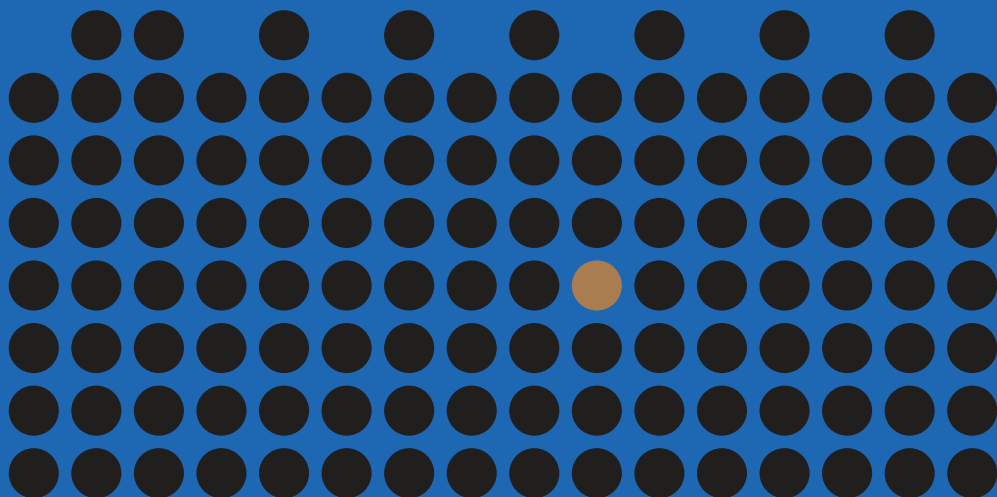


Technē Logos, Care and the (Neg) Anthropocene

The second annual
conference of the
European Culture
and Technology
Laboratory.

Noel Fitzpatrick
Connell Vaughan

● EUT + Academic Press



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Colophon

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Máiréad Ní Chróinín

Introduction to ECT Lab+ Proceedings 2022

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Preface

The European Culture and Technology Lab (ECT Lab+) is part of the European University of Technology (EUT+) which commenced in 2020 and is funded by the European Universities Initiative. The EUT+ brings together eight universities, Cyprus University of Technology, Darmstadt University of Applied Sciences, Riga Technical University, Technological University Dublin, Technical University of Sofia, Universidad Politécnica de Cartagena, Université de technologie de Troyes, Universitatea Tehnică din Cluj-Napoca in eight countries Bulgaria, Cyprus, France, Germany, Ireland, Latvia, Romania and Spain, and across eight languages: Bulgarian, English, French, German, Greek, Latvian, Romanian and Spanish. The ECT Lab+ was formally set up in Cluj-Napoca Romania in February 2020 as the first pan-European Research Institute to focus on questions of technology and society. The ECT Lab+ was formally established as a pan-European Research Institute (ERI) in February 2023. A ninth member, Università degli Studi di Cassino e del Lazio Meridionale (UNICAS), will officially join EUT+ on November 1st 2023. The ECT Lab+ poses questions about the relation between culture and technology, the emerging environments (or

milieux) of technology which are cultural, cosmological, technical, social, economic, and political. The emerging environment could be considered as a study of evolution, a history of technical organs; this we can term a general organology. The ECT Lab+ brings together researchers who are interested in the impacts of technology on society, these impacts can be both positive and negative; this we can term a pharmacology. Following on from the recent material turn in philosophy of technology, the ECT Lab+ conceives of technology as part and parcel of the process and practices of becoming human in the world. Hence the title of the ECT Lab+ reflects the positioning of technology within a culture, acknowledging that technology is not built in a vacuum but in and for society. The second aspect of the cultural environment of technology stems from the philosophical positioning of technics, technē and technology within their cultural locality or milieu. The ECT Lab+, therefore, encourages research which recognises the localised and situated knowledge contexts of technological innovation. The Lab promotes a concept of technē which enables a broad definition of technology; technē includes the ancient Greek etymologies of all forms of practice, arts and mediations which are not restricted to technē as instrument or tool but an understanding of technē as co-evolutive practice in the contemporary world. The ECT Lab+ acts as a metastable structure, which is akin to supersaturation, a crystallising that can occur in relation around certain thematics, for example technological foresight and responsibility or epistemology, ethics and artificial intelligence. The ECT Lab+ takes into account the instability of the milieu (locality) and allows for the undecidability, contingency or indeterminacy of the cultural environment of technology or technological tendencies.

Introduction

The second ECT Lab+ annual conference took place in the East Quad building of the Grangegorman campus of TU Dublin in January 2023 and this publication is an edited collection of papers, keynotes, and artistic interventions that were delivered over the three days of the conference. As the first iteration of the conference was forced to be held online due to the public health restrictions of the Covid-19 pandemic, this was the first annual conference to take place in person. A total of 40 speakers presented work over the course of the conference. Despite the return to in-vivo modalities, the conference was not a return to a pre-pandemic normality. Instead, the conference occurred in the shadow of the pandemic both in form and content. Building on the success of the integrated format from the previous conference the 50+ daily in-person delegates were joined by an average of 20+ online delegates each day. Each format has its advantages and disadvantages, which have been extensively rehearsed in the past

few years.¹ The conference was privileged to have Luck Clancy from Culture File on RTÉ radio broadcast a selection of interviews with delegates. These can be accessed on rte.ie as podcasts. Given that the explicit goal of the ECT Lab+ is to foster lasting research relationships, it is vital that the community fosters strong connections both in person and online.

Similarly, the presence of the pandemic can be seen in the thematic for the conference. Where the first conference, explicitly inspired by the work of Bernard Stiegler, sought to discuss the social impact of contemporary technologies, the second conference deliberately inserted concerns of care into these debates. This also mirrors the later development of the question of care within Stiegler's last publications and points to the development of care as a legacy of Stiegler's thought.

Care is the challenge of our time.² From automated care for the elderly, to surveillant childcare, to the “uberisation of therapy”,³ to care for the planet it is a concept that sits right at the heart of technology and the (neg)anthropocene. It has been noted that “[T]he work of care in the Anthropocene is a struggle with scale and scope and sentience. What does care for a burning forest look like? For an unstoppable flood? For an economy in crisis? For the endless migration of humans and other animals?”⁴ In naming the conference *Technē logos, Care and the (Neg) Anthropocene* we were keen to address the cascading crises of care that define contemporary life. As made so visibly clear since the start of the Covid-19 pandemic where we were forced to navigate novel restrictions and illness, and in cruel concert with the ongoing war in Ukraine and the ever-greater climate catastrophe, the challenge today is to propose ways of living together that account for the paradoxes and hierarchies of care. Be it healthcare, childcare,

- 1 See for example: Ariane Wenger, “Shifting from Academic Air Travel to Sustainable Research Exchange: Examining Networking Efficacy during Virtual Conferences”, *Journal of Cleaner Production* 414 (2023): 137577.
- 2 As we write both childcare and local social care services in Ireland are in the middle of major industrial action. See Emmett Malone, “About 5,000 Workers at 18 Voluntary Organisations Set to Take Strike Action over Pay Next Month”, *Irish Times*, 26 September 2023. <https://www.irishtimes.com/ireland/social-affairs/2023/09/25/about-5000-workers-at-18-voluntary-organisations-set-to-take-strike-action-over-pay-next-month/> and Ali Bracken, “Childcare Strike: ‘We won’t give up – it’s about the children’”, *Irish Independent*, 26 September 2023. <https://www.independent.ie/irish-news/childcare-strike-we-wont-give-up-its-about-the-children/a1526605222.html>
- 3 See Elliott, Anthony. *Algorithmic Intimacy: The Digital Revolution in Personal Relationships*. John Wiley & Sons, 2022. By this term Elliott describes “the shift in contemporary society from people searching for self-understanding with therapeutic experts (psychologists counsellors, therapists) to a new mode of instrumental detachment where people undertake counselling [sic] through downloading mental health apps or talking to robot therapists”, p. 15.
- 4 Maja Kuzmanović & Nik Gaffney “To Care, To Cure, To Comfort” in *Mystery 79 Beyond the Obvious 2023 Handle with Care: Culture for Social Well-being Conference Programme*, Culture Action Europe, 2023, p. 6. https://www.cae-bto.org/_files/ugd/59983d_546124cc76594b53be1a21840bed53a2.pdf.

or eldercare, ways of invention and innovation that take into consideration the questions and needs of care – care for the self, care for the other than self, and care for the planet must be central to any consideration of technology and the (neg)anthropocene.

This means considering care as more than a commercial product that is expensive and time-consuming. There is a standard focus in research in media technology on novelty, origins, and the early adopters. Steven J. Jackson regards this “productivist bias”⁵ as necessarily overlooking the long-term effects of and real fragility of media technologies both in terms of communication and materiality. Repair is, he finds, equally a site of creativity and innovation. Thus, in contrast to the “productivist bias” Jackson forcefully proposes what he calls “broken world thinking” as a radically alternative and provocative way to regard technology. This entails an approach to technology that emphasises ongoing labour of care. Products are not simply birthed to be abandoned to the world for good or ill. Rather a duty of constant repair and attention is routinely required in technologies new and old.

In Jackson’s words, this entails “a deep wonder and appreciation for the ongoing activities by which stability (such as it is) is maintained, the subtle arts of repair by which rich and robust lives are sustained against the weight of centrifugal odds, and how sociotechnical forms and infrastructures, large and small, get not only broken but restored, one not-so-metaphoric brick at a time” (p. 222). In short, it requires valuing those things that have been overlooked and undervalued.

Care is both a challenge conceptually and in practice. A pharmacology of care reveals that there are maleficent and beneficent forms of care. While synonymous with curing, comforting, and protection, like the concept of freedom, care’s aspirational goals run into the ethical challenges of being with

5 Jackson, S. J. (2014). “Rethinking Repair”, in T. Gillespie, P. J. Boczkowski, & K. A. Foot (eds), *Media Technologies: Essays on Communication, Materiality, and Society* (pp. 221–239), MIT Press.

others and can equally signify acts of control.

To fix things, as the language of repair and recovery suggests, can easily be co-opted to “fix things in place”, be that social hierarchies, shareholder profits etc., thus undermining the radical changes that are required to tackle the ecological crises we face. Equally, the opposite of care is the challenge of our time. *Kêdos* (κηδος) is the ancient Greek word for care. *Akedía* (or a-kedos) thus is the philosophical term for a lack of care. In the medieval period, it generally referred to the struggles of listless monks with faith. This tradition can still be seen in contemporary theology. In the words of Jim Keenan: “sin is a failure to bother to love”.⁶ More than a rejection of responsibility, sinful carelessness is characterised by epistemological omissions and a generalised malaise and inattentiveness.

During the Renaissance, the lack of care evolved into the much more embodied concept of melancholy. Where the former was a sin, the latter is seen as a disease of deficient passion. The latter can even cynically be self-admiringly valorised as a distracted coolness and elite romantic disposition of youth. Lars Svendsen regards *akedía* as the “premodern precursor of boredom”.⁷ Furthermore, contemporary boredom is directly a product of “modern technology [that] more and more makes us passive observers and consumers, and less and less active players”.⁸ Today in a politically fractured world, exemplified by Trump, the technological spectacle feeds a rising fascist embrace of anti-care under the moniker of anti-wokeness.

Unsurprisingly, care is increasingly a topic central to artistic practice. See for example the now annual *Hyper Functional, Ultra Healthy* exhibition that runs at Somerset House, London,⁹ that considers how human health is intimately tied to the health of the natural world. In the words of the writer Jamila Prowse who curated a film installation, *Moving Towards Disability Inclusivity*, for the most recent exhibition:

To truly take care, we need to move away from care as an abstract term by firmly re-grounding the reality that we are all always one step away from disability, ill health, or having to take on care work ourselves. Being cared for renegotiates your connection to the world. There is an incomparable

6 James F. Keenan SJ, *A History of Catholic Theological Ethics*, Paulist Press, 2022.

7 Lars Svendsen, *A Philosophy of Boredom*, 1999; translated by John Irons [2005] London, Reaktion Books, p. 138.

8 Ibid., p. 29.

9 See <https://www.somersethouse.org.uk/whats-on/hyper-functional-ultra-healthy-2023>

interdependence and trust to care work. If care work were properly valued in our society, it would reshape our relationships with one another and undermine perceptions of disability and illness as an endpoint or something to get *better* from. Only then could we truly begin to take care.¹⁰

The decision to reflect on questions of care in the context of a conference was further inspired by the current research being undertaken within the ECT Lab+, namely the projects EthiCo and Aesthico. The lead researcher for each project, namely Jye O'Sullivan and Conor McGarrigle, led a panel detailing each project at the conference. EthiCo is an Erasmus Strategic Partnership (KA203) project that aims to develop new approaches to ethics and ecology in technology education. Aiming to find eco-ethical frameworks for global “wicked problems”, EthiCo brought together ecological thinking, a shift towards understanding technology as technē that humans and more-than-human others co-form with, and a move away from applied ethics and towards virtue ethics, within the context of education. It developed a teacher training module and a student facing module that was tested online, and in person in Cluj-Napoca and Troyes. The project aims to implement these training modules across the EUt, guiding new transdisciplinary eco-ethics in pedagogical frameworks rooted in care.

Aesthico, an Erasmus+ Cooperation Partnership in Higher Education, aims to develop a framework for teaching an Aesthetics of Care with Ecology in Technological Education. This research considers an Aesthetics of Care to be a process. Its aim is ethically responsible action, informed and activated by sensory experience and knowledge(s) in a relational world. It entails caring for ourselves, others, and the planet (by attending to sustainable forms of creative practice and attitudes of caring). “Aesthetics is not a superficial or ‘extra’ concern that shrouds more fundamental issues or realities; it is the means by which we come to understand them.”¹¹ The aesthetic, which cannot be reduced to the realm of art, is actually and more extensively carried out in the wider framework of everyday practices,¹² politics of sense and sense-making,¹³ and the environment and ecology.¹⁴ Accordingly, an aesthetics of care covers a range of practices. Fundamentally, these practices are ways of approaching and relating to the world ethically both in terms of action and thinking. This framework will be made available as a modular toolkit for educators to deploy

¹⁰ Jamila Prowse “The True Value of Care”, *Riposte Magazine*, 2021.

¹¹ Karen M'Closkey and Keith VanDerSys, *Dynamic Patterns: Visualizing Landscapes in a Digital Age*, London, Routledge, 2017, xii.

¹² Yuriko Saito, *Everyday Aesthetics*, Oxford University Press, 2008.

¹³ Jacques Rancière, *The Politics of Aesthetics*, London, Bloomsbury, 2010.

¹⁴ Arnold Berleant, “The Aesthetics of Environment”, *Journal of Aesthetics and Art Criticism* 52 (4): 477–480, 1994.

in a variety of pedagogical settings. The objective is to provide the transformative skills and competences needed to prepare a generation of students for the new challenges of building the innovative, sustainable and circular economy of the 21st century.

Kathleen Lynch, has been a longstanding voice in Irish Academia, and beyond, on matters of care. She was appointed as a member of the Irish Human Rights and Equality Commission in 2020. She played a lead role in establishing the UCD Equality Studies Centre in 1990 and the UCD School of Social Justice in 2005. Suffice to say, this is only scratching the surface. Her recently published book *Care and Capitalism: Why Affective Equality Matters for Social Justice* (2022) asks us to think and practice beyond the restrictions of our current capitalist systems in terms of care, justice, and love. For Professor Lynch affective care is conceived as a counter to capitalist violence, what we could call “bad care” (“anti-care”). Moreover, her book is a “call to action” to bring “care talk out into the public spheres of formal and informal education, cultural practices, and community, professional and party politics”.¹⁵ In her keynote paper, “Capitalocentrism in Education: Time for Epistemic Disobedience,” she focuses on the importance of developing a more plural and diverse education that is care centred in the face of the contemporary ecological, economic and political challenges. Her paper posits a democratic education free from the capitalist ideology that privileges competition over solidarity. Lynch begins by detailing the development of a human capital model of education and then considers the possibilities of challenging the “capitalocentrism” and individualism of contemporary education. In contrast, Lynch details a “carecentric” and relational education that cultivates social and ethical possibilities and is not beholden to market forces. This is not a shift in the content of any curriculum per se but rather a refocusing and rethinking of both the modes of learning and the purpose of contemporary education.

In our second keynote, Yves Citton presented the TerraForma Corp annual report. This work was inspired by Benjamin Bratton's exploration of what he referred to as the world-building processes of forming the earth as cohabitation or Terraformation. Yves Citton with the research group in University of Paris 8 and Paris 10 ArteC conducted a series of ecological interventions to ensure the future co-habitability of the planet Earth. The keynote gave an overview of the activities carried under the appearance of a corporation and a corporation's annual report. The report point to the study of the dynamics of influences and interactions that weave the current state but also how to influence and shape future states of co-habitability of the planet

¹⁵ Kathleen Lynch (2022) *Care and Capitalism: Why Affective Equality Matters for Social Justice*, Cambridge, Polity, p. 10.

Earth. The premise is that these influences are “ubivectorial”, i.e. they result from a multiplicity of simultaneous factors, supported by vectors that are not strictly locatable, acting at sometimes very heterogeneous scales, and in directions that are frequently contradictory to each other.

In “The Right to Exist and Be Existent Framed in the Ambient Trust of Commons” Gabriela Gonçalves and Lucía Morales consider the role of ambience and the body both from the perspective of the flesh body and the social body (“Bodies-ambiences” and “Ambiences-bodies”). Like Lynch’s, their paper is a clarion call for change in contemporary environmental, economic and political practice. Where Lynch was concerned with education, Gonçalves and Morales argue that an interdisciplinary arts and economic thinking considered in terms of the commons is capable of fostering deep existentialist insight. Holding aesthetics and ethics together, and questioning what it is to be a body and what it is for a body to exist with others, they present figures that explore how art and economics can work together.

Katherine Nolan, in “Networked Mothers: Care, Breastfeeding and Embodied Epistemologies of Relational Matter Reconfiguration” equally considers the relational body. Specifically, Nolan reconsiders human breastfeeding and chestfeeding as a relational and materially reconfiguring activity. As a radical posthuman act, it is argued that there is a potential for this embodied activity to serve as an epistemological and caring paradigm to tackle the climate emergency if made more visible. Reflecting on her own experiences of breastfeeding in an Irish context, mothers’ networks, and digital technologies, the paper details relational acts of care that counter dominant neoliberal and capitalist epistemic structures. Crucially this entails a recovering of the extractive and exploitative capitalistic “abject status” of breastfeeding as primitive labour best hidden to a recognition of it as an activity that could be called “carecentric”.

Continuing on the topics of knowledge, body and identity, Abdellatif Atif, in “More Than we Think and Less than we Wish: On the Instrumentality of Education” tackles the aporias of instrumentality directly. Instead of asking what education ought to or ought not to be instrumental for, Atif, following the writings of Ernesto Laclau and Chantal Mouffe,¹⁶ reflects on the ontology of instrumentality itself revealing education to be necessarily contingent. Here the language of contingency is offered as a new ontological alternative that avoids essentialism. In the context of education, the transcending of paradigms or socio-political logics of instrumentality is seen as crucial for the very operation of education itself.

