makes sense here (Vermeulen, 2014):

By making available affective experiences that do not correspond to readily available emotional scenarios; the posthuman inaugurates a novel affective dynamic that escapes sensory and emotional codification. Crucially, the inability to place these affects in an emotional vocabulary produces its own feelings: ‘feelings of dissonance, of uneasiness, of being unsettled and not knowing precisely why. ‘a meta-feeling in which one feels confused about what one is feeling... the dysphoric affect of affective disorientation – of being lost on one’s own “cognitive map” of available affects’ (Ngai, quoted in Smith, 2011: 163, ellipsis in Smith). Importantly, this sense of emotive disorientation, this second-order feeling that is generated by the absence of emotion, need not only be a negative experience; it is an affect that can also be valorised as ‘something transformative’ and as a change ‘in physical sensation, in corporeal orientation’ that marks the site for the emergence of the new (163)’ (p. 124-125).

Michael Buser understands affective atmospheres as “the range of collective affects produced through dynamic, relational place encounters – to consider the imperceptible and the affective sensations situated in place experiences and relations” (Buser, 2014) that can be used as practical framework for urban planning and research to think place “without image” (Deleuze, 1994, p. 167 in

⁵⁸ However relevant are Dewsbury’s ideas, they draw from multiple sources beyond this inquiry and dealing with which would introduce more new terms, therefore I leave out this thread.

Buser, 2014, p. 230). He suggests that affective atmospheres can be used to go past “overreliance on social constructivism and representation” and “towards the incorporation of non-cognitive, transpersonal and more-than-human accounts” (p. 240), also exploring “how affective states contribute to the notions of community cohesion, belonging and inclusion/exclusion” (p. 240), pointing the importance for researcher to consider ‘*becoming minor*’ – move from “pre-existing idea of what exists” (p. 240) and opening to what emerges. Shortly, affective atmospheres can help researchers become more attentive and sensitive to the manifold experiences of the place; while posthumanist affective politics is able to work beneath narrow constructs of politics and participation. Such affective politics is practiced by Miriam Simun who carefully explains and shows how to make cheese from human milk to “rework dominant forms of biopower”, “facilitate indigestion” and “denature relations we take for granted” (2014, p. 135).

While affect could be used as a novel framework for analysis, a “lens to explore the nitty gritty of everyday life” (Roelvink & Zolkos, 2014, p.2) to reveal the dungeons of ‘affective prosumer capitalism’⁵⁹, or be linked to currently quite differently situated attempts of Milkoreit (2014) for cognitive-affective analyses of climate change negotiations; its much greater value lies in allowing to appreciate the vastness of intra-activities that exceed megalomaniac attempts of governing reality and broadening possibilities for responsible engagements.

2.2.2.4 Posthumanist ecological community, multispecies conviviality and the politics of otherwise-than-power

As I hope to have showed, Anthropocene, as either concept or normative scenario is based on incredibly narrow, arrogant, ignorant and idiosyncratic relationships with the world. In this context it is possible to see why Heidegger treats Nietzsche’s recommendation to “infuse the world with meaning” as a “worst form of nihilism” (Braver, 2011; see Thomson, 2011 p. 52, 75, 211). Heidegger also reverses Kant’s argument of finding meaning – “it is only that which does not entirely come from us and which cannot be fully controlled that can give meaning to our lives” (Braver, 2011, see Thomson, 2011 p. 22, 54, 60, 104), which remains inaccessible to ‘*happy enframers*’ “who believe they have monopoly over truth” (Thomson, 2011, p. 215).

Since this kind of intra-activity is increasingly poor in responsible relationality, the feeling of meaninglessness leaves us in front of nothing, but death⁶⁰. In more broad sense, this leads us into the

⁵⁹ Such inquiry could be constructed through Colebrook’s (2011) ‘consumption of affect’ and Ritzer’s (2015) ‘prosumer capitalism’.