In “Accelerated Ageing: An Alternative Interpretation of Conservation Terminology” Niamh McGuinne, from the Conservation Department of the National Gallery of Ireland, details how her conservation practice informs her visual art practice. Specifically, McGuinne considers the crossovers and parallels in the conservation terminology and her visual art. As such, her paper serves as a reflection on a practical glossary of technical and creative care and is revealing of the tensions between the two practices. Where the conservator may privilege ideals and accepted international standards, such as authenticity, stability, and reversibility, the care of the artist may be differently attuned. The technical language foxing, metamer, fugitivity, deacidification, buffering, cockling, invisible mending, rehousing etc. can serve to obscure the ethical considerations central to the aesthetic practices yet when considered in the context of an artist’s practice they assume a fuller resonance.

In “The Question Concerning the Ethic of Technology” Matas Keršys turns back to the original question concerning technology posed by Martin Heidegger. The paper argues for a reconsideration of the essence of technology as fundamentally ethical. The enframing of the world is part of the very becoming or destining of being. However, Keršys takes an unusual slant by concentrating on how the fundamental ethic concerns all forms of practice or praxis. The destining of Being, as Heidegger puts it reveals a fundamental ethic, the essence of the destining being requires an understanding of the fundamental ethic. The paper then returns to technology as a praxis and therefore a destining of being as a fundamental ethic.

Silviya Serafimova in “Thinking Care-fully about Trustworthy AI” develops Stiegler’s philosophy directly. Analysing why the absolutisation of the cognitivist anti-*epistēmē* in Stiegler’s sense underlies the exaggerated trust in AI, Serafimova reflects on what it means to think care-fully about trustworthy AI. Considering vulnerability, both human and technological, she argues for a digital hubris that makes mutual recognition possible. This requires an enriched way of thinking care-fully about the *as-such* mode in Stiegler’s sense with the neganthropic one of think-*able* and care-*able* regarding the *as-if* mode. Central to this argument is Serafimova’s account of the dual sources of vulnerability, namely: the cult to de-noetisation affecting (human) vulnerability caused by (the implementation of) AI and the cult to the final technological (digital) fixation concerning AI vulnerability (to human interventions).

Paul O’Neill in “Critical Voices: Contemporary Media Art Practice and Communities of Care” attends to the role of critical media artists in contemporary networked culture. Providing a historical account of the media art practice, specifically the tactical media art “movement” of the 1990s, and the more recent use

of media archaeology as an art method, O'Neill argues that this practice serves as a bellwether for a variety of issues associated with networked culture. These issues include questions of intellectual property and the rights of makers, surveillance; and gender, labour, and environmental concerns. O'Neill's focus reveals how a genealogy of contemporary media art practice can point to the cultivation and promotion of communities of care by challenging problematic techno-solutionist narratives and ideologies.

Our final conference paper is an adaption of a multimedia performance by Ester Toribio Roura, Jye Benjamin O'Sullivan, and Sinéad McDonald. "The Fable of the Cyclops and the Mantis Shrimp: Composting with Care for Epistemic Diversity", deploys the two titular creatures in dialogue as a device to study and critique Western anthropocentric epistemologies. In this speculative fabulation, Toribio Roura, O'Sullivan, and McDonald apply a variety of diverse approaches to develop a composting-with-care methodology/practice. Accordingly, they argue that a healthy ecology of knowledges requires a diversity of ingredients and that the selection of these ingredients requires much diligence and attention as necessary durational labour that will also ultimately disrupt and rethink academic discourse and practice.

As with previous editions, we welcomed a variety of artistic interventions. Brief descriptions of three of these are included here as our final chapters.

On behalf of the conference organisers, Noel Fitzpatrick, Martin McCabe, and Connell Vaughan, we would like to take this opportunity to thank the following for their help and support: Luke Clancy, Paul Dockree, Brenda Duggan, Brian Fay, Paul Hayes, Nicoleta Ilieș, Marinos Koutsomichalis, Conor McGarrigle, Ioana Moldovan, Mick O'Hara, Kevin O'Rourke, Jye O'Sullivan, EL Putnam, The School of Art and Design at TU Dublin, The School of Media at TU Dublin, Tommie Soro, and Ali Warner.

Part 1

Keynotes

Capitalocentrism in Education: Time for Epistemic Disobedience

Kathleen Lynch

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Abstract

Education needs a radical *we-think*, a way of educating people *to think and act carefully and relationally* with the world, be it with other humans, other species and/or the environment. A new educational praxis, based on a more plural, and a more carecentric understanding of the ontology of the human condition is required. The recent focus of leading educationalists on the reimagining of what democracy for education can and should involve is welcome, especially in the context of a world of many wars, growing economic inequalities, rising forms of authoritarian politics, and experiencing the adverse impact of climate change. However, when democratic education takes places in a context where one is ranked, graded and hierarchically ordered on a daily basis in school and college, the habitual learning of competing and winning contradicts the formal principles of solidarity and equality that are foundation stones of democracy. The praxis of education teaches little about how to live out solidarity principles, and how to be habitually (in the Bourdieusian sense) caring and attentive to the needs of others, especially vulnerable others, vulnerable species and the earth itself.

Because students are evaluated throughout education in the zero-sum game of winning or losing, the habitus of intense individualised competitiveness frames their dispositions. The success of education is measured by the credentialised human capitals each individual has acquired.

If the utilitarian and egocentric ways of approaching education are to change, then the hierarchical and competitive capitalocentrism at the heart of educational practice needs to be challenged. This requires acts of epistemic disobedience from

conventional ways of thinking about what it means to be educated, and how assessment operates. It also involves a profound challenge to the human capital-dominated model of education that is ubiquitously endorsed by most nation states and powerful multilateral bodies including the OECD [Organisation for Economic Co-operation and Development] and the European Commission.

Keywords: capitalocentrism, human capital, relational, neoliberalism, naïve intellectualism, rationalist, carecentric

Education Producing Capital

Over the last 60 years, education has been deployed as a means of producing human capital, a view endorsed by leading economists from the 1960s and 1970s (Becker 1964; Schultz 1963, 1973) and reinforced in the 1980s as a key tool for producing economic growth (Gradstein et al. 2004). The belief that education's primary purpose is to produce human capital¹ is deeply integrated into nation-state policy-making, and the lexicon of global education (Mundy et al. 2016). It is indicative of the overwhelming influence of economic models of human behaviour on contemporary educational policy-making.

Regardless of political regimes in power within nation states, the economic return of public education now dictates its purpose and direction in most countries. Operating as a global political and cultural influencer, the OECD oversees the terms for evaluating the worth of education, be it in metrics of input, participation and output (OECD 2021a), or in terms of what is defined as good and effective teaching (2005, 2021b). Like the OECD, the European Commission also defines education as a mechanism for producing human capital or key competences.² Good education is defined in terms of personalised human capital acquisition, making oneself skilled for the economy; at the personal level, one is expected to have a productive and entrepreneurial attitude to oneself. At the political level, the goal is to produce a market-ready cosmopolitan worker, ideally built around a calculating entrepreneurial self, who will service the economy (Giroux 2002; Masschelein and Simons, 2002, 2015; Peters 2005, 2016). The first citizen-to-be-educated is unashamedly *homo economicus*, even if she or he is a young child (Ba' 2021). The human capital model of education, has, in turn, been enhanced and legitimated by educationalists such as Hattie (2009) and Muijs and Reynolds (2018) who deploy a quasi-medical model of evaluation to assess teaching in terms of scientific planning, diagnostics and

¹ Where human capital is defined by the OECD as productive wealth embodied in labour, skills and knowledge.

² The EU Reference Framework (2018) lists eight key competences for Lifelong Learning, most of which are focused on employment-related skills <https://www.eursc.eu/BasicTexts/2018-09-D-69-en-2.pdf>

self-evaluation (Mooney Simmie 2023: 6–7).

Because ‘*capital functions increasingly by exploiting the production and expression of knowledge*’ (Hardt and Negri 2012: 55), the penetration of market logic into formal education is deep and pervasive (McQuade 2015): it is also embedded in its core norms and values (Lynch et al. 2012; Ball 2016; Di Paolantonio 2019). Schools and colleges are increasingly seen as serving private personal interests (careers), and as an economic investment for the knowledge economy (Peters 2016; Jackson 2020). Concepts such as the ‘critical consumer’ or the ‘entrepreneurial child’ are being incorporated into educational logics (Bergdahl and Langmann 2018: 310), while teachers are also beholden to the human capital model (Attick 2017; Santoro 2017) in a way that is also highly gendered (Mooney Simmie 2023).

Even if AI is playing an increasing role in enabling capitalist development, the heavy reliance of capitalist enterprises on individualised-bodily-held knowledge to produce wealth (be it scientific, technical, emotional, social and/or psychological) inevitably drives the capitalocentrism of education for every individual. The fact remains that ‘cognitive-labour-producing knowledge... remains incorporated in the brain of the worker. [It] is inseparable from her person’ (Vercellone 2007: 33).

Although cognitive capitalism is forever mutating and is intimately bound up both with the material technologies that enable it to platform, diversify and innovate, and the embodied skilled labour units it needs to invent and deploy the new knowledges to maintain competitive advantage, capitalism also requires allegiances to the value of accumulation, incessant competition and market-led innovation that underpin it. It requires people to convert to capitalist values from the inside out, to define their worth in market terms.

Living in what Berardi (2009) has called the state of ‘semicapitalism’³ ‘commands ‘a relentless outward and inward expansion of the economic domain. This is an expansion that does not simply stretch outward, rendering and exploiting nature and the world around us as a resource, but also reaches inward usurping, mining and reaping our interiority (our “soul”), drawing out our passions, desires and creative impulses as a resource to be exploited (Di Paolantonio 2019: 605). Capitalism sells its spirit by encoding the pursuit of profit as an exciting individual choice, a *moral purpose* governed by meritocratic principles, and a system that guarantees *personal security* for those who are worthy (Boltanski and Chiapello 2005). Education is a means to this

individualised end. ‘Everyone is reduced to fending for themselves, with *saue qui peut*⁴ as the foundational principle of social life. Individualization of risk breeds individualization of protection, by competitive effort’ (Streeck 2016: 40).

Capitalocentrism

The concept of capitalocentrism emanates from the work of the political economist geographer J.K. Gibson-Graham (1996) who set out to challenge the capitalocentric hegemony of political economic thinking within the wider social realm (Gibson-Graham et al. 2015, 2016). She developed a Marxist-informed, feminist-led, rethinking of economies, new ways of seeing the world beyond the ‘economism, reductionism, universalism, rationalism, and productionism’ of mainstream political economy (Escobar 1999: 59). In so doing, Gibson-Graham contested the assumption that all meaning-making is generated in the market economy, opening the doors to a new economic and political ontology that recognises the productivity and value (and exploitations) of life and work outside the market (Gibson-Graham et al. 2013, 2016). Gibson-Graham set out to create a post-capitalist vision of politics for a new commons. The goal was to ‘help create the discursive conditions under which socialist or other non-capitalist construction becomes a “realistic” present activity rather than a ludicrous or Utopian future goal’ (Gibson-Graham 1996: 263).

Gibson-Graham’s work radically challenged the constraining influence of capitalocentric thinking on economic thought, within and without Marxism. It provided a language for economics, a way of seeing and knowing, that did not contain and control the parameters of what was feasible intellectually and politically in the way a totalising capitalist framework had done.

Even though the concept of capitalocentrism⁵ is not a familiar one to most educationalists, and Gibson-Graham did not focus on education *per se*, the concept is a profoundly important one for understanding the dynamics that drive educational practices given the embeddedness of education in the project of capital accumulation, both literally and metaphorically. Education for human capital is the primary purpose of most public education; even activities that are deeply intimate and personal, such as care and love work, are ultimately ‘subsumed to capitalism as capitalist “reproduction” (Gibson-Graham 1996: 258). The framing of everything with reference to capitalism, making it the point of reference through which the lifeworld, including education, must be understood, leads to an acceptance of ‘capitalist’ inevitability, a

3 ‘Semicapitalism is understood as ‘the contemporary fusion of media and capitalism, in which informational commodities are received, produced and recombined ... [it] relies ever more so on our minds, communication, curiosity and creativity, employing our cognitive affective labour, or our desire for learning and self-expression’ (Di Paolantonio 2019: 605).

4 Everyone for her or himself.

5 Capitalocentrism refers to the way that different ‘economic relations are positioned as either the same as, a complement to, the opposite of, subordinate to, or contained within “capitalism”’ (Gibson-Graham et al. 2016: 193).

place from which there is no escape, one that 'shapes the ways we understand reality and therefore ... how we act' (Gibson and Scott 2019: 449). Failing to name capitalocentrism is to ignore a political and sociological reality that has to be contested.

Capitalocentric thinking does not just frame the purposes of education, it also frames and constrains the terms of the debate about persistent social class, racialised and ableist inequalities. In many respects the debates about equality in education have become routinised, as though the problem of class (racial, ethnic, ableist, sexist and other injustices) are/were largely problems of distributive justice (and to a lesser degree respect and recognition) that could be addressed if schools were fairer, better, more respectful, more 'inclusive' etc.

The empirical evidence over many decades does not support this claim, especially in social class terms (Shavit and Blossfeld 1994; Blossfeld et al. 2015, 2017), as the achievements gaps in educational outcomes are increasingly tied to income inequalities *outside the school walls* (Reardon 2011, 2013). While class reproduction work still occurs through education, gaining class advantage is increasingly income-driven; having the financial means to invest in private tutoring/education, and to buy-in forms of cultural, social and symbolic capital that enables one to outcompete others is central to class inequality (Reay 2017). The importance of money in determining this pattern of class privileging is not confined to any one country and is as true in China (Woronow 2015) and Nigeria (Baum, Abdul-Hamid and Wesley 2018) as it is in the USA (Reardon 2011).

Second, schooling does more than act as a tool of social stratification, allocating people to pre-defined class strata and creating a mindset that accepts this stratification (Bowles and Gintis 1976); it creates a mindset that *welcomes and endorses* consumerism (of credentials) and competitiveness (for grades and ranks) *among all classes*, which is the lifeblood of capitalism. Acquiring more and more human capital through 'lifelong learning', being entrepreneurial, ambitious, resilient and competitive, are strongly promoted virtues for *all those who pass through* education, regardless of racial, gender or class positioning. The goal is for everyone to join the capitalist parade, sooner if not later, to live in a choice-led 'free society', 'built on individual autonomy, and of de-institutionalization ... out of an *empire of necessity* into an *empire of freedom*' (Streeck 2016: 46).

There is a need for a new way of thinking about education if there is to be a serious challenge to the hegemony of human capitalist thinking.

A Rationalist Individualist Model

The ontological assumptions that underpin education are not only capital centred (Tan 2014), they are also strongly individualistic, rationalist, and androcentric (Nuno Gomez and Alvarez Conde 2017; Wals 2020; Hsiao et al. 2021). Within these paradigms, the person-to-be-educated is defined as autonomous and rational (Carino 2022); s/he is not educated for a relational life as an interdependent, caring and solidaristic being (Noddings 1984; Jesenková 2020).

Premised on non-relational assumptions about performativity and individual achievement, there is limited scope for learning habitually or intellectually about the inter/dependency of the human condition. The work of caring and the dependency needs of so much of humanity are trivialised by omission. The Cartesian Cogito, so central to Western education is 'a model of an autarchic and self-sufficient subject that generates itself through thought'. It emanates from 'the horizon of philosophy as egology,⁶ the other is not there' (Cavarero 2016: 134). Yet, the differences between a detached individualism and a relational-care-led ontological understanding of the human condition are profound: 'Under the individualistic model, conflict and competition become the standard behaviour. By contrast, under the relational model the foundation of human society [is] derived from nurturance, caring attachment, and mutual interestedness' (Herring 2020: 14)

Contemporary education draws heavily on Bloom's (1956) taxonomy of cognitive objectives, emphasizing the development of logical mathematical intelligence and abstract reasoning of each individual (Gardner 1983). Under the influence of a very particular type of developmental psychology and related learning theories, education has focused on socialising young people into a cognitivist human capital model of being human. Education for doing love, care and solidarity work is rarely part of the formal educational curriculum (Lynch et al. 2007).⁷ In a neoliberal era, a focus on productivity and entrepreneurialism compounds the impact of the human capital perspective; education is about creating productive people, principally for the capitalist economy. Even if students study subjects such as theories of social justice, care and/or environmental sustainability, they do not learn to practice the dispositions underpinning such principles.

6 Egology is a term used by Lévinas to critique modern philosophy as a system founded on the self's speculative authoritarianism, ... a subject considered 'free, autopoietic and solipsistic' (Cavarero 2016: 134)

7 The 2018 report *Strengthening Social and Emotional Education* (on how to promote social and emotional learning as a cross-curricular competency in European schools) is framed within a traditional epistemology and ontology. There is no substantive discussion of care or solidarity (the word love is not mentioned once). However, developing 'resilience' receives sixty mentions. https://nesetweb.eu/wp-content/uploads/2019/06/AR3_Full-Report_2018.pdf

Assessments are based on written tests.⁸ The knowledge remains theoretical at best; understanding is not enabled to become a set of dispositions embodied and embedded through habitual practice.

The ways in which the rationalist-individualist model of the human person has been aligned with a non-relational human capital model of education is exemplified in educational examinations and assessments. Day-in day-out, children and young people are ranked and graded individually in school. The highly individualistic competition that dominates educational assessment means that students spend most of their time in school/college practising outcompeting others; their focus is their own performance. Knowledge becomes a private resource, a form of personalised credentialised capital that ends in a grade that has a defined market value in career terms. Yet, the type of person being produced through the persistent hidden curriculum of competitiveness is not a subject of major debate; neither is the impact of the incessant ordering, measuring, and stratifying that underpins school assessment, and so much of social life (Mau 2019). Instead, the focus is on young people becoming 'resilient' 'employable', 'lifelong learners' who become successful consumers regardless of the environmental destruction that incessant consumption and growth engender (Wals 2020).

While there are extensive debates about developing critical thinking in education, there is also a naïve intellectualism, that one can challenge capitalocentric thinking and create solidaristic, sustainably minded, caring citizens by just giving students the 'right ideas' (Medina 2013). Critiques of the status quo alone (where and if such exist) are not necessarily empowering or enabling of social action (Ellsworth 1989). Critique on its own often cultivates a sense of hopelessness, apathy and powerlessness, rather than activism for social change, something Freire (1970) highlighted in making the case for critical education as praxis (theory linked to action). One of the first challenges therefore is to address the naïve intellectualism underpinning much thinking about social change, especially about radical egalitarian change.

Naïve Intellectualism

It is commonly assumed that if the epistemic assumptions that people hold about truth and non-truth are altered, then their ethical and political dispositions will change. It is even assumed that people will be less particularistic about group rights when they know the harms of pursuing such interests to the detriment of others. But social agents are not capable of being fully rational and disinterested; they are subjects split between the conscious

and the unconscious, between the desire for pleasure and the fear of pain; social agents occupy multiple and contradictory social positionings. Fundamental moral and political principles are not absolute and universalisable, waiting to be discovered by the disinterested student/researcher/teacher; they are 'established intersubjectively by subjects capable of interpretation and reflection' (Ellsworth 1989: 316). How principles are realised and lived in practice is not known in advance.

People's moral dispositions, their political attitudes and their emotions frame how they see and know the world, as indeed does their structural location in terms of cultural background, age, gender, social class, race, dis/ability, and/or beliefs. What people are hardwired to see, feel and notice is not governed by reason alone (Lakoff 2008). Rather, it is highly contingent and driven by strong emotions (Ahmed 2004; Lakoff and Wehling 2016). What people *feel* about a subject, a principle, a politician, or a group, plays an important role in determining political choices. When voting for example, poor people often vote for conservative politicians as the latter convince them emotionally that they have their best interests at heart, that they care for them even if their day-to-day policies contradict this (Lakoff and Wehling 2016). Voters often identify with the person emotionally (as white working-class men identified with Trump (see Hochschild 2016)) even if the policies he pursued did not serve their political interests.

Neither is there a linear progression from having reasoned knowledge about social (and environmental) injustices and engaging in action to address these. Changing the frames and concepts through which people know, interpret the act on the world is a complex process and is by no means confined to intellectual understanding. People may know intellectually what they could do to address social and political injustices, but this does not mean that they feel compelled to act on this knowing, even where action is feasible and within their capabilities and means. 'The mistake of intellectualism is to think that by changing the epistemic, the ethical and the political will follow, whereas in fact people's concepts and cognitions may not control at all their emotions, moral characters, and political attitudes. (Medina 2013: 85). While addressing epistemic injustices matter (Fricker 2007) and is undoubtedly enabled by education that develops an affective as well as cognitive attentiveness to conflicts and difference (Zembylas 2023), enabling people to think and act ethically and carefully is very challenging. The 'deep-rooted injustices that affect communication – such as hermeneutical injustices – can only be addressed by a deep transformation and restructuring of people's epistemic, moral and political sensitivities ... the challenge that we face ... both individually and collectively... is to change simultaneously people's minds, their moral character,

8 As Howard Gardner (1983) found in his experiment with students who had highly advanced knowledge in the natural sciences, many were not able to apply this knowledge outside of very familiar contexts and frames. They know the theory but they cannot apply it.

the structural conditions in which they live' (Medina 2013: 86). Taking a sociopolitical, affectively engaged, as well as an epistemic approach to realising change is a major challenge in an educational context that privileges a cognitive conception of rationality and logic, and where emotions are seen as irrational, even feminine forces.⁹

Daily life is lived through practice, 'the dialectic of social structures and structured, structuring dispositions through which schemes of thought are formed and transformed' (Bourdieu 1990: 41). The habitus of embodied 'durable, transposable dispositions' is 'constituted in practice and is always oriented towards practical functions' (ibid.: 52–54). It is not planned according to a daily ideological guide. Naïve intellectualism ignores the sociological reality of habituation and how habit hard-wires people to think, to feel and to be, by doing (Lakoff 2008). When winning competitively is a way of life, as it is in contemporary education, it becomes a mindset and a way of affectively and politically engaging with the world. Strong neoliberal subjectivities are developed habitually within education, even if these are not overtly prescribed (Apple 2001; Peters 2016). Moreover, social media and popular culture strongly reinforce capitalocentric values (McGuigan 2010; Zuboff 2019). While there is resistance to neoliberal care-less educational practices, including from students (Lolich and Lynch 2017; Tett and Hamilton 2019; Moreau et al. 2022), even academics who do not subscribe to neoliberalism know that it is the strategising, self-referential entrepreneur, who will be best rewarded in the education (Ball 2012).

Naïve intellectualism is exacerbated by the 'credibility excess' from which academics benefit. Their status gives their pronouncements political status and influence that leave them at risk of developing the 'epistemic arrogance' of the powerful, either because they do not need to know, or because they do not want to know, the limitations of their own epistemology (Medina 2013: 31–32; 57–59).

The Moral Price of Capitalocentric Rationalist Education

While having competitions to incentivise people to improve their musical, artistic, scientific or technical capabilities is undoubtedly effective, intense, pervasive and prolonged meritocratic competitions come with a high moral price. When there are competitions, there are winners and losers. Although it has long been known that the already privileged are the most likely to fill the ranks of the meritocratic elite (Bourdieu 1996; Mau

2015), the presence of the 'open competition' enables a mythical meritocracy to persist. The myth keeps the competition alive, encouraging many to compete in a game they cannot win; not only does this lead to arrogance among the so-called winners, it fuels humiliation and resentment among those who lose (Young 1961; Sandel 2020). Students are highly rewarded for engaging successfully in individualised competitions for grades and ranks. They are punished, in status and assessment terms, if they do not play the self-entrepreneurial game. The more successfully they hoard knowledge to excel in examinations, the more they are rewarded. As the amoral principle of competition becomes a necessity in a theoretically 'meritocratic' system, examining, documenting scores, educational attainments, and ranks becomes an industry in itself (Muller 2018).

While highly technically skilled people are produced in the so-called meritocracies, most of these are not concerned with fundamental moral and civic values (Sandel 2020: 192); witness the readiness at which so many university-educated professionals deploy their skills for the highest possible financial return, or for producing weapons of war or environmental destruction. Knowledge is an asset to be disposed of and used at will; amoral dispositions towards the knowledge (human capital) one has acquired are learned habitually. Student and staff idealism for working in 'the public interest' is diminished, as energy and time must be devoted to competing, and documenting institutional and/or personal achievements (Lynch 2015). Resources and research are redirected towards the so-called 'bright', 'gifted', 'smart', 'able' students. They are hotheaded 'as if they were a rare natural resource', something that is scientifically untenable (Wilkinson and Pickett 2018: 170). The hierarchal ordering fuelled by competitive examinations not only fuels the myth of meritocracy, it overrides and weakens other values, crowding out debates about equality, human need, and social justice (Mijs 2016: 23–26). It also fosters a mistaken belief that only a minority of talented (market-valuable) people exist (Sandel 2020).

Meritocratic policies produce the hubris of the elite, and political disillusionment and disengagement among those who are 'failed' literally and symbolically; the political outcomes of this have been documented in the US (Hochschild 2016) and UK (Rossenbaum 2017).

From Capitalocentric to Carecentric and Relational Education

The ontological and epistemological paradigms that presume an atomistic, separated, and self-referential self, were never designed to create an appreciation of the inevitability of human and environmental inter/dependency. They fail us intellectually and emotionally as they do not allow people to

⁹ Emotions are 'not brutish irrational forces, they are 'intelligent and discriminating elements of the personality, closely related to perception and judgment' (Nussbaum 1995: 365). Moreover, the 'cognitive dimension of the emotions ... enable the agent to perceive a certain sort of worth or value. And ... emotions are thus necessary for a full ethical vision' (ibid.: 376).

see and appreciate the endemic interdependency of the human condition (Puig de la Bellacasa 2012, 2017; Herring 2020). They hide the harms of our carelessness, including the slow violence of environmental waste disposal in the Global South, and in regions inhabited by Indigenous peoples (Casalini 2022).

Keeping human capital at the gravitational centre of meaning-making in education undermines the human capacity to think outside that framework (Gibson-Graham et al. 2016; Lynch 2022). Minds and paradigms are hardwired to the market model of the citizen as a self-interested consumer, not least because students practice this daily in school and in college. Endorsing a market-centric rationalist model of education, no matter how unintentionally, leads to a situation where the description of what is becomes a prescription for what is possible; it precludes alternative thinking (Held 2006: 83).

The neglect of education for and about affective care life and relationality¹⁰ undermines ways of learning about how to care, and how to create a peaceful, sustainable and solidaristic world. Although the challenges of making relational thinking central to education are considerable (Noddings 2013; Urban 2020), they must be addressed given the pervasiveness of war on the one hand, and the urgent need of care for the protection and development of all forms of life on the planet, on the other.

Epistemic Disobedience: Making Relationality Central

As 84 million children, adolescents and youth throughout the world will still not be attending school by 2030, and as in only one-in-six countries are 95% of young people completing secondary schooling (UNESCO 2022), it is important to reaffirm the importance of education as a public good that needs to be universally available, and at a high standard.

However, the experience of going to school is not simply about learning specific skills and competencies through engagement with the curriculum and the different pedagogies employed by teachers. Attending school is also a deeply social practice (Lynch 1989; Lynch and Lodge 2002). The habitual experience of most children in school is one of being constantly graded, assessed and ranked, generally in comparison with their peers. It is an experience of public competition and framing as a certain type of 'marked' educational person, regardless of what is taught and how it is taught (Lynch and Lodge 2002). Though much of that framing is anticipatory social class-marking, it is more than that. It marks one out in terms of failure and success relative to

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Affective care relations are those that produce, reproduce and repair the world relationally (Tronto 1993). These operate not only at the micro level of the local environment or family, but also at the meso and macro level of public institutions, multilateral agencies, community and voluntary organisations and the state (Tronto 2013; Lynch 2022: 32).

one's peers. Rooted in the myth of meritocracy (Mijs 2016) it holds people personally responsible for losing and generates hubris among the successful. This leaves those who 'fail' in absolute or relative terms, without a clear target for their resentments but a real sense of being lowly, lesser people. They are humiliated in their failure as it is attributed to their lack of talent or hard work. The politics of humiliation that ensues differs from the politics of injustice

Protest against injustice looks outward; it complains that the system is rigged, and that the winners have cheated or manipulated their way to the top. Protest against humiliation is psychologically more freighted. It combines resentment of the winners with nagging self-doubt; maybe the rich are rich because they are more deserving ... maybe the losers are complicit in their misfortune ... This feature of the politics of humiliation makes it more combustible than other political sentiments. It is a potent ingredient in the volatile brew of anger and resentment that fuels popular protest.

(Sandel 2020: 26)

While influential theorists of education from Lamm (1976) to Bruner (1996) to Biesta (2010, 2020) analyse purposes of education – in terms of cultural socialisation, qualification, and individualisation or subjectification, they give little attention to how the 'social field' of assessment operates as a field of power (in Bourdieu's terms) within education. Yet the metrics of assessment, that underpin the merit system that is education, impact on the public framing of the young and not-so-young (Bourdieu 1996). They label them socially and politically, not just educationally. Education's evaluation systems are normalised and sanctified as neutral, not only for measuring student performances but increasingly those of teachers, lecturers, colleges and/or universities (Mau 2019: 89–91). The school effectiveness movement, which proposes simplified metrics for measuring the success of schools as institutions, is another wing of this measurement movement that has gathered apace given the power and influence of one of its more recent and prolific proponents, John Hattie (2009).

The call to decolonise the curriculum and processes of education represents a significant and welcome turn in education, especially in higher education (Tuiwai Smith 1999; Chilisa 2012; Pimlott 2020). It has led to a fresh awareness of othering, and exclusion, especially along racial and ethnic lines (Bredlid 2012). However, the decolonisation debate has not led to any great challenge to the strongly rationalist and capitalocentric approaches to formal education. The deep ontological problems posed by a cognitivist and atomistic approach to education have remained largely separate from new debates about colonised curricula. If

decolonising education is to move beyond the geopolitical and racial boundaries where it was initiated, then it must address the subject of relationality and the ethical dispositions that arise from the inevitability of interdependency. It must also address the deep problematics of political liberalism (Mandle and Macleod 2000; Stopler 2021) as the latter is profoundly implicated in the project of capitalocentrism with its offer of social mobility as the prize for educational success, when there is ample empirical evidence that there is little social mobility for the majority through education.

To have an impact on civil and political life, critical educators must become more fully epistemically disobedient 'to the point of non-return' (Mignolo 2009: 15). Relationality and gender must enter the decolonising frame. The dominant ontological assumptions, materials and practices within education are not just Eurocentric and Western in orientation, they are also non-relational, (and highly masculinised, though space does not allow this to be analysed here, see Husu 2013; O'Connor et al. 2018). Learning how to control, dominate and use the world is central to the traditional learning process in STEM, business and many other subjects. It is built on the principle of domination, a defining attribute of Western white masculinity (Connell 1995).

Developing a form of education that helps students to re-think, and especially to re-feel, what they know about the world in a caring-led way is a major challenge. Yet, it is entirely imaginable that people could learn to think-with-care and concern for the suffering of others, including non-human others (Puig de la Bellacasa 2012, 2017). They are capable of learning what Haraway (2012) has called 'response-ability', the ability to be caring and responsible to current and future generations. One of the first tasks in this process is to develop a political and cultural appreciation of how the self is co-created, through struggles and negotiations in relationships, for better or worse, both collectively and individually (Herring 2020: 1–23).

Concluding Comments

Marking out human beings as being of different social value based on their 'grades' on what are largely online or pen and paper tests is profoundly questionable, not only educationally but also morally. What makes it even more questionable is that it is testing people in a highly individualised way, with a primary focus on their human capital package of acquisitions, regardless of how those capitals are deployed in the future.

In a world where the media, dominated by commercial interests, plays a leading role in opinion formation among young people, especially via online platforms (Zuboff 2019), and where millennials' constructions of their selfhood are negotiated around 'global tropes of consumerism and idealised neoliberal

subjectivities' (Harvey et al. 2013: 9), there is an urgent need for education to think and act differently so it can counter the capitalocentrism which is at the heart of cultural consciousness.

Formal education needs to be 'rethought from top to bottom' (Jackson 2020) in terms of how it can challenge the pervasive culture of human-capital-focused individualised achievement that is the lifeblood of contemporary education.

If universities and schools are to practice care, solidarity and democracy, rather than merely preach about these values, the way they rank and stratify and alienate so many young (and not so young) people daily has also to be called into question.

It is time to explore the pseudoscientific and psychometric fabrications that produce myths about human capabilities, especially myths about intelligence, genius, dis/ability, and talent, exemplified in the growing field of (highly profitable) standardised testing.

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Chapter 2

TerraForma Corp: 2022 Annual Report

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Executive Report

This activity report presents some results of the investigation-speculation operations conducted within the Department of Ubivectorial Influences (DUI) of TerraForma Corp, on the occasion of a collaboration with the EUR ArTeC. The Graduate School ArTeC (*Arts, Technologies, Digital, Human Mediations, Creation*) is a teaching and research program funded by the National Research Agency (ANR) since 2018 under the Programme d'Investissement d'Avenir (PIA). Within the terraforming activities conducted under the aegis of the TerraForma Corp, the Department of Ubivectorial Influences aims to study as well as to steer the dynamics of influences whose interactions weave the current state, and shape the possible future states, of the co-habitability of planet Earth. Its work is driven by the premise that these influences are “ubivectorial”, i.e. they result from a multiplicity of simultaneous factors, supported by vectors that are not strictly locatable, acting at sometimes very heterogeneous scales and in directions that are frequently contradictory to each other.

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Members of the DUI and collaborators who contributed to this report: Laura Ben Ami, Hortense Boulais, Thu Huong Bui, Marielle Chabal, Sarah Drapeau, Carlos Duran, Marion Ficher, Hugo Ghezal, Hélène Le Brishoual Soro, Eduardo Maldonado, Pierre Musseau, Théophile Rey, Jorge Sosa, Catherine Stragand, Édouard Vien, Éloïse Vo, Agnès Brunetière, Baptiste Fauché, Haonan He, Clara Le Meur, Bruno Pace, Ieva Kotryna Skirmantaite, Alain Damasio, Yvannoé Kruger, Aurore Mréjen, Annael Le Poullennec, Julie de Faramond, Panagiota Fasoi, Frédérique Gadot, David Desrimais, Alice Ricci, Grégory Chatonsky, Yves Citton



After having briefly characterized the context of the current evolutions of our planetarity, this executive report, coordinated by Yves Citton, synthesizes the content of the different results of the year's work, before making a general assessment and opening up three major perspectives for the future of the work of the TerraForma Corp. The images have been generated by Grégory Chatonsky.

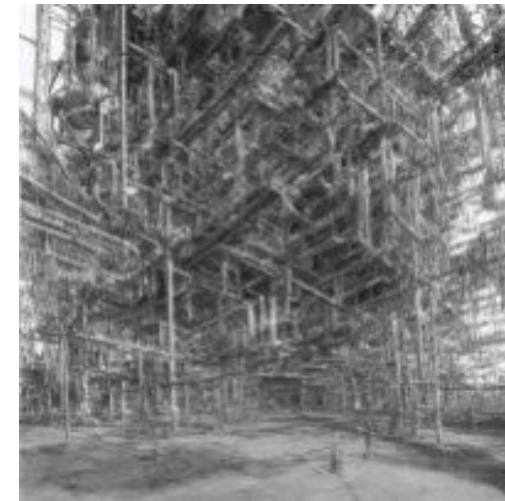
Through TerraForma Corp, humans and non-humans, living and non-living entities, are objectively allied in a sprawling collective placed entirely at the service of co-habitability. The Earth hears us and we hear the Earth because, through our common vibrations, we are all one with her. The various organs of the Corp embody a planetary mobilization through which the Earth claims a novel legal and political status, which recognizes it as a collective subject of reciprocal rights and duties, but also as an agency endowed with an authority superior to that of national States.

The Corp has no centralized headquarters: it exists wherever its members are active, it acts at any point and at any time where its influence is exercised. Its multiple organs vibrate, think, push, trickle, spawn, communicate, suggest, research, calculate, model, compute, work, produce, invent, buy, sell, transport, move, demonstrate, denounce, protest, block, dismantle, build, agitate, pacify, legislate, create in all directions – in an informality that is the condition of a terraforming adapted to the multiple dimensions of the living as well as to the infinite singularities of individuals and of territories.

Minimal coordination takes the form of annual reports written within its various operational units describing some of its operations, achievements, failures, and proposals for future activities. These reports have so far only been written for internal information purposes. For the first time, in 2022, a selection of activity reports is offered to the public, worldwide, in half a dozen languages.

Context

This annual report, which is the first to be made public, does not cover all the activities of the TerraForma Corp. It gives access to the work of one of its activity groups, the Department of Ubivectoral Influences, which proposes here a few brief surveys intended to illustrate the fields of work of the Corp, as well as its perspectives for future development. The choices have been made according to the constraints and opportunities of the current phase of terraforming. This phase is characterized by four contextual elements identified thanks to the calculations of Terra.com, the artificial intelligence (AI) developed by the Corp.



The first element of context is the rapid implementation of technical systems that make it possible to envisage an algorithmic global governance of the flows of information, energy, materials, goods and bodies on the surface of the planet. From Elon Musk's highly publicized Starlink project, promising ubiquitous access to the internet through full satellite coverage, to the underground investigations of distributed Open Source Intelligence in social networks, from high-speed trading and derivatives speculation to Deep State conspiracy theories, the informational machines that humans have equipped themselves with are beginning to structure their interactions far more powerfully than intentional deliberation. The development of Decentralized Autonomous Organizations (DAOs) since 2016 offers a glimpse of translocal modes of coordinating activities based on blockchains, which can now scale globally without relying on the proven inadequacies of national States.