⁶⁰ Nothing is not “nothing at all”, but the subtle way “being continues to make itself felt in our technological age” (Thomson, 2011, p. 211); our contemporary openness to being is our closeness to extinction.

question of extinction, which can be understood as senseless⁶¹ in at least three ways co-constitutively produced by enframing – its urge is blind to inexhaustible meanings life upholds; the way of revealing it promotes through late modern technology, science etc. greatly conceals and ravages opportunities to ethically relate with what is happening; meanwhile, our own lives become increasingly strange and poor in meaning because of multiple reconfigured entanglements, yet the loss of meaning is hard to comprehend because we were not aware of them in first place, the intelligibility through enframing being made the only condition of future possibility for unfolding. Mick Smith's elaboration of senseless extinction allows further explicating the ecological reconfiguring of the late modern ontotheology. Smith sees extinction as loss within at least four materially inseparable aspects of ecological/community relations: "*material manifestation (appearances)*" – touching, smelling, tasting, surfaces, depth and manifold of other ways to sense we are barely aware of; "*material involvement (effects)*" – their unique contribution to diversity of creative matterings and realizations, "*semiotic resonance (meanings)*" – loses in "*ways of becoming meaningful*" to others – the stagnation of biosemiosis in the broadest sense along with unique "*phenomenological experiences*" – "The loss of a species of openness on the world" (2013, p. 21-22): "These aspects of community can only make sense [...] in conjunction with each other and in terms of the creation and sharing of a world between beings. [...] This creative sharing [...] is how an ecological community is (relationally) constituted, and a loss to this world alters the constitution of this community irrevocably" (Smith, 2014, p. 23). Posthumanist ecological community "does not exempt humans from ecological effects or except ecology from ethical and political concerns" (p. 22)⁶².

Building on most recent posthumanist political thought^{63,64}, Rafi Youatt (2014) suggests rethinking international relations as interspecies relations – an affirmative politics which would continuously

⁶¹ See Colebrook (2014b) for somewhat different formulation of senseless extinction. Her emphases on its three-fold nature are: the sixth extinction, "extinction of other species by humans" and self-extinction of humans (p. 10).

⁶² Worth a note: "the meanings and values created within and by such communities evolve; they are constantly re-interpreted, re-evaluated, re-formulated, re-produced, and re-enacted" (Smith, 2013, 29). While we witness some part of ecological unfoldings, many of them might happen in phenomenal worlds beyond our comprehension.

⁶³ This inquiry engages only with the posthumanist writings I considered relevant to the trajectories of this work, which doesn't exhaust posthumanist perspectives on international politics, e.g. see Cudworth & Hobden (2011).

⁶⁴ Among prominent recent works is Mick Smith's *Against Ecological Sovereignty: Ethics, Biopolitics, and Saving the Natural World* (2011), a very rewarding read. Smith argues that politics of ecological sovereignty is ultimately anti-ecological, elaborating radical ecological ethics and politics. Also worth attention is *Minimal Ethics for the Anthropocene* by Johanna Zylińska (2014).

challenge the logics of anthropological machine (esp. the killability⁶⁵ and manageability of all / particular life for some increasingly ephemeral good), working beyond representationalism, the language of objection and thick social meanings⁶⁶, a politics that “does not operate along a nature–culture axis or human–animal binary” (p. 218), but would consider the ecological diversity of naturecultures and politics we part with other species, including “semiotic markers of bodily gesture, visual and pheromonal signals, and complex forms of vocalisations” etc. (p. 220). Youatt’s general claim is that “the more we are able to think and act on the assumption that ‘political animals’ refers to multiple species with multiple capacities, the less likely we are to be able to depoliticise other humans in the extreme forms that we do by rendering them as animals or as natural” (p. 214).

Inviting life beyond the Anthropocene may critically need challenging anthropocentrism and the logics of anthropological machine; however I am still prone to see the ontotheology of enframing and its underlying principle of will-to-will, so vivid in contemporary geo-bio-politics as more critical ground of the ecologically destructive trajectories we part, of which some form of centrism or machination are only an element. To responsibly involve (or not involve) with the worlds that are happening beyond the Anthropocene, we might need to work past power-based politics of will-to-will, into something that I, along with Miguel de Beistegui (2007)⁶⁷ suggestion to think from as a *politics of otherwise-than-power*⁶⁸. Such politics (not exclusively though) could be imagined, enlivened and nurtured through multispecies⁶⁹ conviviality⁷⁰.

⁶⁵ In contrast to an act of killing an animal (Youatt, 2014, p. 213)

⁶⁶ See p. 215-216 for Youatt’s fruitful discussions with Derrida, Agamben, Wolfe, Eckersley and Dryzek which I can’t afford exploring here as well as his inquiries into current interspecies politics constructed through human legislative efforts. Ultimately Youatt argues that “incorporating nonhuman life into existing forms of international politics by requiring speech on their behalf is an end-run around political process, and, in some ways, in fact reproduces a number of the central tenets of anthropocentrism” (p. 222); which is in large part what (he thinks) constitutes ‘rights of nature’ in Ecuador or Bolivia or ‘legal personhood’ of Whanganui river ecosystem in New Zealand.