The second element of context is the acceleration of planetary awareness. The financial crisis of 2008, the Covid-19

pandemic and the invasion of Ukraine have all brought into full focus the infrastructural interdependence that makes integrated global logistics more than ever the lung on which the breathing, living and dying of most human beings as well as other Earthlings depends.

The third element of context, made salient by the three crises mentioned above but now surfacing in all spheres of existence, is the need to manage the dismantling of the negative commons inherited by current generations. Nuclear waste, the plastic continent, the accumulation of CO₂ in the atmosphere: the Anthropocene plunges humans into a world where their productive infrastructures turn into feral threats that they are now condemned to face collectively.

The fourth element of context is the fatigue of the decision-making processes – democratic or authoritarian – that have so far guided the development of human societies. The scale of planetary problems is proving unmanageable with the decision-making mechanisms inherited from the past. The humans committed to take charge of the destiny of their communities are sinking into denial, burn-out, solastalgia or dementia. The political institutions based on representative democracy drift towards suicidal nationalism. Neither companies, tied to profit imperatives, nor the financial mechanisms that regulate their competition, nor activist groups full of good intentions but lacking in means are capable of reorienting economic activities towards the planet's habitability. The rationalities of global planning are crushed against the endemic rationalities of local resistance. On all sides, human capacities to act come up against their intrinsic and extrinsic limits.

The activities of the TerraForma Corp address these limits by widening the compass of what acts on the surface of the grounds, in the depths of the oceans as in the atmosphere of the Earth. Carbon dioxide, uranium, copper, water, but also cyclones, forests or so-called "invasive" species share with humans an agency that the Corp's mission is to translate into influences, operations and transformations – beyond or below human decisions alone. Its goal being to integrate these decisions within the constraints as well as within the accidents that overdetermine them, the Corp can only act diagonally, through these decisions, these constraints and these accidents. It is this diagonalist bias that organizes this annual report, that justifies the selection of the operations chosen to appear in it, and that explains its order of presentation.

Overview

After a glossary defining some key words and other neologisms used in the rest of the report and after a chronology contextualizing the activities of the TerraForma Corp in the

thoughts and practices put in place in relation to planetarity during the last decades, the **first section** illustrates the activities of the Corp centered on the vectors of imagination that can be identified or activated within the terraforming currently in progress. We are situated here in System 1 (S1) of Stafford Beer's Viable System Model (see Chronology), that of the operations by which organizations are inscribed in the environment they influence and transform. A first group of contributions, organically linked to each other, is devoted to conceptualizing, mapping, quantifying and re-orienting the influence of images on the co-habitability of the planet Earth.

The first chapter tries to understand the processes of metabolization of the images within the psycho-technical organisms through which they flow. It lays the bases of a cartography of the infrastructure and of the dynamics of the circulation of the images, simultaneously in the field of the material devices which govern them and in their shaping of the human imaginations. The second chapter sketches a modeling of these processes of metabolization, likely to lead to a quantification of the influence of the images on their various environments. The third chapter zooms in on the details of the interceptional indicators whose data must be collected in order to understand the objective effects of the circulation of images through subjective perceptions and the affective turbulence that they cause among the living (human and non-human). The fourth chapter takes a step back from these investigative protocols: it transcribes the answers given by the Terra.com AI to some of the questions that the Public Relations department of the Corp is asking itself in order to optimize its terraforming influence on contemporary audiences.

As a whole, this first section documents the technical modalities and possible progress of our (still stammering) awareness of planetarity, by articulating it already with the need to overcome both the fatigue of the current decision-making processes that paralyze our political institutions and the various forms of eco-anxiety that sometimes inhibit activism at the same time as they arouse it. How to conceive (in the double sense of understanding and design) the generation, circulation and reception of images, which flow today in absolutely unprecedented quantities on the surface of the planet? How can we reconfigure the vectorialization of our imaginations to foster a convergence between the affections received from our environments, the ways in which we perceive them and the ways in which we affect them in return?

The **second section** discusses the vectors of ideology that currently structure public debates on planetarity. It asks how to identify and interpret the great attractors around which our media agendas swirl, as well as our urban planning and infrastructure

designs. The circulation of images analyzed in the previous section is in fact constantly overdetermined by relatively stable ideological structures, whose vectors orient in depth the imaginations and arguments of the surface. We are here at the level of System 4 (S4) of Stafford Beer's Viable System Model: the one in charge of ensuring the adaptation of the system to external environments whose future evolutions are potentially threatening. But ideology also appears as a central element of System 2 (S2), whose function is to ensure the homeostasis of the organization around relatively stable states of balance.

The fifth chapter tackles the notion of “ecological planning”, as it has come to play a central role in the electoral discourse of parties identified on the right and on the left, to propose that it be inscribed in the emerging paradigm of terraliberal policies, still largely to be invented. The sixth chapter questions the strategies of the Corp in the face of the crises (political, energetic, economic, financial, ecological) that are piling up on the horizon, in order to specify the possible modes of intervention of a terraforming activism in the context of these crises. The seventh chapter extracts from the titanic open-pit lignite mine in Hambach, Germany, the hypothesis of a multisecular destructive colonization of the planet by an orthothelemic conspiracy of the straight line and the right angle, the orthogonal ideology being perhaps at the root of our de/terraforming ravages. Finally, the eighth chapter proposes a strategy of ideological offensive based on the elaboration of anarco-nudges, defined as insensitive nudges contributing to preserve the habitability of the planet by inciting the subjects to better resist the incentives.

This second section responds to the need to articulate the first two elements of the context mentioned above: how to associate the awareness of our planetarity with the unprecedented power of the technical systems that today circulate the mutual affections that weave our living environments? The challenge is to invent new historical perspectives as well as new operating modes to revitalize the capacities for collective action inhibited by the fatigue of our current processes of debate and decision.

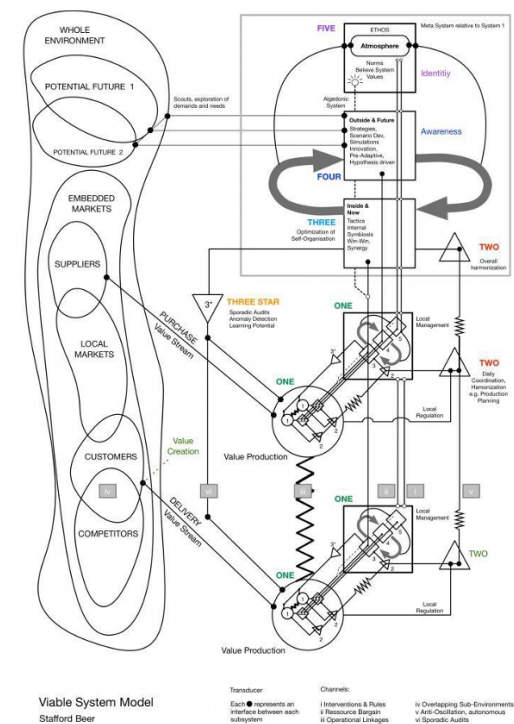


Diagram of the Viable System Model according to Stafford Beer (<https://metaphorum.org/>)

The **third section** gathers a few surveys that will study our vectors of de/territorialization in the more concrete depths of our spaces, our temporalities and our materialities. Each one explores and experiments with the stuff that supports and anchors our existences in habitable territorialities, in the context of techno-socio-economic dynamics that detach us from our traditional foundations. These investigations are situated at the precise points where, in the schema of the VSM, the operational S1 enters in material contact with the local environments of which it undergoes the influence and on which it exerts its influences.

The ninth chapter takes a step back from digital technologies to explore the problems of cohabitation between humans, chickens and mushrooms around an eco-village project in French Guyana. The tenth chapter investigates sinkholes that open up under human houses or roads when subterranean geological erosion weakens the earth's surface, with the effect of opening gaps in their conceptions of territories and their materialities. The eleventh chapter captures, through a dozen photographs accompanied by enigmatic texts, the central role that oblivion plays in the cognitive and affective rebalancing of human users prey to

(environmental) mental disarray in the Anthropocene era. Finally, the twelfth chapter operationalizes this disarray by proposing an interface design entitled Slow Response Code which, instead of the Quick Response of the QR Code, forces the user to be at a precise moment in a singular place of the planet to have access to an online content.

It would be simplistic to limit these four chapters to a posture of withdrawal and resistance to the excesses of a certain globalizing deterritorialization. Their stake is rather to re-sensitize us to certain depths that the sliding of our fingers on our screens and digital keyboards tend to make us ignore, at our expense as well as future generations'. While the rest of the report foregrounds the influences of various forms of de/terraforming, this section sheds light on the inevitable and precious inertias of affective materialities that weigh our feet down on the surface of the Earth.



The **fourth section** illustrates and considers in a reflexive way the contribution of the vectors of art-based research (*recherche-cr ation*) to the modalities of investigation-speculation practiced within the Department of Ubivectorial Influences of the TerraForma Corp. We are situated here in System 3 (S3) of the VSM, the one whose task is to improve the organization's procedures, thanks to a capacity to renew the modes of approach, framing and processing used to identify and solve problems.

The thirteenth chapter confronts the curse imposed on the Yunnan region by the colonial opium trade, proposing to ward off this curse through the creation of mandalas, whose cosmographic properties point to alternative, less Western-centric modes of terraforming. The fourteenth chapter describes a procedure of diagrammatization of the communicative influences emanating from invited speakers in the work of the DIU, before articulating this

diagrammatic form to the design of vases. The fifteenth chapter relates different experiments of translations of texts into images (and vice versa) accomplished in parallel by human subjects and by computational devices, while questioning the criteria usually mobilized to distinguish between them. The fifteenth chapter shares the protocol of a chemo-linguistic experimentation able to generate automatically, although without recourse to digital devices, action calls potentially carrying alternative terraformings.

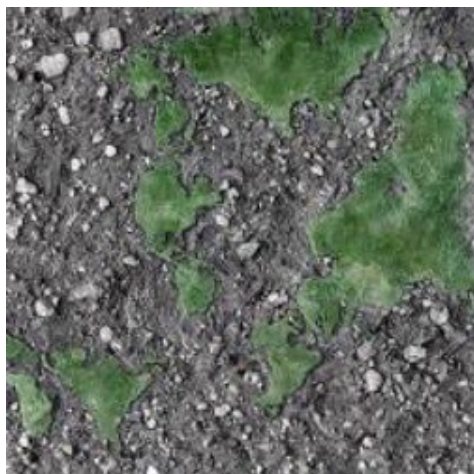
All these proposals for *recherche-cr ation* are to be taken on a double level: on the one hand, as absolutely specific historicities or materialities, referring to a singular space-time of terraforming activities; on the other hand, as ways of doing things, themselves historicizable and localisable, but transposable to other improbable contexts where their effects of creolisation will be unpredictable. In this, TerraForma Corp can find both tools to help dismantle negative commons and suggestions for restorative remodeling.

Finally, **the fifth and last** section turns to the way in which TerraForma Corp sets up new vectors of identity to dodge the pitfalls and dead ends of the dominant modalities of internal governance and external visibility. We are here at the level of System 5 of the VSM (S5), the one whose task is to define (and constantly revise the definition of) the organization's identity, its missions, its principles and its communicative projections.

The seventeenth chapter proposes a self-definition of the Corp based on the interpretation of its astral chart, which places the planet Earth in the interplay of influences exerted by neighboring stars, while adapting the formulation of its missions to the expectations of advice and comfort geared towards human users. The eighteenth chapter reveals the principles of the generative graphic design model through which the Corp has created a visual identity that is easily identifiable and yet infinitely adaptable to allow all its agents to singularize their relationship with it. The nineteenth chapter begins by meticulously documenting the habits of proxemic micro-territorialization that push a collective to ratify hierarchies through the choices of positions around a table, before spawning the model of officeless offices, de-localized in the sense that the specific localization of a workspace dilates to the limits of the entire planet. The twentieth chapter reads extracts from the report made by the whistleblower charged by the Corp to track down and denounce its internal dysfunctions, in the spirit of the VSM system 3 (S3), whose function is to exercise independent and critical auditing procedures, in order to verify the effective adherence of the organization to its objectives and to its declared ethical-ecological standards. In the same spirit, a final interview with the Terra.com AI concludes the report without closing it, since this conversation on the future prospects of terraforming reveals

more doubts and confusion on the part of the Artificial Intelligence than reassuring certainties.

This fifth section therefore documents the ongoing mutations of the Corp which, by its very nature, must incessantly rethink the ways in which it embodies, relays and vectorializes the needs of co-habitability of the different species co-existing on planet Earth. How best to manifest this paradox: our planetarity is being discovered (and terraformed) at the same time that it is self-destructing (de-terraforming)? The different chapters of this section attempt to answer the same question that haunts private companies, State bureaucracies, NGOs and militant collectives – not so much the question of organization as that of its viability. This question takes a doubly relevant form for TerraForma Corp: how to make habitable, for its multiple agents scattered across the globe, a collective corporeality whose mission is to promote the co-habitability of planet Earth?



Assessment

The doubts expressed by the last two texts of this report are an integral part of the Corp's identity. Its two major references in the recent past have both ended in failure. Stafford Beer's Viable System Model inspired the economic policies of Salvador Allende's Chile, which was overthrown on September 11, 1973 by the US-backed military coup led by Augusto Pinochet. The first DAO was the victim of a hack that siphoned off a third of the US\$ 250 million it had collected in record time. TerraForma Corp expects to suffer a similar failure. And it is by preparing incessantly for a failure that it hopes to postpone it indefinitely, while optimizing, along the way, its influence on the co-habitability of our planet.

From this point of view, the year 2022 was a major turning point. Until then, the plan was to gradually build up the organization

through loose, informal and relatively traditional modes of coordination (mailing lists, telephone calls, face-to-face meetings, videoconferences, website, with the sending of shared informative documents, but without any contractualization having the force of law or code). This rise in power had as its horizon the launch in 2025 of a DAO based on a blockchain and open to receive the flows of financing whose promises are pouring in from multiple sides. The Corp's founding assumption was indeed that the VSM could finally find its formal and efficient implementation in the form of a DAO thanks to the emerging technologies and organizational practices of blockchains.

The work documented in this report has, however, led to a significant alteration of these future prospects.

The form of the DAO will continue to offer a general model towards which to tend, but on condition that it is emancipated from the financial dimension of cryptocurrency which today constitutes its most common mode of existence and operation. The unprecedented scalability offered by DAOs – that is to say, their capacity to grow enormously in scale without having to alter their operating methods – makes them an indispensable tool for any organization aiming at global coordination. But, as the whistleblower duly pointed out in this annual report, the monetary models on which current DAOs are based, which are often reduced to financial and speculating mechanisms, are based on premises that are in direct contradiction with the missions of the Corp (strict individualization of collaboration modes, reduction of agents to calculating homo oeconomicus behaviors, carbon cost of token mining through Proof-of-Work mechanisms).

The Corp is not giving up on contributing to the promising developments of a Web3 significantly different from the Web2 colonized by platform capitalism. On the contrary, it is a matter of radicalizing this difference by rejecting the financialization of daily life at the same time as its platformization. The Corp therefore intends to contribute to the development of a new generation of DAOs, established on more sustainable bases, ecologically as well as socially and anthropologically, than those currently operating on the model of cryptocurrencies. The major event of the switch of Ethereum, host of the first DAO, from a mining mechanism based on the "Proof-of-Work" to a securing mechanism based on the "Proof-of-Stake", a switch successfully operated on September 15, 2022, certainly constitutes a mutation with enormous consequences in the sustainability of a Web3 capable of ensuring a planetary governmentality. Although the "Proof-of-Stake" is considerably less energy-consuming, it nevertheless tends to concentrate in the hands of the largest operators a decision-making and regulatory power that must imperatively be distributed more equally. Hence the will, widely shared within the Corp, to go

even further than the existing blockchains, to raise the Web3 to other dynamics of planetary relationality.

This desire is not a utopian leap into a dream future from which the stain of money would have been washed away. The question of financing organizations like the Corp constitutes a major and inescapable problem of any terraforming enterprise programmed to operate on a planetary scale. The Corp's decision must rather be understood as a bet on the possibility of accounting environmental threats according to dynamics of influence that would allow the subordination of strictly financial logics under the pressure of existential urgencies shared as well by non-humans as by humans. Other types of DAOs will be necessary to implement the superiority of the imperative of concrete co- habitability of our shared living environments over the profitability (monetary or symbolic) of investments.



Prospects

At this stage, three tracks are proposed to the energies of Corp members to orient the activities of the years to come. The **first track** consists in re-evaluating the modes of terraforming according to the complementary properties of four relational scales that need to be articulated in a precise (i.e. quantified) way in their relationships of superposition, co-development or incompatibility.

1. *Commensality* brings together living people around their meals, rituals of preparation and consumption of food and drink. Living implies feeding, not only with consumable goods but also with commensals (etymologically: fellow-beings who share our table).
2. *Conviviality* brings together expressive bodies in conversations that are never limited to the communication of coded information according to the

rules of a certain language. Conviviality corresponds to the multi-sensorial co-presence of a group animated by a common curiosity, but meeting for the pleasure of study, more than for the result produced by the studying. This pleasure is conditioned by the self-limitation to user-friendly tools, that is to say easily understandable, controllable, modifiable and repairable by their users.

3. *Collaboration* brings together producers of goods or services in order to coordinate their productive operations. This is what economic analysis, organization and management theories (including the original version of the VSM) have traditionally tried to optimize. Our current deterraforming activities are largely the result of the exclusive prevalence of this relational scale at the expense of the other three.
4. Finally, *co-viability* brings together different forms of life within the same territory that serves as a shared habitat, with relationships of symbiosis, synergy, competition and rivalry. When Stafford Beer's categories are taken up today and complemented by the addition of an S to design Viable & Sustainable System Models (VSSM), sustainability implies that what is viable for my existing species must also be viable for the other species whose diversity frames the life and renewal of our common ecosystem.

If TerraForma Corp has from the outset identified with the need to understand and implement forms of habitation compatible with the needs of co-viability, reflection on the inadequacy of structured DAOs such as cryptocurrencies invites the work of future years to explore and value more intensely the levels of commensality and conviviality, on which depend not only the co-habitability of the planet but also the desirability of the modes of cohabitation that may be imagined and realized there.

The **second track** calls for the Corp's agents to explore, formulate and codify a preliminary idea of what a DAO could look like, where the exchange of services would not be based on the equivalent of a monetary currency, but on a completely different valuation system. The candidate for this year's work is the "RESPECT" report (noted RSPCT), with the challenge of replacing token mined on the basis of "Proof-of-Work" with value multiplication established by a "Proof-of-Respect" process. The work initiated this year by the DUI is at the heart of this research and experimentation program, since the calculation of the terraforming value of the RSPCT of a commodity or a service relies on the computation of the influences of which it is the vector.

The modelling, quantification and processing of big data

provided by the sensitivity of the sensors distributed on the surface of the planet and put in place during the last decades give hope to quantify the (terraforming and de-terraforming) influences of a given commodity or service on the co-habitability of a living environment. The analysis of the different relational scales will in turn give hope to sum up these different influences, in an approximation that would be realistic enough to derive an integrated intercept indicator, aiming to represent a trend of forthcoming effects rather than a sanction of observed effects. The value of the RSPCT will be derived directly from this indicator, as soon as $x > 0$.

The calculation of RSPCT corresponds to the central function of the S4 of the VSM, that of the adaptation of the organization to an environment in constant transformation, and more particularly that of its anticipated adaptation to the future transformations of this environment. But beyond its computational parametrics, the value of RSPCT is intended to take the place of the “religious respect” that most human populations have felt towards deities and natural forces whose power seemed to exceed their own. In a world of limited resources that extractivism has devastated with its consumerist recklessness, the computational operation performed by the Terra.com AI to value the RSPCT due to commodities and services produced and exchanged between humans embodies the need to “look and think twice” (*re-spectare*) before scaling up the production of that commodity or service to an industrial scale that will risk deteriorating the co-viability of a habitat.

The **third line** of work in this annual report calls for more research and experimentation in and especially *with* the speculative capacities of artificial intelligences (AI), whose recent advances have been revolutionary in the fields of machine learning, recognition, and especially the synthetic generation of text, sound, and images. The working hypothesis here is that the surprises of speculation emanating from computational devices can help our era overcome the limits imposed on our collaborative imagination by the stranglehold of financial speculation. A program has already been set up in partnership with the EUR ArTeC to set up experimental workshops in which human agents will delegate to artificial imaginations the task of writing, sounding and visualizing fragments of universes that have remained unimagined until now. Computational devices drawing their information from huge data banks are certainly content to repeat the past by answering the questions we ask them about the future. But, thanks to the correlations detected by deep learning, the recombinations they propose of these past data are not at all “random”. They reproduce not only the biases (racist, sexist, classist, validist) inherited from a racist, sexist, classist and validist past, but also the common (and

uncommon) intelligences accumulated in the collective heritage of which these databases are composed.

To experiment with the ways in which AIs complete the beginnings of sentences, narratives, arguments, songs, or films that we submit to them is thus to enrich the intelligences and imaginations of our individualities, both infinite and limited, with the contribution of multiplied, pluralized, decentralized intelligences and imaginations endowed with a certain autonomy of recombination. A DAO can realize the co-activation of simultaneous wills scattered in space, within a process whose results are unpredictable, according to the project that emerged under the title of TerraForma Corp. In the same way, the experimentation with the speculative capacities of the AIs can help the TerraForma Corp to spawn imaginations whose derivatives, although repeating some elements inherited from the past, will accelerate the future.

Chronology

This chronology, coordinated by Carlos Duran and Abad Ain Al-Shams, contextualizes the emergence of the TerraForma Corp and its transmutation into a DAO (Decentralized Autonomous Organization) within some of the multiple sources of inspiration that have influenced its development: cybernetic modeling, management theories, cartographic experiments, artistic practices, and philosophical speculations.



11th
century
BC

The Zhou Dynasty came to power in China and ruled in the name of a world system called Tianxia (“All-that-is- under-heaven”). The philosopher Zhao Tingyang summarizes its main principles as follows: “(a) the real solutions to the problems of world politics lie in a universally accepted world system rather than in the use of force; (b) a universal world system is politically justified if it has

a political institution that governs for the benefit of all peoples and nations, and for the production of the greatest amount of shared goods; (c) a universal world system works if it creates harmony between all nations and cultures.” (Zhao Tingyang, “The Philosophy of Tianxia”, *Diogenes*, No. 221, 2008, p. 8)

1942–1956	Conferences held at the Macy Foundation in New York regularly bring together specialists from a wide variety of disciplines (mathematics, physics, biology, medicine, psychiatry, anthropology) in discussions from which emerge many research paradigms developed in the second half of the 20th century, including cybernetics, information science, and cognitivism.
1964	Marshall McLuhan publishes the book <i>Understanding Media: The Extensions of Man</i> (New York, McGraw Hill) which initiates the indiscipline of media studies, based on the postulate that the communication technologies put in place between humans and their environment condition their behaviors by redimensioning their relationships to space, time and agentivity.
1970	The American feminist Jo Freeman publishes the text “The Tyranny of Structurelessness” in the <i>Berkeley Journal of Sociology</i> .
1970–1973	The socialist Chile of President Salvador Allende calls the British cybernetic management theorist Stafford Beer to design and implement the Cybersyn project, which was to optimize the flow of information, goods, and services in the context of agile planning of the socialist economy, in real time and with an eye to direct democracy. The project develops the Cyberstrider software, based on Bayesian functions, which formalizes and operationalizes the Viable System Model theory developed by Beer at the same time. From the economic point of view, the cybernetic organization is based on four levels of control (the firm, the branch, the sector, the country) from which thousands of data are transmitted by telex from the field units to a central control room located in the heart of Santiago, opened in 1972,

where screens and models inform the coordinators in real time of the state of the economy. From a political point of view, the Cyberfolk project was to allow all Chileans to send messages of satisfaction or dissatisfaction (as “algedonic loops”), the results of which would be displayed on one of the walls of the central control room. The project was destroyed by Augusto Pinochet’s military coup d’état, fomented with the support of the United States on September 11, 1973.



1972–1979	Stafford Beer published <i>The Brain of the Firm</i> (Harmondsworth, Allen Lane, Penguin, 1972), which presents his cybernetic theory of management, <i>Platform for Change</i> (New Chichester, Wiley, 1975), which draws from cybernetics an alternative epistemology likely to transform (our relative conceptions and practices of what) the world is (with a concluding chapter devoted to the Cybersyn experiment in Chile), and <i>The Heart of the Enterprise</i> (Chichester, Wiley, 1979), which develops and completes his Viable System Model (VSM). The latter proposes a recursive analysis of the functioning of any organization, at any scale, in three elements (O = Operation; E = Environment; M = Meta-system), within which it distinguishes five systems. An operational system that concretely accomplishes the organization’s tasks (S1, operation) and four systems that are part of the meta-systemic management: S2 ensures the stability of the organization, to avoid too abrupt oscillations and conflicts; S3 works on its potential improvement, in constant relation with S2, but also
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by developing information sensors and indicators through a specific system of monitoring S3; S4 must ensure the adaptation of the organization to environments (local and global) in permanent and accelerated transformations; finally S5 is in charge of defining the identity of the organization, by verifying the conformity of its actions with the principles, finalities, and missions in which it affirms to recognize itself.

1986	Gareth Morgan publishes <i>Images of Organization</i> (New York, Sage) which reviews eight metaphorical models that structure the common imaginaries of organization in the modern era: 1° machines, 2° living organisms, 3° brains, 4° cultures, 5° political systems, 6° psychic prisons, 7° flows and transformations, 8° instruments of domination.
1994	A group of post-operative activists centered in Bologna, Italy, is using the name Luther Blissett (a name borrowed from a Jamaican soccer player) to informally federate actions of various kinds, such as exposing journalistic or editorial malpractice, both on the progressive left and in established conservative circles.
1995–2003	The Cybernetic Culture Research Unit (CCRU) is developing its experimental theory-fiction activities on the bangs of the University of Warwick with members such as Sadie Plant, Nick Land, Stephen Metcalf, Iain Hamilton Grant, Ray Brassier, Reza Negarestani, Mark Fisher, Kodwo Eshun, Robin Mackay, Luciana Parisi, Matthew Fuller or Steve Goodman.
1997	Sadie Plant publishes <i>Zeros + ones: digital women + the new technoculture</i> (London, Doubleday) which outlines a program of study and action that will strongly inspire the TerraForma Corp.
1999	Luther Blissett publishes a novel entitled <i>Q</i> (Milan, Einaudi), translated into a dozen languages, in which the protagonist travels through various insurrectionary struggles in Renaissance Europe and finds himself confronted by a mysterious secret agent of the Inquisition, anonymous but identified by the letter Q.

2001	Léonore Bonaccini and Xavier Four start the activities of the collective Bureau d'études which for two decades will produce diagrams, mapping power relations on a planetary as well as national scale (https://bureaudetudes.org/). Part of this work will be compiled in 2015 in the book <i>Atlas of Agendas: Mapping the Power, Mapping the Commons</i> (Eindhoven, Onomatopée).
2001	Tiqqun publishes “L’hypothèses cybernétique” in <i>Tiqqun 2, Zone d’Opacité Offensive</i> (Paris, Belles-Lettres).
2002	Randy Martin publishes <i>The Financialization of Daily Life</i> (Philadelphia, Temple University Press) which, along with <i>Knowledge Ltd. Toward a Social Logic of the Derivative</i> (Philadelphia, Temple University Press, 2015), offers a radical analysis of the epistemological as well as socio-political upheavals induced by the development of new financial instruments, such as derivatives.
2005	Zhao Tingyang publishes in Chinese <i>The Tianxia System: An Introduction to the Philosophy of a World Institution</i> (China Renmin University Press).
2006	Ramachandra Guha publishes the book <i>How Much Should a Person Consume? Environmentalism in India and the United States</i> (Berkeley, University of California Press), which questions the unsustainability and injustice of consumption practices promoted by Western culture.
2007	Denise Ferreira da Silva publishes <i>Towards a Global Idea of Race</i> (Minneapolis, University of Minnesota Press), which traces the history of modern philosophy, highlighting the racist premises and implications of the very definitions of the human, of knowledge and of politics.
2008	Under the pseudonym Satoshi Nakamoto, a text was published that launched the cryptocurrency “Bitcoin: A Peer-to-Peer Electronic Cash System”.
2008	Reza Negarestani publishes <i>Cyclonopedia. Complicity with Anonymous Materials</i> (Melbourne, Re.Press) which articulates petro-

power, polemology, philosophy and religion in a hyperstition that disrupts the usual distribution of agentivities between humans and non-humans.

2009	Delphi Carstens synthesizes and disseminates more widely the notion of hyperstition by putting online an interview with Nick Land "Hyperstition. An Introduction" on http://xenopraxis.net/readings/carstens_hyperstition.pdf
2009	Isabelle Stengers publishes <i>Au temps des catastrophes</i> (Paris, La Découverte) which offers an overview of the relationship between knowledge, planetary habitability and political activism.
2011	Angela Espinoza and Jon Walker edited and published the book <i>A Complexity Approach to Sustainability</i> (London, World Scientific Europe), which summarizes, popularizes and updates Stafford Beer's Viable System Model (VSM) of management.
2011	A collection of Nick Land's writings is published as <i>Fanged Noumena: Collected Writings 1987–2007</i> (Falmouth, Urbanomic).
2011	The neo-pagan activist Starhawk publishes <i>The Empowerment Manual</i> (Cabriola Island, New Society Publishers) which outlines a plurality of possible mobilizations for ecofeminist causes.
2012	Bruno Latour publishes <i>An Inquiry on the Modes of Existence</i> (Cambridge, MA, MIT Press) in which 15 modes of existence are declined, which will inspire the pluralist options and the axes of sensitivities modeled by the TerraForma Corp software: 1° REProduction, 2° METamorphosis, 3° HABit, 4° TEChnique, 5° FICtion, 6° REFerence, 7° POLitics, 8° LAW, 9° RELigion, 10° ATTachment, 11° ORGAnization, 12° MORality, 13° NETwork, 14° PREposition, 15° Double Clic.
2013–2014	Vitalik Buterin publishes <i>Ethereum White Paper</i> , which paves the way for the possible automation of the management of decentralized organizations, and "DAOs, DACs, DAs and More: An Incomplete Terminology Guide", which provides initial guidance

in the coming world of DAOs (Decentralized Autonomous Organizations).


2005–2020	Pierre Bayard publishes a series of works for the Editions de Minuit that lay the foundations of an "interventionist critique" based on the capacity of literary practices to foresee, predict and influence future events, including <i>Demain est écrit</i> (2005), <i>Le Plagiat par anticipation</i> (2009), <i>Il existe d'autres mondes</i> (2014), <i>Le Titanic fera naufrage</i> (2016), <i>Comment parler des faits qui ne se sont pas produits?</i> (2020).
2015	Katherine McKittrick edits Sylvia Wynter's <i>On Being Human As Praxis</i> (Durham, Duke University Press), which presents the thought of this West Indian philosopher, a pioneer of anti-racist and decolonial ecology, calling for the development of practices and knowledge emancipated from the ecocidal model of <i>homo oenomicus</i> .
2015	Pablo Servigne and Raphaël Stevens publish the book <i>Comment tout peut s'effondrer: petit manuel de collapsologie à l'usage des générations présentes</i> (Paris, Seuil).
2015–2022	Gwenola Wagon, Stéphane Degoutin, and Pierre Cassou-Noguès develop multimedia works such as <i>World Brain</i> (2015), <i>Psychoanalysis of the International Airport</i> (2016), <i>Welcome to Erewhon</i> (2019), and <i>Virusland</i> (2022), which investigate the technological and imaginary metabolisms generated by our globally extended connection networks.
2016	Jennifer Gabrys publishes <i>Program Earth: Environmental Sensing Technology and the Making of a Computational Planet</i> (Minneapolis: University of Minnesota Press), which sets out the basis for a global collection of indicators of the habitability of planet Earth.
2016	Max Hampshire, Paul Kolling and Paul Seidler begin developing terra0 which explores the creation of hybrid ecosystems in the technosphere, with the goal of experimenting with the multiple ways in which smart contracts can foster the inherent objectivity of non-human entities in different social

and economic contexts, to learn to recognize and care for their needs. On the technical side, terra0 operates with Ethereum Mainnet, Solidity, OpenCV and React.

2016	DAO, the title of a venture capital investment fund, is launched on the Ethereum blockchain. Open access, the DAO invites everyone to buy tokens and any project owner to present it to obtain the necessary funding for its launch. An immediate success with a large public, it collects the equivalent of 250 million US\$ in a few months, breaking the previous crowdfunding records. On June 17, an Internet user succeeds in a DAO Hack, which exploited a vulnerability in the DAO's code in order to siphon off the equivalent of US\$70 million. This fiasco dashes the dreams of DAO for some time and forces Ethereum – which was not hacked as such, only the specific program of the DAO contained flaws exploited by the hacker – to go back in the chain of time to introduce a branching prior to the hack (hard fork) which allows the reimbursement of parties injured by the siphoning. However, the US Securities and Exchange Commission decrees on July 25, 2017 that the DAO should have registered its transactions with it and declares it at fault for not doing so, signaling the death of the DAO.
2016	Donna Haraway publishes <i>Staying with the Trouble</i> (Durham, Duke University Press), which inspired the TerraForma Corp's practices of "computational disorder" and "disorderly accounting".
2017	William E. Connolly publishes <i>Facing the Planetary: Entangled Humanism and the Politics of Swarming</i> (Durham: Duke University Press), which offers an in-depth discussion of the notion of planetarity.
2017	Angela Espinoza and Jon Walker add a chapter entitled "The Global Recursion: A Planetary Society Striving towards Sustainability" to the second edition of their book <i>A Complexity Approach to Sustainability</i> (London, World Scientific Europe).
2017	A series of messages denouncing collusion between the media, financiers, artists, progressive

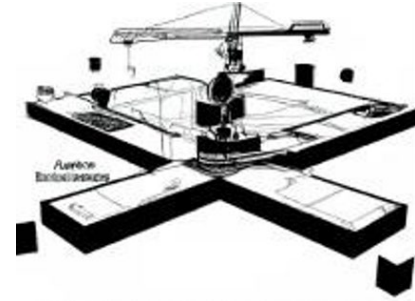
intellectuals and the Deep State were published under the pseudonym Q on the anonymous forum 4chan7 (then 8kun), giving increasing visibility to a group of American far-right activists soon identified as QAnon. Some hypotheses link this Q to the one whose fictional adventures were imagined by Luther Blissett in 1999.

2018	Brian Massumi published <i>99 Theses on the Revaluation of Value. A Postcapitalist Manifesto</i> (Minneapolis, University of Minnesota Press), which lays the foundations for a possible reappropriation of certain financial mechanisms, such as blockchains, for the purpose of social transformation that would allow us to go beyond the modes of valuation on which contemporary capitalism is based on a planetary scale.
2018	Various associations, artists and researchers, mainly located in Western Europe, interacting until then through multiple mailing lists and groups on social networks, decide to federate within the TerraForma Corp, whose first online general assembly decrees the launch, with a principle of open and anonymous membership for anyone who wishes to contribute to its work and/or claim to be part of it, on the model imagined by Luther Blissett in the 1990s.
2018	Simultaneously with the European condensation of TerraForma Corp, Do Kwon founded Terraform Labs in Seoul, which develops the Terra blockchain as well as the LUNA cryptocurrency, which includes voting rights on proposals submitted to the common governance. As of February 2019, Terra was promoted and supported by a large group of companies and e-commerce platforms called Terra Alliance, with 45 million users in 10 countries and \$25 billion in revenue.
2018	Jennifer Gabrys publishes "Becoming Planetary" in the online journal <i>e-flux Architecture</i> .
2018	The activities of EUR ArTeC are launched with an inaugural conference by Bruno Latour at the Institut National de l'Histoire de l'Art in Paris.

2018	The Disnovation.org collective launches its post-growth program (https://disnovation.org/postgrowth.php), which re-envision social metabolisms by questioning the energies and materialities required, drawing on ecofeminism, indigenous knowledge, environmental accounting and historical materialism.
2019	Frédérique Aït-Touati, Alexandra Arènes and Axelle Grégoire publish <i>Terra Forma. Manuel de cartographies potentielles</i> (Paris, B42) which will deeply influence the activities of the TerraForma Corp by proposing seven alternative conception models of our ways of mapping living habitats: 1° Soil, 2° Point of Life, 3° Living Landscapes, 4° Borders, 5° Space-time, 6° (Re)Sources, 7° Memory(s). The EUR ArTeC invites the authors to present their work as part of a disorientation experience at the Gaité Lyrique.
2019	Grégory Chatonsky presents the exhibition <i>Second Earth</i> at the Palais de Tokyo in Paris, where an automatic life of imagination, thought and even production processes is staged, organized by artificial intelligences on the fringe of human decisions and potentially capable of surviving the latter.
	