⁶⁷ Also see Clammer (2005) for attempt to step beyond social theory based on power through Asian conceptions of being.

⁶⁸ “The essential unfolding of Power as machination negates the possibility of the truth of beings” (de Beistegui, 2007, p. 94).

⁶⁹ Staying with the Agential Realism, one could suggest a notion of intra-species instead of Youatt’s interspecies, which would however be too confusing because of other established meaning of intraspecies; therefore I suggest multispecies (also found in recent work by Haraway (2014), as a promising way to imagine ecological conviviality of *becoming with* (Haraway, 2008) in situated, inclusive and responsive manner. Dipesh Chakrabarty (2009, p. 213) speaks of ‘species thinking’ in the context of Anthropocene with some different emphases and in regards to history of capital.

⁷⁰ Why the notion of conviviality is well suited for this elaboration would be another discussion, beyond this inquiry. See Metzger (2014) for some ongoing explorations of how cities can be better nurtured for multispecies conviviality in senses very similar to which I articulated (as well as to Charitesian imaginaries).

Multispecies conviviality offers some practical advantages. It has so far received very limited attention as a political concept within SS communities but doesn't sound too radical or idiosyncratic, also serving as an invitation into posthumanist thought. It can resist most simplifying missuses like grand ideas of governance, sustainability or the Anthropocene. While the concept of conviviality has its own interesting history of deepening "concern over modes of human togetherness" (Nowicka & Vertovec, 2014) it is also very consonant and responsive to notions like politics of friendship and politics of senses (Siisiäinen, 2013) – which bring us much closer to the life we share with diverse others. Meanwhile 'conviviality' is "not 'political', in the same sense as cosmopolitanism" (or multiculturalism) (Nowicka & Vertovec, 2014, p. 346), as well as reminds that "we may design spaces and expect particular effects, but we cannot control how togetherness happens" (p. 348). Multispecies conviviality gives important swing to the question of individual and species ecological sovereignty – it is not some external biodiversity disappearing, but mostly also us being part of the reconfigured intra-activity; therefore continuously reminding the mutually constitutive *becoming with* and that its ethics, this Levinasian '*first philosophy*', "cannot be captured and contained under preconceived formulae, categories, or overarching principles" (Smith, 2011, xviii). So finally, it works as otherwise to *Anthropocene stewardship* and more importantly (hopefully) – otherwise to enframing, inviting into worlds beyond the Anthropocene, which have nevertheless always been there.

2.2.2.5 Sustainability/Posthumanist Art-Science: towards a Meaningful Postmodernity?

As I have been looking at the Anthropocene through the lens of *enframing*, it is now time to consider how Heidegger himself envisioned a possibility of dealing with it beyond bleak articulations of politics of '*otherwise-than power*'. Staying with Iain Thomson's reading (2011), it is in the Heidegger's philosophy of art, where he finds hope for the late modern societies to move out of the nihilistic technological ontotheology – opening possibilities to transcend it '*from within*' and initiate '*another historical beginning*' [p. 66-67]), an opportunity for a genuinely '*Meaningful Postmodernity*'⁷¹. According to Heidegger "our tendency to treat art as aesthetics is just as significant for and revealing of our current historical self-understanding as are the increasing dominance of science and technology, the tendency to conceive of all meaningful human activity in terms of "culture", and the growing absence of any god or gods in our Western world" (Thomson, 2011, p. 52). The '*ascendance*' these five '*essential phenomena*' reveal the historical direction of late modern world (the pursuit for enframing), in the context of art reproduced by aesthetics, which reduces art to "a producer of

⁷¹ Referring to an 'aspirational situation', rather than a 'historical era' (Cashell, 2014, p. 94), which we can so far only bleakly articulate. For Iain Thomson's understanding of Meaningful Postmodernity see (2011, p. 121-127).

subjective experiences, mere delivery systems for stimulants and suppressants” (Braver, 2011) and therefore hinges its transformative potential. Neither should we consider Heidegger’s philosophy of art as anti-aesthetic, since this would stay “trapped in the logics of what it opposes” (Thomson, 2011, p. 41).