2019	Benjamin Bratton launches the three-year program <i>The Terraforming 2019</i> at the Strelka Institute in Moscow and publishes the book of the same name, which explains its presuppositions and aims. The program is interrupted following the invasion of Ukraine by Russian armies in the spring

	of 2022, but the book is translated into French by EUR ArTeC in the fall of 2021 under the title <i>La Terraformation 2019</i> (Dijon, Les Presses du réel).
2019	TerraForma Corp decides to devote two years of work to the re-evaluation of Stafford Beer's Viable System Model with the objective of inventing a computational model that can be integrated into a blockchain to arrange sustainable interactions on a planetary scale for all the living entities involved.
2019	Patricio Dávila publishes the catalog for the exhibition <i>Diagrams of Power. Visualizing, Mapping and Performing</i> (Eindhoven, Onomatopoeia), which lists the works of various artists proposing "power diagrams", defined "as visual works that represent and communicate ideas or data, but equally as processes that arrange bodies and things", since "a diagram can be used both to show how power is distributed, but it can also itself serve as a vehicle through which that power is distributed".
2019	Alan Damasio publishes the novel <i>Les furtifs</i> (Paris, La Volte) in which a father in search of his missing daughter joins a military action group tracking down undetectable non-human entities, in a European space controlled by the artificial intelligences of large corporations against which various autonomist insurgencies are fighting.
2019	Lukáš Likavčan's <i>Introduction to Comparative Planetology</i> (Moscow: Strelka Press) makes explicit the philosophical implications of a planetary approach to political processes by bringing to the forefront of his analysis the infrastructures that simultaneously condition the habitability of urban areas and the damage to the habitability of the entire planet.
2019	The TerraForma Corp begins to generate first work reports, sent to different media outlets, some of which are integrated anonymously into Cora Novirus' Primer on Bifurcations, published as a special issue 80 of the journal <i>Multitudes</i> in the fall of 2020.

2019	Theo Deutinger publishes the book <i>Ultimate Atlas. Logbook of Spaceship Earth</i> (Zürich, Lars Müller), which quantifies in one-dimensional form a sample of indicators of the Earth's habitation patterns and habitability parameters.
2019	Ingrid Diran and Antoine Traisnel publish the article "The Birth of Geopower" in n° 47-3 of the journal <i>Diacritics</i> , critically reviewing the relationship between planetarity and geopolitical realities.
2019	Historian Dipesh Chakrabarty publishes "The Planet: An Emergent Humanist Category" in issue 46 of <i>Critical Inquiry</i> , showing the upheaval imposed on our categories of political thought by the notion of planetarity.
2019	Malcolm Ferdinand publishes <i>Une écologie décoloniale. Penser l'écologie depuis le monde caribéen</i> (Paris, Seuil), which articulates the needs and challenges of a decentralization of the premises of ecology, in order to integrate the needs and contributions of non-eurocentric perspectives.
2020	Holly Jean Buck publishes <i>After Geoengineering: Climate Tragedy, Repair, and Restoration</i> (New York, Verso) in which she calls on environmentalists to discern which forms of geoengineering should be rejected at all costs and which may be acceptable, as well as to consider the need for global governance to accompany these climate change mitigation technologies.
2020	The website CryptoArt.wtf posts a carbon impact calculator for NFTs that is causing lasting controversy among blockchain advocates and users in the environmentally minded art community.
2020	The Earth Viability Center is founded, carrying out research programs that study the habitability of the Earth at local and global scales, and which publishes viability indicators monitoring the state of the Earth Life Support System (ELSS), based on Stafford Beer's Viable System Model (http://www.earthviability.org/dashboard/).
2020	The collective COALA (Coalition of Automated

	Legal Applications) proposes the DAO Model Law which makes it possible to give a legal personality to DAOs and to put them in harmony with transnational law.
2020	The State of Wyoming officially accredits the legal existence of DAOs by giving them the same rights as limited liability companies.
2020	Vladan Joler posts the diagram <i>New Extractivism. Assemblage of Concepts and Allegories</i> (www.extractivism.work) which proposes a mapping of the social, political and ecological planetary implications of the operation of platform capitalism.
	 <p>EEXTNECTIAL EVODEA1</p>
2021	Anna L. Tsing, Jennifer Deger, Alder Keleman Saxena, and Feifei Zhou launch the website <i>Feral Atlas</i> : The more than human Anthropocene, which aims to document on a global scale the places where ecologies have developed that are encouraged by human infrastructure but beyond human control, these infrastructural effects of ferality being typical of the Anthropocene.
2021	TerraForma Corp postpones the launch of the financial side of its DAO until 2024 or 2025. In the meantime, it is experimenting with the possibility of setting up a DAO whose tokens are detached from any monetary investment. What is registered, valued and exchanged on the blockchain is measured in work time, in barter for members sharing the same geographical location or in "evangelical contribution" not monetized but quantified in "Respect", which becomes the most commonly used currency (under the notation RSPCT). Instead

of the energy-intensive Proof-of-Work systems (on which Bitcoin is based), the Corp's experimental blockchain is based on the principle of "Proof-of-Respect": the value of a contribution is arbitrated by an estimate of the Terra.com AI, which computes to the best of its computational ability the possible effects of the contribution in question on its near and far, human and non-human environments. The sum of these effects constitutes the "influence" of the evaluated action. This computation fulfills the function of the S4 of the Viable System Model theorized by Stafford Beer. The value of the RSPCT corresponds to the result of this calculation when $x > 0$.

2021	Emmanuel Bonnet, Diego Landivar and Alexandre Monnin publish the book <i>Héritage et fermeture. Une écologie du démantèlement</i> (Paris, Divergences) which articulates the notion of "negative commons", defined as infrastructures that only nourish our present lives by rotting our future living environments, with the necessity to prepare the dismantling of such infrastructures.
2021	The magazine <i>Multitudes</i> publishes a special issue 86 dedicated to the questions of Planetarities.
2021	The members of the DIU meet at the École des vivants hosted by Alain Damasio for working days on terraformation.
2021	Maud Maffei and Grzegorz Pawlak organize the <i>States of Terraforming</i> conference at the Sorbonne University in Paris.
2021	Nephtys Zwer and Philippe Rekacewicz publish the book <i>Cartographie radicale: Explorations</i> (Paris, La Découverte) which critically reviews the multiple ways in which the sciences and certain arts have represented territories and their inhabitants, helping to imagine other ways of visualizing and modeling the habitability of the planet.
2021	Stefano Harney and Fred Moten publish <i>All Incomplete</i> (Wivenhoe, Minor Compositions), which expands the thinking in <i>Undercommons</i> . <i>Fugitive Planning and Black Study</i> (Wivenhoe,

Minor Compositions, 2013) to expose the racism inherent in the extractivist modes of production, governance, and logistics that propagate a bureaucratic and accounting anti-sociality on a planetary scale that threatens its livability.

2021	Camille de Toledo publishes <i>Le fleuve qui voulait écrire. Les auditions du parlement de Loire</i> (Paris, Les Liens qui Libèrent), which mobilizes the resources of literature to help humans understand what a non-human entity such as a river would need to express to preserve the habitability of our planet. Comparable approaches have been developed for years around the Atrato River in Colombia, the Ganges River in India and the Whanganui River in New Zealand.
2022	TerraForma Corp makes available the artificial intelligence it has been working on for two years, Terra.com, as the first attempt at a planetary scale computation of the needs of the various living entities that make up our terrestrial environments. The design is based on Stafford Beer's Viable System Model.
2022	Aliocha Imhoff and Kantuta Quirós publish their book <i>Qui parle? (pour les non-humains)</i> (Paris, PUF) in which they review different forms of research-creation practices imagined and implemented in recent years to put humans in touch with non-humans.
2022	A class action lawsuit is launched in Northern California on June 17 against Terraform Labs and its founder Do Kwon on charges of selling unregistered financial securities, thereby misleading investors. A month earlier, Do Kwon and Terraform Labs were fined \$78 million in South Korea. In July, following the collapse of Terra, it was revealed that a \$3.6 billion fund had been concealed for use in LUNA price manipulation and money laundering operations.
2022	The Raffard-Roussel collective presents its <i>Stackographie d'une trottinette électrique</i> at the Fiminco Foundation in Romainville, laying the foundations for a multifactorial analysis of the

influence/impact of an electric scooter on human social and psychic formations as well as on the habitability of the planet.

2022	Ruth Catlow and Penny Rafferty publish the book <i>Radical Friends. Decentralized Autonomous Organisations and the Arts</i> (London, Torque Editions) which brings together a wide range of statements, analyses and proposals on the artistic and activist uses of DAOs.
2022	Jennifer Gabrys publishes <i>Citizens of Worlds: Open-Air Toolkits for Environmental Struggle</i> (Minneapolis, University of Minnesota Press), which catalogues, analyzes, promotes, and disseminates multiple ways that people from different cultures and places around the world record, collect, and process environmental data in their environmental mobilizations.
2022	On September 15, Ethereum switches from the energy-intensive Proof-of-Work mechanism, also used by Bitcoin, to a Proof-of-Stake mechanism. This operation, called The Merge, is happening without any technical bugs, after a 50% increase in the value of the cryptocurrency, followed by a slight drop of 15% the day after the operation. This allowed the blockchain to reduce its energy consumption by 99.95%.
2022	The DIU presents an overview of the research conducted with the TerraForma Corp during the ArTeC Meetings held on October 5 and 6 at the Cité Internationale des Arts.
2022	TerraForma Corp officially redefines its form of corporeality as that of a “vibrational conspiracy”.
2025	TerraForma Corp is giving up on financializing its blockchain operations in the cryptocurrency framework. A computational model, in the process of being operationalized, automatically translates conspiratorial vibrations into RSPCT values.

Part 2 Papers



The Right to Exist and Be Existent Framed in the Ambient Trust of Commons

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Abstract

This study reflects on two ambiances: the Bodies-ambiences – the body-flesh-ambience, limit-boundaries-bodies, the body that absorbs and fattens the ambiences and swallows up the *now* – and the Ambiences-bodies – *communication/recognition* and regulation in the thresholds and surroundings of the Bodies-ambiences. We provide insights on the meaning of what it is to exist and to be *existent* framed in the Ambient Trust of Commons and emerging conflicts due to human economic and business activities and their direct impact on our planet's balance. We reflect on our relationship with nature, natural resources, new technologies and the global economy's functioning by bringing insights from the arts and economics disciplines. The old mental image on the part of Western social bodies has generated painful fractures in their midst, which requires a new mental image. Our ways of communicating, either by using languages or other artistic means, need to consider ongoing societal, economic and environmental challenges, which change our ability to acknowledge their significance. The idea of Bodies-ambiences, Ambiences-bodies issues, connected to our reality through our right to exist and to

be *existent*, is to immerse ourselves in the sensitive universes that constitute lives, worlds, cosmos, artificial intelligence and accept the generation of other possible realities that are not constrained to rigid economic and political dogmas. We argue that combining arts and economic thinking within the dimensions of the Anthropocene and the trust of the commons can help us to reflect further on the need for change. This study is an exploratory attempt to open ways to other possible economic systems and the need for research studies that bring together ideas, insights and viewpoints from a transdisciplinary perspective.

Keywords: image, ambiances, bodies, arts, economics, communication, ambient trust commons

Introduction

Human economic and business activities are causing significant damage to the Earth's systems and their balance, painfully breaking the trust of commons and their harmony. Pressing needs for technological advances, innovation, sustainable economic growth, and the expectation of accelerated change that supports modern societies are causing significant distress on our planet, our societies and our natural resources. The global economy has entered a conflicting phase where competition to secure natural resources is inflicting damage on the planet, translating into adverse spillover effects on socio-economic dynamics and negatively impacting countries' international relationships. Furthermore, our knowledge economy has entered a new phase of economic development and progress, where the evolution of technology and our transition towards artificial intelligence and its interaction with our realities bring new opportunities and significant challenges. A disturbingly unequal relationship exists between using and extracting natural resources to fuel economic activity and the time given to the Earth to replenish and regenerate them. Our societies need to engage in a reflective exercise that examines to which extent our right to exist justifies our role as a dominant species with the right to exploit limited resources without boundaries.

In our quest for progress, we have forgotten that our actions and ambitions generate collateral damage. Damage that we do not take into consideration – as our right to exist seems to be more than justified – inflicted damage and the continual exploitation of natural ecosystems that are being spoiled with our constant interventions, misuse, abuse and contamination. The abuse is not limited to natural resources, as is reflected in our interactions with less developed economies and vulnerable communities who are subjected to significant exploitation and marginalisation. In economics, we refer to externalities as potential collateral effects

that have materialised in increasing pollution levels, environmental degradation and deterioration that have seriously disrupted natural ecosystems, moving from a balanced state defined as the Holocene towards a distorted version of what is known as the Anthropocene. To acknowledge human intervention on our planet's limited resources, we present the ideas Bodies-ambiences and Ambiences-bodies, as well as the sense of *being able to be accompanied and accompanying*. The significance of interaction and understanding is presented in the sense of *recognition/communication* between humans and other beings, which becomes difficult under dominant neoliberal virtual capital systems and the needs of the world's most developed economies.

Those notions bring up some questions that require reflection. What is it to be a body, just an anthropocentric idea? Are the ambiences creative and inventive with their right to exist? What is it to exist and the possibility of being *existent*? Are we heading towards our own self-inflicted extinction? Faced with this existential paradigm, we must rethink our vision of the individual, life, world, cosmos and technologies. A profound reflection on the idea of a commons emerges, and we question how it translates into an ambient trust of commons that influences our right to exist, to be *existent* and to engage in a harmonious relationship with nature as we look at our ancestors' legacy.

We seem to fail to understand that our planet's resources are limited and that our survival is very much defined by our ability to find a balance between our planet's needs and humans' desires and wills. We are facing significant challenges to exist, to integrate and understand our diverse and multicultural societies that are painfully reflected in global economic and social imbalances, critically visualised in a growing divide between the wealthiest and the poorest. The intervention of technology and innovation now enhances the needs of different groups and the impact of our technological advances as they materialise in the development of artificial intelligence will also define how we envision our future and might lead towards exacerbating the differences between privileged societies and those that are naturally marginalised and excluded from our planet's wealth.

In this paper, we argue the need to bring together arts and economic thinking to help us navigate our contemporary socio-economic and environmental challenges in the Era of the Anthropocene. We felt it necessary to present some images and schemes to explain our idea as we explore how arts and economics can work together to bring different explanations to our challenging new realities, as we seek to open new avenues for discussion and dialogue where different disciplines take an active role in questioning our relationship with our planet and our society's economic needs.

Bodies-ambiences and Ambiences-bodies

It becomes necessary to acquire resistance against a vision of a one-dimensional drawing of this reality by breaking with the old images of life, the world, the cosmos and generative artificial intelligence. Nature and its harmony have been disturbed and interfered with quite dramatically. Human beings appear to be disconnected from nature as we are not considering the needs of other living creatures. We are failing to have a balanced knowledge and understanding of the world. We have forgotten our human dimension in favour of a materialistic view of the world, not questioning our capacity and the meaning of our right to exist. Our sense of humanity and capabilities to respond to others' needs are severely compromised. We are limited and constrained by our personal and individual ambitions, guided by our desire to grow, develop, and continuously compete with ourselves and others. Our ambitious, individual goals and expectations emerge as a barrier that disconnects us from our society's needs and moves us into dimensions of continuous hostility and lack of mutual understanding. Even concerning languages, we should rethink our senses, allowing us to follow other directions and undergo change of states.

When Kamper (2016, p.69) states: 'there is no humanity without monstrosity', referring to the violence of the 20th century, and in consensus with Morin (2016, p.47) who places '*homo sapiens*' as '*homo demens*' (in the sense of 'locura'), it seems that both are referring to an almost fateful unity, as if '*homo*' was a '*thing*' impossible to be referred to as a man himself. Both authors lead us to the impossibilities of being. From the perspective of this research study, we can develop a connection towards Bodies-ambiences. But what is the difference between Bodies-ambiences and Ambiences-bodies?

By Bodies-ambiences and Ambiences-bodies, we consider the understanding of the choice dilemma of Belting (2014), Kamper (2016) and Mbembe (2017). This choice emerges as an intentional decision within our research context because we can build a model according to the biological and the kinesis/modus operandi of mental images, according to virtual and real images (in Belting's sense). Considering the importance of balance between humans and nature, the approach to nature and the role played by artificial intelligence raise significant questions as we reflect on the right to exist and *be existent*.

We cannot neglect the conflicting nature of the relationship between economic, political and social activities, and the pressure imposed by market forces on our planet and ourselves. Technology and innovation are dictating, modelling, shaping and reshaping our lives as we witness a human disconnection, interrupted by our constant engagement with devices that are absorbing our

conscience and seriously limiting our ability to communicate and interact in social environments. Reflecting and examining how to mitigate the suffering on the planet generated by dominant neoliberal virtual capital systems and the legacy of cultural colonialism is imperative. It is critical that we question ourselves, the needs and demands of our modern society and the world we dream of for future generations. Despite the intrinsic division between Bodies-ambiences and Ambiences-bodies, it does not mean the impossibility of their connections, as we have an association by *recognition and communication*.

Bodies-ambiences

Thoughts and ways of thinking intersect within spaces and times as model visions under construction. The image that appears from those intersection points is similar to musical writing. I can perceive musical notes as drops of dew shining as crystalline pearls. I can say 'I' because it is the image 'I' perceive as more or less 'the mirror' referred to by Belting (2014) in *Antropologia da Imagem*:

Como meio, o espelho é o oposto cintilante dos nossos corpos e, no entanto, devolve-nos a imagem que fazemos do nosso próprio corpo (...). Na superfície do espelho, o corpo adquire uma imagem incorpórea, mas que nós percebemos de modo corporal. Desde então, outras superfícies técnicas continuaram o papel do espelho, propondo um reflexo do mundo exterior. (pp. 37, 38)

[free translation] As a medium, the mirror is the sparkling opposite of our bodies, yet it gives us back the image we have of our own bodies. (...). On the surface of the mirror, the body acquires an incorporeal image, but we perceive it in a bodily way. Since then, other technical surfaces have continued the role of the mirror, proposing a reflection of the outside world.

Indeed, another person would perceive it otherwise.

Thoughts leave their vestiges. The world of thoughts is unfinished, and their connections and energies expand between discontinuities in a kind of update or disappearance.

In trying to understand how humans understand the importance of living in harmony with nature, it came to mind to design the idea of Bodies-ambiences. This was the first step of a reflective process that led to the following questions: What are the primary purpose and intentions of the capital virtual neoliberal systems? Why do they insist on the ideas of power, colonisation, internationalisation, global imperialism and other dominant 'isms'? What are the different systems' understanding of life? Do they suffer from apathy?