For Heidegger, great works of art “ground history” and allow “truth to spring forth” (2001, p. 77) animating “the strife between world and earth” (Woods, 2014, p. 120). *Truth* is the disclosure of *what is* and *what matters*. Through conversations with works of art (most famously of the *Greek Temple* and Van Gogh’s *Pair of Shoes*) Heidegger explores how they “work in the background of our historical worlds, in other words, by partially embodying and so selectively reinforcing community’s historical sense of *what is* and *what matters*” (Thomson, 2011, p. 43), “art is the becoming and happening of truth” (Heidegger, 2001, p. 71). After the Anthropocene has disenchanting us from itself, when late modern societies may no longer sustain, borrowing from Braver (2011), the “fantasy of complete control and autonomy”, art can teach us relearn appreciating the vastness of, in Agamben’s words “outside in an exteriority more external than any open, and inside in an intimacy more internal than any closedness” (2004, p. 91). What posthumanist scholars aspire to elaborate may be opened to through artistic modes of intra-action, and which late-modern societies have learned to veil through, borrowing from Weil writing about Kafka’s critique of assimilation, giving the “voice only by destroying the self that would speak” (Broglio, 2013). By-passing comfort zones reinforced by late modern science, technology and aesthetics (an increasingly surreal safety) art can “make claims upon us” (Braver, 2011)⁷² – revealing what is happening and helping better envision and prepare for the worlds to come. As de Beistegui notices: “the value of poetry, literature and art rests in its sacrificial potential, that is, in its ability to transform our relation to the world by turning to the earth as its uneconomical excess” (2007, p. 101). Could we imagine SS and posthumanist approaches collaborating with arts to open for a Meaningful Postmodernity Thomson envisioned through his reading of Heidegger?

It might actually be so, with the ongoing interest in overcoming disciplinary constraints within SS. The art-science relationships hold a long history of conversations – among all kinds of crowd (e.g. Snow, 1965; McNiff, 2013). Many times throughout history art and science have intertwined while recent decades have witnessed an increasing or renewed hybridization of these realms. SS is also beginning to discover opportunities of such collaborations. Art is increasingly understood as a contribution to

⁷² Which as Braver (2011) notices “have taken on some of the sheen of the sacred leftover in our God-fled world, which explains the horror we feel at acts of violence perpetrated on artworks”; the truth of this has been fleeing after famous Benjamin’s essay.

the “quest for ‘culture of sustainability” (Heras & Tàbara, 2014, p. 381) with potentials to “yield outcomes that can be individually liberating and culturally enlightening” (Sullivan, 2010, p. 97), becoming much more open to multiple meanings, which is quite different from much of the science that demands “single or predefined code of interpretations” (Heras & Tàbara, p. 380). Practicing arts may improve our capacities for dealing with ecological realities in their complexity and uncertainty “deepening human understanding of human actions and capabilities”, intertwining and integrating “analytical intelligence, emotional intelligence and the intelligence of the body” (Heras & Tàbara, 2014, p. 381). It is when intuition and reason come together for “*intimate tango*”, greatest discoveries arise (Scheffer et al., 2015). Scheffer and colleagues suggest some interesting changes to science and education: emptying time (productive work could be considered not only as sitting by the computer or meeting with colleagues, but also be “dozing in the armchair”, “taking a stroll in the woods” (2015, p. 2-3); as well as taking occasional naps – thus “it might be a good idea to deliberately plan substantial unstructured time and breaks to create moments of reflection” [p. 3]), diversifying inputs to encourage different thought-styles and encouraging heterogeneous ‘wisdoms of crowds and artists’, esp. turning to art practices of “learning at the edge of chaos” (Kleiman, 2011 in Scheffer et al, 2015) – all these are highly appreciated by the emerging, transdisciplinary and undisciplined science of serendipity (Darbellay, Moody, Sedooka, & Steffen, 2014; Darbellay, 2015). It still gets more interesting when the Anthropocene steps into conversation. Involvement with arts and artists becomes essential for sustainability scientists, advocates and practitioners due to the unique promises for building cognitive skills necessary for decision-making in the Anthropocene, “currently woefully underdeveloped even in the brains of the brightest scientists and the most passionate global policy-makers” (Milkoreit, Galaz & Kaitlyn, 2014). Artistic engagements can facilitate necessary “cognitive regime shifts”– allowing us to better grasp the reality in its complexity, “imagine the unimaginable” and become better stewards of the new epoch (Milkoreit, Galaz & Kaitlyn, 2014). Applications of art as merely a tool for communicating and properly framing science, recently met with great enthusiasm and appreciation from SS communities (“arts should be harnessed to help extend the increasingly unpalatable and urgent messages of global climate change science to a lay audience worldwide” [Curtis, Reid & Ballard, 2012, p. 1, also see Vervoort et al, 2014]) hide in the shadows.

From the other side of the island, ‘art-science’ initiatives are increasingly applied for transdisciplinary collaborations and creation of “integrative narratives that include participation of people from diverse cultural contexts and policy arenas” (Heras & Tàbara, 2014, p. 380) and serve as a shared space for creating ‘common frameworks of meaning’ (Hudson, 2014, p. 220) and ‘living experiments’ (Perello, Murray-Rust, Nowak & Bishop, 2012; Born & Barry, 2010), allowing to “better explore the

emotions, beliefs and meanings behind the lived realities, processes and structures involved into them” (Heras & Tàbara, 2014, p. 380). Amongst recent contributions of art-science are shifts from ‘social’ as “human-centric concept” towards one that also includes more-than-human in pursuit for different modes of conviviality and ethico-political practices, thus assembling “new types of collectives that participate in the making of our socioecological futures” (Hawkins et al., 2015, p. 333), which include “the practice of not just living with difference but taking account of it in the co-fabrication of immanent, indeterminable, and speculative worlds and futures to come” (Hawkins et al., 2015, p. 334; also see Johnson et al., 2014). Art-science initiatives help to deeply explore and alter how humans are co-constituted with the worlds they part, with arts “suspending the ordinary coordinates of sensory experience” and helping in “making, imagining, contesting, and living in shared material and affective worlds” (Hawkins et al., 2015, p. 334), meanwhile transforming what we understand as art, science and public. Hawkins and colleagues explore how ‘gentle activism’ of Bird Yarns, an international knitting initiative happened not just as regular “making is connecting” (p. 335) of social bonds or heightened attention to diverse localizations of climate change, but led to deeper awareness of impacts on birds’ bodies, migration patterns, nutrition and human embeddedness into these processes, resulting in different imaginary of climate change – no more a threatening fact, but a lived reality. In words of Neimanis & Walker (2014), climate change *has come home*.

As this thesis was coming to its end, I came by David Wood’s essay ‘Can Only Art Save Us Now?’ (2014), linking Heidegger’s philosophy of art, ecological strangeness of our times and more-than-human concerns. Woods makes emphases on how art can help dehabituate our dwelling patterns and open to different ways of relating with the world, “softening resistance to changes” and helping to at least prepare and “begin to feel our way toward imagining and living otherwise” (p. 134) – which goes very much along the above mentioned considerations on the climate change coming home. One could also turn attention to ecotage or green comedy (Dryzek, 2012), ecopoetics as ‘practice of emergency’ (Ronda, 2013), or cinema being “the greatest resource for reviving our lost “belief in this world” (Ivakhiv, 2015) and the emerging Art and the Anthropocene discussions (Morton, 2012b), but sadly this is as much as I could afford exploring. With all the fervour, there still would be art that refutes attunement to art-science, academia or any practical purpose of here-and-now, art that distorts scientific knowledge in ways that make it hard to actually imagine some mutually constitutive collaboration, it is usually also the art that is most appreciated [Elkins, 2009]. Many of the above noted considerations on art-science, art historian James Elkins would likely call ‘*a drunken conversation*’ (p. 34), since “most interesting art has little to do with science” (p. 36), while “the science in art, especially in the past two centuries, is simplified, misunderstood, or otherwise modified, and after a point it becomes counterintuitive to think of it as science at all” ... when what is

being counted as scientific content is nothing more than remnants of scientific forms stripped of their content” (p. 39); or shortly, paraphrasing art historian Timothy James Clark, “science dines very poorly on the leavings of art. (He said it the other way around, but both are true)” (Elkins, 2009, p. 39)⁷³.

Based on this short inquiry, we can see that art and science are not expected to always work together – their aspirations and attunements with life may lie in different registers, beyond the comprehension of each other, which however shouldn’t discourage the manifold curious promises of the collaborations.