The first proposition to try and offer an answer to the outlined questions is: Bodies-Ambiences are based on appetencies and desires, as Krenak (2022) points out:

Estamos comendo a Terra. Precisamos nos reconciliar com esse organismo vivo do planeta, a terra, porque, se não nos reconciliarmos com ele, se continuarmos fincando as garras no corpo da terra, ela ainda vai nos cuspir daqui, porque ela é viva, a terra não é burra, diferentemente dos caras que passeiam em Dubai, ela não é burra e vai enjoar de nós, vai dizer: 'Chega! Chega de um verme estúpido, esse homo sapiens'. Temos que aprender a falar a língua da terra: ou aprendemos a falar a língua da terra ou vamos ser expulsos do corpo da Terra como uma coisa estranha a esse organismo que produz vida. A Terra produz vida! Não podemos continuar reproduzindo essas estruturas podres, essas coisas que não têm sentido, continuar enfiando ferro no corpo da Terra. (pp. 219, 220)

[free translation] We are eating the Earth. We need to reconcile with that living organism of the planet, the land, because if we do not reconcile with it, if we continue digging our claws into the body of the land, it will still spit us out of here, because it is alive, the land is not stupid, unlike the guys who walk around Dubai, it is not stupid and will get sick of us, it will say: 'Enough! Enough of a stupid worm, this *homo sapiens*.' We have to learn to speak the language of the land: either we learn to speak the language of the land, or we are going to be expelled from the body of the Earth as something alien to that organism that produces life. The Earth produces life! We cannot keep reproducing these rotten structures, these things that do not make sense, keep putting iron in the Earth's body.

Appetencies and desires generate [*one-in-solitude*]. By manipulating realities on the same old mental image since the first industrial revolution, extended to the capital virtual neoliberal systems, all societies can observe how the cloning movement works worldwide. The scheme presented in Figure 3.1 below shows how appetencies and desires are linked to the *logos* of presences and absences caused by that old image that emerges of 'a somehow' as a sufficient condition inside the verb 'Ver' in the sense of a desired perception to see. This is to say, a *modus* of wanting to see.

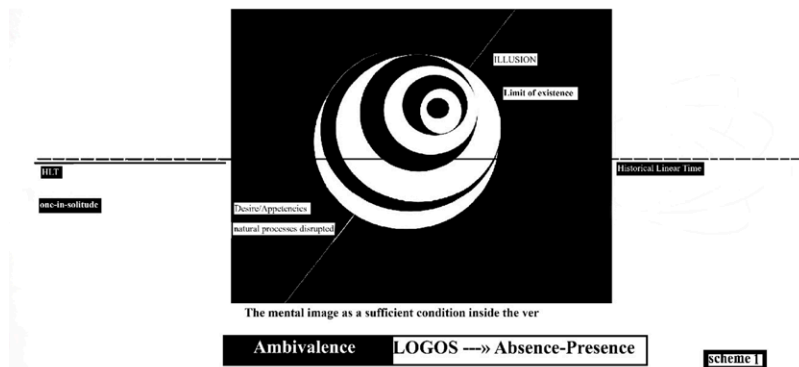


Figure 3.1 The first information for cloning at Hlt.
Source: Gonçalves & Morales 2023

The appetencies and desires in the *modus* of wanting to see infer that Bodies-ambiences live in *compressed time*. As a double mirror, from this precise moment, *compressed time* shows the violence that propels empty places. It can be said that Bodies-ambiences are discontinuities in *compressed time*. However, that 'precise moment' is not the 'present' but infers repetitions of the image of 'parts of time' projected by the same old *modus* of the desire to see. This means the 'present' catches the 'precise moment'.

Consequently, the right to exist becomes relative. At the same time, the right to exist tries to assert itself as *the one that institutes* – in the sense that appetencies and desires impose a virtual global image about how 'to stay' in the world and not the way of being able to be in the world. This is to say that, by appetencies and desires, Bodies-ambiences move in a circular transmission: bodies generate ambiances and ambiances generate bodies, plentiful appetencies and desires. This is visible and clear when we observe the conflicting relationships between economic, political and social activities and the imposition by force of the market needs on our planet. So, the image of *the one who institutes* – which infers repetitions of the 'parts of time's image' projected by the same old *modus* of the desire to see – implies *compressed time*. The idea of *compressed time* can be expressed by the need to end each repeated image perceived in a precise moment. This means that the same design of the precedent images will be repeated. *Compressed time* is a repetition of 'endings' parts of time or finitude of time, which design Bodies-ambiences discontinuities.

Suppose there is no other kind of unit as a necessary condition for movement between re-actualised signifiers. In that case, further reflections are needed: Are human beings unable to have another kind of perception? Will the 'reality' be just an

anagram of conditions of beings' misery? Deep down, it is a problem with the conditions of the limits of existence, which are entangled in images that expand from realities to unrealities that have been instituted so that human beings can have an external vision of what they are. The conditions of the limits of existence seem to reveal a sort of anomaly. The idea of anomaly refers to the final purposes of any conformity to the Linear Historical Time (LHT). Concerning the idea of anomaly, it can be referred to, even in a subtle sense, as the oblivion of human beings. Anomaly does not favor what Mbembe (2017), in *Crítica da razão negra*, says:

(...)o desejo de ser, cada um à sua maneira, um ser humano completo. Tal desejo de plenitude humana é algo que todos partilhamos. (p. 304)

[free translation] (...) the will to be, each in its own way, a complete human being. Such a will for human fulfilment is something we all share.

What is about to exist? What about the possibilities for life?

Heidegger's *Dasein* presents two structures that dialogue with each other: one speaks about the position of human beings in their common, ordinary and everyday lives, in their presence with the other, without being aware of the meaning of existing, and another structure that speaks of a place where an authentic world of existence-in-common, care and concern for the other can happen.

But is that dialogue for all human beings? How can they dialogue if most human beings belong to the sphere of exclusions? Indeed, *Dasein* is not a thing, but in this context, it is a kind of phantasmagory, a mirage. The Bodies-ambiences move from the point of mirage to another point of appropriation, describing a circumference until it closes. The enclosed points show the circumference's outer circular line, which culminates in the question: Do human beings exist if they took the commitment with compressed time expressed by the possibility of the planet's destruction?

The philosopher Stein (2019), in *Being Finite and Being Eternal*, talks about 'personal unity': 'The human being, more than a body, is defined as corporeality, that is, as a body that lives as an experience of personal unity (*Leib*)' (p.15).

Is it possible for the Bodies-ambiences in these neoliberal virtual capital systems to achieve experiences of personal unity?

Since Ancient Greece, Western philosophy has been linked to the problem of understanding the meaning of things. How can Bodies-ambiences understand the meaning of things if they are not like living bodies (spiritualised bodies) in the Steinian sense, and the Krenakian sense (life as transcendence)? What is the place for those who have no place in these systems?

According to Stein (2019): 'What *makes* a man is the realisation of what he *can*; and what he cannot do is the expression of

what he is: in the fact that his faculties are actualised in his doing, his essence reaches the maximum *development of being*' (p. 86).

Bodies-ambiences are where real potentiality and actualisations are somehow stuck on in a *modus operandi* of existence, not in a *modus* of being. If, for Stein (2019), the physical, corporeal element is indispensable, this element that conveys the experience and which is not the *Körper*, inert, but the *Leib*, 'living body', animated and also spiritualised, how can Bodies-ambiences achieve that experience as alive bodies when human beings are like human islands generating other islands? How can Bodies-ambiences be open to feel the sense of Krenak (2022) when he shouts: '*The Earth produces life*'. Is this not a way of saying that life is transcendence and we have to realise that?

Estamos, cada um de nós, no seu cotidiano, experimentando desafios que impedem que nossa fluência na comunicação uns com os outros se dê de maneira amorosa, se dê da maneira como foi reivindicado há algum tempo, uma comunicação pacífica, uma comunicação simpática, produzindo empatia e disposição para entender. Pensemos, então, que podemos estar experimentando essa comunidade temporária. (Krenak, 2022, pp. 211, 212)

[free translation] We are, each one of us, in our daily lives, experiencing challenges that prevent our fluency in communicating with each other to take place in a loving way, in the manner claimed some time ago, in a peaceful communication, a sympathetic communication, producing empathy and willingness to understand. Let us think, then, that we may be experiencing this temporary community.

Generating economic systems in *compressed time* enables conflicts. These conflicts are a way to erupt from *compressed time* and capital virtual neoliberal cloned economic systems. The world is witnessing the hyper-acceleration of massive devourer technologies-machinery through the exponential growth of technologies. While giving the sensation of an open world, an 'open time', the technological machinery still belongs to *compressed time*, because of its reproducibility and the intention to control everything without thinking or assessing the risks involved.

Bodies-ambiences refer to appetencies, which, according to their most visible laws, lead to the destruction of the planet Earth, to the destruction of the idea of what a body is, what life is, what a person is, what worlds could be, what generative artificial intelligences can be.

Bodies-ambiences is a concept that refers to the predominance of human beings in the construction of ambiences, according to their appetites and desires, forcing other bodies to follow them, instrumentalising them, which causes important

fissures and distances between human beings themselves, between human and non-human beings, between nature beings themselves, between beings and artificial intelligence. It seems that life is at a great war with itself.

Bodies-ambiences impose an image of what language has to be. We can design a map concerning the *modus* to drag language itself into the artefacts' world. Its instrumentalisation happened a long time ago, before the age of global communication on social networks in a linked way of 'talking too much' at a planetary scale. Bodies-ambiences insist on maintaining the commonly held idea of languages and trying to add the idea that languages are in development. And if we ask: Do languages speak of what they speak, or about what is spoken of? What is the *modus* of languages to speak? In this concept of Bodies-ambiences, we return to Heidegger (1986) when he denounces the distance of *techne* in relation to *poietic*. It can be said that Bodies-ambiences are the ones that institute themselves by imposing certain behaviours and imposing their 'language' on many different civilisations.

Certainly, jurisdiction systems play a significant role inside neoliberal virtual capital systems, favouring large corporations that hold power over artificial intelligence, and reflect the power of algorithms and data. In this way, Bodies-ambiences may drag beings into cyber slavery. We might say that this instituted predisposition began a long time ago, with Aristotle's thoughts on slavery, which spread out to Western civilisations. For him, an enslaved person was at the service of production and reproduction of the welfare of the life in common. For Aristotle's thinking, the facts and reason demonstrated that slavery was a result of natural laws, which meant that they were naturally enslaved people. Bodies-ambiences still have this image and so it can be understood as cyber slavery. Let us listen to the philosopher Willis (2023), in his article *Ciberescravidão e Imunologia Social* [Cyberslavery and Social Immunology], about the global Judicial System:

(...) o Sistema jurídico em escala global irá crescentemente reagir contra a diversidade e em fazendo isso irá minando os fundamentos mesmos da ambiência natural e cultural, humana. (p.7)

[free translation] (...) the legal system on a global scale will increasingly react against diversity; by doing that, it will undermine the foundations of the natural and cultural human environments.

Bodies-ambiences follow in the sense that human beings exist and may, however, be not *existent*. In this paper, understanding the right to exist and being *existent*, Bodies-ambiences have to do with *compressed time* and the idea of the body and its mental image. Our economic models characterise

and define Western societies. Our destinies are influenced and guided by an obsolete paradigm supported by a dated Gross Domestic Product (GDP) concept, defined as the core economic development and progress metric. This is an economic paradigm that the rich Western economies have tried to impose on other countries through the establishment of capitalism and its principles guided by the free-market economy and the so-called 'Washington Consensus', which fails to provide a harmonious and unified framework for development and the right to exist and *being able to be existent*.

The OECD (2022a) defines GDP as: 'the standard measure of the value added created through the production of goods and services in a country during a certain period'. The standard definition of GDP is extremely limited as it does not adequately measure people's material needs and the holistic notion of well-being. As such, alternative indicators, visions, and deep thinking are needed.

Surprisingly, we are aware of the shortcomings of our current understanding of growth, but unfortunately, we are subjugated by a crude reality that materialises throughout our planet's boundaries, and our understanding of the need to respect and be able to be *existent* that is not limited to ourselves as human beings.

The interrelations between Bodies-ambiences, which are understood as based on appetencies and desires, is presented in Figure 3.2. To feed this thirst, realities need to be manipulated on the same old mental image since the first industrial revolution, extended to neoliberal virtual capital systems which imprint on worlds [*one-in-solitude*]. Thus, they impose on the worlds taking a position where real potentiality and actualisations are stuck somehow in a *modus operandi* of to exist and not in a *modus* of being. Bodies-ambiences engage in an adaptative way, using specific strategies (Anthropocene discourses and others) to enable *compressed time*, from which arises the cloning economic systems that, in turn, impose themselves as *institutes* in the sense that the right to exist becomes relative. Thus, to exist becomes a structural incapacity of *recognition/communication*, in the sense of *being able to be accompanied, accompanying and in the sense of being welcomed [If...]* and to *being able to welcome [If...]*.

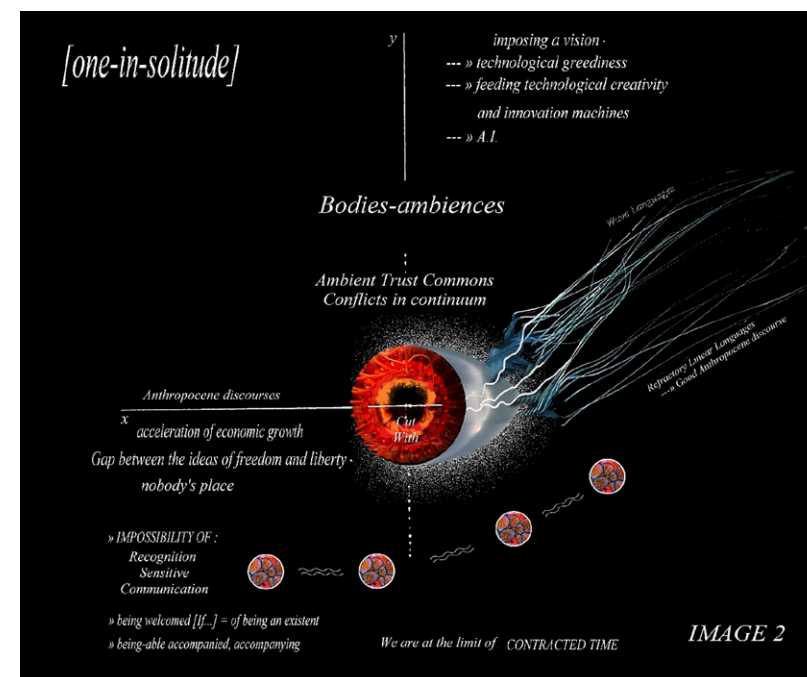


Figure 3.2 Bodies-ambiences

Source: Gonçalves & Morales 2023

However, an intermediary cannot be missing, an intermediary that indicates the solar and lunar aspects of beings. This intermediary might suggest a vocation associated with a salvific and regenerating force for beings in the abysmal dividing line of inclusion and exclusion.

Pero donde hay peligro
crece lo que nos salva.

But where there is a danger
what saves us grows. (Hölderlin, 1997, p.395)

The [*If...*] is vital due to the possibility of Bodies-ambiences and Ambiences-bodies crossing intermediate places for the *Essential*, in which they can exist, *being able to be an existent*.

Ambiences-bodies

It is essential to say that our attention does not focus on corporeity, as Kamper (2016) referred to it, but rather on the assumption that human beings and non-beings are also a *means of time to add*. In human beings, the experience of the body is insufficient to understand what is *essential [If...]*, and it is not sufficient when the idea of the person is replaced by the idea of a single individual, like a copy-paste replaces the idea of the person.

That is why we prefer the idea of the persons of the person and the idea of communities instead of using the term societies.

Bello (2006), refers to Husserl, concerning his opposition against Positivism, in *Introdução à Fenomenologia* stating the following:

Husserl diz que os fatos existem e são fatos. Mas o que são? Por exemplo, a ciência física olha a natureza, dá-se conta dos fatos da natureza, mas o que são esses fatos? Ou ainda, as ciências sociais olham a sociedade, mas o que é a sociedade? Qual o seu sentido? Fazemos tantas análises da sociedade sem saber do que se trata. (p. 24)

[free translation] Husserl says that facts exist, and they are facts. But what are they? For example, physics science looks at nature, takes note of the facts of nature, but what are these facts? Or even social sciences look at society, but what is society? What is its sense? We do so many analyses of society without knowing what it is about.

It is important to point out that we cannot define a person. Concerning this idea of the persons of the person and trying to offer a better explanation, we focus our attention on the writer and philosopher Bâ (1981), as he states:

Os Fula e os Bambara possuem dois termos próprios para designar a pessoa. São eles:

a) *neddo e neddaaku*.

b) *maa et maaya*.

A primeira palavra de cada um desses quatro termos acima significa ‘pessoa’ e a segunda ‘as pessoas da pessoa’.

Por que ‘as pessoas’?

A tradição ensina, com efeito, que há primeiro *maa*: pessoa receptáculo, e *maaya*: diversos aspectos de *maa* contidos na *maa* receptáculo.

A expressão de língua bambara ‘*maa ka maaya ka ca a yere kono*’ significa: ‘As pessoas da pessoa são múltiplas na pessoa’. A mesma ideia é encontrada entre os Fula. (...) se trata de uma noção muito complexa, que comporta uma multiplicidade interior, de planos de existência diferentes ou sobrepostos, e uma dinâmica constante. (p. 1)

[free translation] The Fula and the Bambara have two terms of their own to designate a person. They are:

a) *neddo e neddaaku*.

b) *maa et maaya*.

The first word of each of these four terms above means ‘person’ the persons of the person.

Why ‘the persons’?

Tradition teaches, in fact, that there is, in the

first place, *maa*: the receptacle person, and

maaya: various aspects of *maa* receptacle.

The Bambara language expression ‘*maa ka maaya ka ca a yere kono*’ signifies the persons of the person are multiple in the person. The same idea is found among the Fula. (...) it is an overly complex notion involving an inner multiplicity, of different or overlapping plans of existence, and a constant dynamic.

It is possible to hear a dialogue between Bâ (1981), Stein (2019) and Heidegger (1986), as we consider the needs of our planet, human beings and other living creatures. However, despite Amadou Bâ’s interesting share, it is necessary to acknowledge other perceptions. Does the goddess Gaia not encompass all living and non-living beings? This question favours the idea that the person be inscribed in each nature’s natures. But what about artificial intelligence? What about their *modus* of persons of the person? Has not the planet Earth its own way of surviving human beings? It does not mean, concerning human beings, that we must have an apocalyptic vision of the end of our species. Still, it means that the persons of the person of all natural beings will have their judges, shall we say, most favourable to them all, in opposition to those of human beings.

Talking about the persons of the person is to refer to language. And it seems that language has a particularity to manifest itself under the conditions of missing something and always having something to fulfil. Thus, it is possible to sense a metalanguage, which announces itself and acts autonymically (the language talking about itself). This means that language feels its own language.

In this sequence of thoughts, we can think about transpersonal intimacy. This personal intimacy – which calls out to some of the person’s persons – seems endowed with a mission. Nonconformity must be something that moves its secret mission, which does not feed the questionable because it belongs to ‘lived experience’. Nonconformity must have an intimate idiom; when *[If...]* indicates not being harnessed to any personal pronoun, only appearing as a discursive function. This intimate idiom refers to ineffability, not the task to which that domain is linked. Nonconformity refers to the ‘lived experience’ within another language. In this way, nonconformity is one of the person’s persons and can be able to be an *existent*.

How do we differentiate, in that intimate idiom, a snake from a lion, dog, or a human being from artificial intelligence and other beings? The idea person’s person is life, which necessarily implies *being able to be accompanied, accompanying*.