2.2.3 Staying careful with posthumanists, escaping the Anthropocene?

While posthumanist contributions to SS and politics may support more convivial trajectories, in some way they may also be an attempt to continue grasping the reality in *more*, a well-packaged distraction from real changes and responsibilities; inclusion of new realms into the happy enframer’s operations. This inquiry dealt mostly with ideas (hopefully) somewhat immune to mentioned concerns. Calls for appreciation of the entangled naturecultures, are not the same as calls for intruding late modern politics into every corner of the universe. Still, promises and dangers usually come together (Thomson, 2011). It might also be not easy to disentangle posthumanist scholarship and its noble attempts for greater responsivity from the seductiveness of the Anthropocene rhetoric. In fact, posthumanist scholars find it as highway for drawing attention to their ideas (e.g. see Åsberg, Neimanis, & Hedrén, 2015), it can be even said that they actually “have gained momentum with the rise of Anthropocene scholarship” (Hawkins et al., 2015, p. 333). Would emphases on after/post/beyond the Anthropocene be sufficient to go past the Anthropocene imaginaries or are they already caught into its multivariate logics self-reproduction by all means? Will it be possible anytime soon to think of common ecological trajectories without buying into in the Anthropocene industry, and inescapably – spending much time on going through its artfully created labyrinths?

2.2 Getting it together, (re)imagining Sustainability Science?

Among key concerns of SS are the futures it is able to envision and enact (Wiek & Iwaniec, 2014). While SS has focused a lot on different ways of improving the quality criteria and methodologies for envisioning “a desirable state of the future”, with qualitative and quantitative goals and targets (p. 497), much less consideration has been given to the basic ways sustainability scientists themselves relate to the world. Posthumanist ideas can help SS in this deeper rethinking of what the field is about. Through reconsidering some basic concepts – climate change as weathering, social-ecological

⁷³ See Elkins (2009) for a plentitude of examples on art-science conversations which I couldn’t afford here.

system as posthumanist ecological community, conviviality in terms of multispecies relationships etc. posthumanist contributions can help us better accommodate and learn to live in the increasingly strange world we are starting to discover anew. Crucially, posthumanist perspectives may help SS to nurture ethico-ontological pluralism within scientific practice, and help to avoid common mistakes of attempting to discover “the one true way reality works”, caricatures of postmodern hermeneutics where “anything goes” (Braver, 2011, Thomson, 2011, p. 24, 100, 102, 126)⁷⁴ and building from ontology (which Levinas [1969, p. 46] considered the “philosophy of power” [in Zylinska, 2014, p. 94]) without embracing its inescapable entanglement with ethics. While methodological pluralism has caused much debates not least because of unreconciled ethico-philosophical clashes, starting with realization of the entanglement between epistemology, ontology and ethics (Barad, 2007) may lead us not only into creation of complex transdisciplinary frameworks, shifting ‘*back-and-forth*’ between different epistemologies and making better decisions for non-human beings (Barret, 2013), but relocate energies from the large-scale aspirations and complex system analysis, to much more situated, attentive and long-term learning for convivialities that require new ways of seeing, hearing, sensing, exploring and involving, as well as open and experimental approaches. Imagining SS and politics through these lenses may therefore be a promising way for a relational attuning to the contemporary ecological changes, much deeper than proclamations of our god-like powers, negotiations of biological integrity based on counting vanishing lives (in species), instrumental formulations of resilience, or creating laws that sustain the logics of the anthropological machine.

Some, of these approaches may come from arts and art-science collaborations. It is not necessary to borrow Heidegger’s grand rhetoric to understand that art in the context of SS can help nourish our openness to the world and facilitate learning for multispecies conviviality, yet it is helpful to think through Heidegger for understanding both deeply transformational role art can play along the ways it can be appropriated into scientific and aesthetic comfort zones of improving science communication, emptying some time for scientists (that while are valuable on their own terms, according to Heidegger would obscure the true value of art), not talking about highly troubling hopes for “*cognitive regime shifts*” (Milkoreit, Galaz & Kaitlyn, 2014) that would improve our capacities to govern the world or the proliferation of the Anthropocene cinema with its hardly intelligible significations and unfoldings. Posthumanist ideas challenge and offer alternatives to both anthropocentrism and anthropological machine, on which SS often uncritically or straightforwardly rests and which are considered by posthumanist scholars among major drivers of ecologically

⁷⁴ I suggest this based on Thomson’s interpretation of Heidegger’s ontological pluralism (Thomson, 2011) and Barad’s (2007) elaboration of Agential Realism.

destructive politics (Youatt, 2014, Smith; 2011, 2013). What is more crucial, they allow exploring the greatest gift of the Anthropocene, which we unpacked with help from Heidegger's philosophy. While posthumanist perspectives might get us into different imaginaries within SS, it is when art-science and posthumanist apparatuses come together, their transformational potential becomes much more curious. What I therefore consider most promising about posthumanist ideas and art-science are their contributions to undoing the erroneous point of enframing, into which much of sustainability research and politics seem tightly implicated (Shaw & Nerlich, 2015; Irwin, 2010). Posthumanist art-science can be seen as practice of multispecies conviviality, an ecological ethico-politics of otherwise-than-power. Allowing artistic practice to sprout into its core SS may discover new opportunities its 'transformational mode' so much years for (Wiek et al, 2012) – not only generating new 'actionable knowledge', but working in ways that gradually shift attention of sustainability scientists towards diverse more-than-human ethics and shared worlds we part. It might also be that SS and posthumanist perspectives are not as compatible as I wished they were or they would even benefit most not from integrating research agendas, but coexisting in productive tensions. Still, both are so far increasingly entangled with the flourishing of the Anthropocene industry.

If this thesis could be longer, a third part would be dedicated to exploring current and potential contributions of posthumanist ideas, arts and art-science to post-Anthropocene SS – to find out their utmost practical feasibility. It is however possible to articulate some opportunities particularly in regards to the SS master's program the author has been engaged into for the last two years. While I consider fundamental remaking of LUMES neither possible nor feasible, the program might benefit from some of the suggestions. These include: opening space in the third semester for courses in Arts and Environmental Humanities (e.g. the *Visual Culture: Nature and Environment* taught for visual arts students at Lund University), which already engages entangled ecological, posthumanist and artistic problematques, enriching literature and methodologies of courses with posthumanist, arts and art-science perspectives (already to some, yet limited extent considered; could be especially fruitful for K2A course and master theses). SS education would do its best if could support transformational experiences that build on "multiple sources of expertise and wisdom" and use "multiple modes of learning for the development of different kinds of knowledge in different contexts and groups in a transformative and engaging way" (Heras & Tàbara, 2014, p. 380), which also demands challenging "outdated ontologies, assumptions and epistemologies of education" (p. 379) and "some of the cultural limits to our consciousness". It might thus be worth to explore art-science and posthumanist perspectives in relations with SS competencies (Wiek, Withycombe & Redman, 2011). Finally, recognition of the post-Anthropocene triggers us to reconsider the very definitions of science, art

and politics. Could we imagine artists as critical contributors for life beyond the Anthropocene? Could SS education help nourish them?

Instead of conclusions, uncharted trajectories

Recognition of the Anthropocene doesn't mark an entrance into (or discovery of) the presupposed epoch, but precisely and doubly the opposite – it signifies the coming end of the particular ways of revealing, comprehending and becoming with the world (foremost the aspiration for endless enframing) and is meanwhile a lively mechanism of bringing to collapse what it was supposed to mark the establishment (or revealing) of. The value of this thesis might thus be in one simple (re)articulation: proclamation of the Anthropocene marked the end of the Anthropocene illusion. The greatest gift of the Anthropocene is in facilitating ways of relating with the world beyond itself. Therefore, the rest of the thesis explores possibilities for post-Anthropocene SS and politics that can be brought to life with the help of posthumanist perspectives and art-science experiments.

Posthumanist apparatuses, while posing relevant questions and offering enchanting opportunities are far from being an angel-saviour and even angel as such. However helpful might be different philosophies of science and articulations of ethics and politics for life beyond the Anthropocene they would be insufficient and even futile without nurturing lived responsibilities. Opening to these through art-science may be a highly rewarding journey, and as far as I now – one of the most promising, possibly helping to cherish something of a Meaningful Postmodernity that Iain Thomson (2011) tried to envision. While it would be naïve to think that art-science will solve all our problems, it would also be naïve to underestimate multiple layers at which art may play beyond the scope of those I articulated, can articulate, as well how it already works beyond all the writing and all the science.

These suggestions only touch on the most basic aspects of possible changes (if not provide a new contribution to the status quo) and would require a much deeper inquiry or much less talking. Is there a better way out of *enframing* for this text if not to stop its own writing?

It would be necessary, in sum, to choose between art and death.

JACQUES DERRIDA, *Copy, Archive, Signature*

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