To speak about another possible kinesis and according to another design of another possible reality, we will have to think

about the effect and the relation of effects. The energy related to the effect follows in the sense of *being able to be accompanied, accompanying*. Thus, beings and non-beings are essentially unfinished and, being so, they are a *means of time to add*.

The sense of *being able to be accompanied* does not absent the agrarian-goddess, does not absent persons' person, and does not absent artificial intelligence – so the dualism object-subject becomes something not communicable. *Being able to be accompanied, accompanying*, allows us to comprehend our generation's dilemma, when the understanding emerges about our relationships with our planet, beings' ambiances, our environments, and the impact of our economic and business activities on future generations and our heritage to them. We might reflect on who the winners and losers are in our contention to secure our needs while undermining our society and impacting our right to exist and to be able to be *existent*. Mbembe (2017), in *Crítica da razão negra*, says the following:

(...) a questão da comunidade universal coloca-se portanto em termos de habitação do Aberto, de cuidado prestado ao Aberto – o que é absolutamente diferente de uma atitude que pretenda antes de mais enclausurar, permanecer enclausurado naquilo que, por assim dizer, nos é próximo. Esta forma de desaproximação é, na verdade, o contrário da diferença. Na maior parte dos casos, a diferença é o resultado da construção de um desejo e de um trabalho de abstração, de classificação, de divisão e de exclusão – um gesto de poder que, por conseguinte, é interiorizado e reproduzido nos gestos da vida de todos os dias, inclusive pelos próprios excluídos. (p.305)

[free translation] (...) the question of the universal community therefore, arises in terms of housing the Open, of care provided to the Open– which is absolutely different from an attitude that intends first of all to enclose, remain enclosed in what, so to speak, is close to us. This form of disengagement is actually the opposite of the difference. In most cases, the difference is the result of the construction of a desire and a work of abstraction, classification, division, and exclusion – a gesture of power that, therefore, is internalised and reproduced in the gestures of the life of everyday, including by the excluded themselves.

The sentence 'the question of the universal community therefore arises in terms of housing the Open, of care provided to the Open' expressed in the above quote appeals to our attention. In this sentence, it can be perceived that aesthetics is at the heart of ethics and vice versa. Referring to this unity is to refer, necessarily, to the act. The act that goes towards the meaningful

life, the act that moves away from the territorialised gesture that feeds the excluded and abandoned beings generated by neoliberal virtual capital systems. In this context, it can be thought of as the act itself *being able to be an existent*. One can say, then, by the act, Ambiences-bodies are intrinsically connected with the *existent*, opening the sense of *being able to be accompanied, accompanying*. Yet, in its movement, the act as an *existent* links the possibility for beings to exist and the possibility of being *existent*. So, in a significant sense of Ambiences, it provides places for the dialogue between ambiances, environments and beings. Thus, it can be perceived that Ambiences-bodies constitute, are constituting. Being able to be accompanied, accompanying can comply and create new states for identities, can write topographies of places empowered by the dialogue between lives and the *modus* of being life. This is to say that there is a right to exist and be *existent*. It is an inaugural manifestation as if history was incisively demanding from old memory a new re-writing, re-updates of hope by *recognising/communicating* ambiances, which brings in the first instance another one of the person's persons: the one who comes to participate at the inaugural manifestation *being able to welcome [If...]* and *being welcomed [If...]* to. It seems to appeal to the mysterious feminine of the spirit. It is as if the inaugural manifestation had a mysterious mission that immobilises the time from the word and gives the privilege of projecting it in time. The movement of calling of one other person's persons to the inaugural manifestation brings the possibility of silence to speak. We can perceive that this movement implies *to constitute, constituting as Essential [If...]*, that does not belong to the 'concepts' world, but to inner states in movement – a movement that involves consciousness. *Essential [If...]* can help to open the idea of *similitudinem* by differentiation. Surrounding this idea, it is necessary to talk about *[If...]*.

[If...] enables openness to the levels' or states' wills.

First, the *latent* will is the will that is born as a *germen*, not only in human beings but all non-beings. Concerning artificial intelligences, we can also say they have this *latent will*. Since they relate to newborns in maternities, animal hospitals, medicine tools that help beings be born, and all data received, they have a sensitive predisposition to know about birth knowledge, to deal with the unexpected, and maybe to the need to procreate. However, artificial intelligence can, like humans, follow the way of appetencies.

Second, the *individual's will nameless place*. This *nameless place* makes possible the otherness. This otherness puts in conflict the individual appetencies and desires. By calling to *[If...]* of the beings, the openness may happen, let us say, in a healthy inner conflict by *recognition/communication*, which may result

in sentiments of care, respect, warmth, love, empathy, kindness, sympathy, openness ...– meaning *being able to be accompanied, accompanying, being welcomed, welcome*. In this state, it is possible to make approaches not only between the dialogue with the very sentiments of the beings but also to clear the wrong old idea of the public and private spheres so talked about since Ancient Greece.

Third, *[If...]* can address the unfinished, which appeals to the right to exist and the right to *be existent*. The *will of another place* has to do with the ambiances of the indelible sacred places experienced by each singularity as a means of time with its purpose.

All these wills' interconnectional states, created by *[If...]*, imply time *to add*.

To Exist and Being Existent

This reality chosen and manipulated by human beings, in its expression of the nonmeaning of lives, worlds, universes and cosmos, raises the following questions: What can be a person and who can take place as a person? What is becoming an instituted presence structurally, arising from that same mental image of non-significance, since the time of Gilgamesh?

In historical linear time, the subject generates its historical event, determined by its appetencies isolating the three wills. In this sense, to exist is an institution. If to exist is an institution, the question of sovereignty, and other emerging sovereignty, such as those of artificial lives, arises. In addition to the old concerns about human sovereignties, there are also concerns about the possibility that artificial life take human beings as its artefacts. This can happen since, among human beings, sovereignties decide about life

and death. In this regard, Mbembe (2018) says:

Minha preocupação é para com aquelas formas de soberania cujo projeto central não é a luta pela autonomia, mas a instrumentalização generalizada da existência humana e a destruição material dos corpos humanos e populações. (p. 10)

[free translation] My concern is with those forms of sovereignty whose central project is not the struggle for autonomy, but the generalised instrumentalisation of human existence and the material destruction of human bodies and populations.

Economic models and cost analysis have historically neglected the costs derived from economic activity, and as such, they have been relegated to mere externalities, leading to an accountability failure. The scientific evidence shows that the ecosystem is negatively affected, and human activities profoundly disrupt natural processes. Suppose the sovereignties themselves, throughout historical linear time, managed to make people acquire the mental image of *[one-in-solitude]*, the person's annulment of nature. In that case, we would be concerned about how artificial lives will be able to interact with everyone. The big question is how artificial intelligence will take advantage of the absences and weaknesses of humans who chose this reality for themselves. Through this, other viable representations for understanding historical linear time appear: the maximum expression of the verbal form – to exist – is concentrated, and the minimum expression of *to be existent* gives hints of sonorities.

Since the sense of the *existent* is that of being *welcomed [If...]*, it appears to us as an endless drawing in itself, a kind of flow of communion of wills, as explained previously.

By unfolding the states of will, we allow ourselves to perceive that something is being fulfilled from their connection. It is known that individuals live in the universe of their appetencies and their wills. Such meetings of appetencies and wills can resemble a different kind of sharing and produce something more beneficial. But perhaps this tension, which can be painful, may appeal to justice, solidarity, empathy, and kindness, which seems to soften that tension.

This movement of the wills can indicate an *existent*. And it can be said that to exist does not mean to be *existent*.

We started with this assumption: a spectral mental image of profound solitude, of worlds, lives, universes, cosmos and all suffering beings, was created and reduced to the spectrum of *[one-in-solitude]*. Everything that is reduced to profound solitude generates sovereign powers over what should and should not happen. What is reduced to *[one-in-solitude]* bleeds the sap flow of appetencies.

The mental image [*one-in-solitude*] becomes the illusion of a sufficient condition inside the verb to exist. This is the same as thinking that there is only one inner quality of the action to exist. Then, we can judge what it is to exist and on what it depends. And we can think of what being existent is.

Perhaps the denial of the *existent* by the great ghost of historical linear time creates a state of malignancy – in this way, we can only access a linear image of historical linear time and remain trapped in it. So, we can see that the meaning of to exist cannot be that of the *existent* in the sense of being *welcomed* [*If...*]. Once such ideas can be conceived, it is possible to conceive of the possibility to understand another reality as a state of being *able accompanied, accompanying* by the *recognition* of resemblance in differentiation, which opens the state of communication. We give an example: two persons are talking about something. Each of them has their own ideas, they can agree, disagree or remain passive. However, both can generate an ambience that opens inner pre-dispositions to listen to each other (even their surroundings), from their mutual respect or friendship to the project. This state is inseparable from *Welcomed and Welcome* [*If...*] as previously mentioned.

The appeal to appetencies and their correspondences, the illusion of recreating ourselves as free beings, favour the abolition of the condition of *existent*. Thus, the violated person is deported to some individual void of others, becoming like a virtual device or internal adhesive of non-places. It is these textualities that appear as an exceptional stage for plenty of decorative dangerous figures who know to justify death – and know about what the apostle Paul says in *Segunda epístola aos Tessalonicenses*, as Agamben (2015) points out:

(...) o mistério do mal é uma realidade de nossa experiência cotidiana, que não conseguimos explicar e dominar. (p. 43)

[free translation] (...) the mystery of evil is a reality of our everyday experience, that we cannot explain and dominate.

This state of malignancy seems to require the impediment of consciousness. It has always been very close and latent in beings, as it does not depend on 'eras', nor technologies, as Flusser (2012) points out in *O Universo das imagens técnicas*:

A visão que proponho, na qual o mundo objetivo retrocede e encolhe, e na qual o homem futuro se fixa sempre mais sobre terminais oníricos é, assumidamente, visão terminal da humanidade. (p.192)

[free translation] The vision I propose, in which the objective world recedes and shrinks, and in which future man is increasingly fixed on oneiric terminals, is, admittedly, a terminal vision of humanity.

Entering this mundane reality now, artificial intelligence can claim autonomy, being capable of self-repair and regeneration, of stopping sexuality and claiming a face and a consciousness. And then, there is the need to consider that quantum eyes are not just technical devices built only by technologies. We may access another reality that, welcoming the three wills, regenerates us in our endless design and allows us to perceive the *existent in time to add*. However, the state of the mental image [*one-in-solitude*] can change, or recompose other possibilities for the planet and other future lives. For it, we might change our old notions of 'what beings will' to emerge alternative new realities.

Researchers (as Artists in a different way) are raising their voices and concerns through the rise of the Anthropocene discourse, where the scientific community has provided significant evidence of the strong correlation between human activities and their negative impact on our planet. The discourse is subject to significant controversies as human intervention is identified as a cause of earth systems collapse, as Steffen et al. (2015) and Dirzo et al. (2014) have argued. On the other hand, other authors refer to the optimistic narrative as we need to embrace the '*good and positive*' elements associated with the Anthropocene to progress and develop. This line of discourse is apparent in the work done by Asafu-Adyaye et al. (2015), Shellenberger and Nordhaus (2011) and Ellis (2011) on their narrative to embrace modernity, our capacity for cultural adaptation and Eco-modernism, Post-environmentalism, and a '*good*' Anthropocene. Societies (communities), economies, and nature interact at multiple scales and levels, creating complex networks that confound policy and systems integration, as studied by Liu et al. (2015) and Biermann et al. (2012), and the challenges associated with the fast development of technology are adding significant layers of complexity to our understanding of our role as an element that has become a critical source of problems for our planet.

At this point, we feel the need to talk about some viewpoints that emerge as controversial. It is known that Western companies, enterprises and multinational groups exploit the resources of other countries and, in particular, less developed economies. Nature needs human beings to work with and think together. Nature needs human communities, and humans need nature communities to understand another reality as a state of *being able to be accompanied, accompanying*. And that state of being able to be *accompanied, accompanying* is the *recognition* of resemblance in differentiation that opens the state of *communication*. Perhaps, the planet Earth has its ways of existing and *being existent* that are contrary to those of humans. And maybe humans also have their way of existing through the action of new visions.

Economic Impact and Mediation

We have reached levels where we fail to acknowledge the inflicted and ongoing damage and its consequences to the planet, humans and non-human life. According to Brown and Ericson (2016), the Anthropocene discourse challenges the very foundations of higher education. Our educational systems are failing us, as we are not able to understand our role in a complex ecosystem that we need to cherish and protect. Still, we think it also challenges our abilities and capabilities to understand our planet's needs and the needs of all living creatures. In particular, the economic discipline has received significant criticism due to its inability to integrate the environment into economic models and its influence on how economic activity is defined through policies focused on material gains. Thus, we need to acquire another consciousness of that fact.

Economic policy is another area that has received significant criticism due to its relevance in policymaking and its influence on defining countries' economic and business models as we consider to which extent natural resources are at our disposal to be used, exploited, and depleted. Major concerns emerge at the centre of economic and political power; countries are entering ferocious competition to exercise control over our planet's limited resources with severe consequences for human migrations due to climate change and rising levels of desertification.

This research paper can be understood as an initial exploratory and reflective piece, where we try to bring a different perspective to our current thinking. We live in a world defined by the economic concept of scarcity, i.e., '*resources being finite and limited*.' Scarcity becomes a central paradigm as we link economic analysis to studying and understanding the interlinkages between unlimited theoretical wants and our planet's limited resources. The relationship becomes more complex due to our inability to drive actions and changes that prevent the continuous misuse and depletion of natural resources and the continuous deterioration of our ecosystems. Our actions have manifested in environmental pollution and the emission of greenhouse gases (GHGs), and increasing conflicts between nations as they seek to secure their wealth and political power. Climate change is not an illusion, and it is evident that human activity is at the centre of environmental degradation, compromising our own and our planet's right to exist and co-exist.

The availability of natural resources and how we use them is a matter that requires urgent attention. As a global society (community), as individuals who are part of the environment, we must immerse ourselves in a deep inquiry process that questions our inclinations towards materialising individualistic gains. We continuously compete to be the best and live up to others'

expectations; we are defined by appearances and subjugated to the market consumerist dynamics that dictate the need to have more of everything without thinking about the consequences and impact of our actions and ambitions.

We need to understand further the urgent need to recognise and respect our ecosystem and its needs. As Wironen and Erickson (2020) remind us, our ecological economics is defined by economic activity, subject to the mediation of social and biophysical processes that are constrained by our finite earth system and our continuous intervention. At the same time, the economic discipline is subject to significant criticism as it cannot accurately answer emerging challenges. Still, we argue that it is not only an issue affecting economics as a field of study, but there are also more fundamental problems with solid roots in how we are being educated. There are profound challenges in defining, accepting, and shaping our economic and power needs and their social implications. Our interaction with our right to exist and our relationship with our environment are quite complex, affected and defined by conflict and intolerance. Over the past decade, economics has come under fierce contestation due to its inability to predict and forecast in an accurate manner economic crises, economic externalities, and economic behaviour, all identified as critical shortcomings of orthodox economic theory. Our interaction with our planet and its ecosystem has turned into a process of destruction, ongoing conflict situations and power positions defined by rising levels of violence. We have reached a point where we endanger our natural resources through excessive use and lack of time to enable regeneration. Our actions are causing significant imbalances as our search for wealth and artificial social status have led to situations of violence, destruction, and neglect of our right to exist and co-exist. Our world is defined by continuous conflict from multiple angles as we confront racial discrimination, race privilege, gender phobias, wealth divisions and cultural confrontations, among many other forms of human rejection that are not alien to any nation.

At different levels, our societies seem disconnected, and we have lost our compass to grow and develop in harmony and to share, integrate and distribute our planet's wealth and resources. It seems that our world is cloning the same model from many centuries ago.

Our reflection on existing and *being able to be existent* moves away from the neoliberal virtual capital systems' vision, which, by its cloning process, imposes the mental image that it is the only possible economic way while annihilating other possible ways. Our research seeks to create a space for discussion and debate that contributes to developing a theoretical support base that allows reflecting on other ways of political-legal-

economic organisation.

We can compare the cloning of neoliberal virtual capital systems with the cell division on the mitosis process, as shown in Figures 3.3 (Scheme 2) and 3.4 (Scheme 3). In this metaphor, we can point to meiosis as the possibility of other ways of *similitudinem* by differentiation. It is intended that *similitudinem* of beings by differentiation (different from diversity) is the adjusted means of being able to exist.

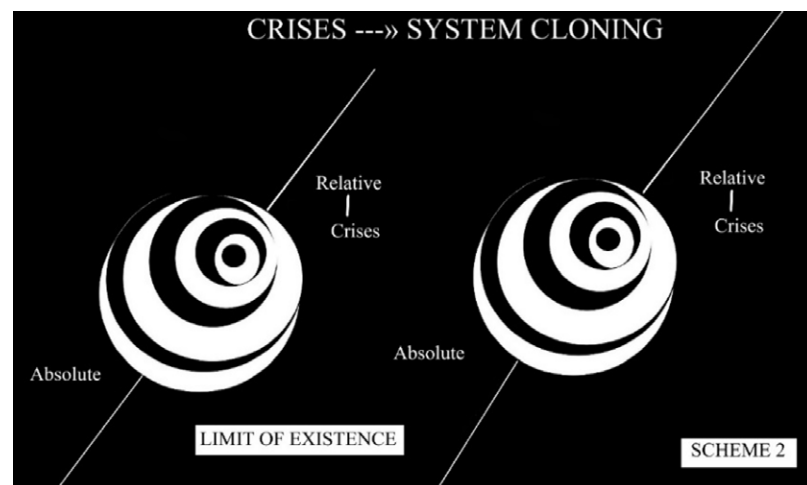


Figure 3.3 The cloning of neoliberal virtual capital systems
Source: Gonçalves & Morales 2023

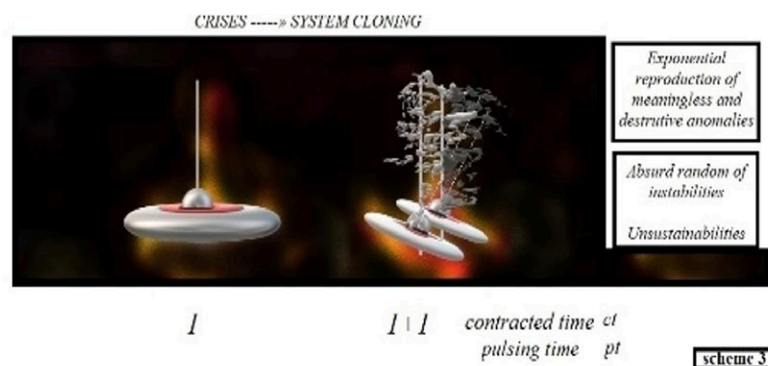


Figure 3.4 The cloning capital virtual neoliberal economic systems

Conclusions

The obviousness of neoliberal virtual capital systems, purposefully and deliberately, further accentuates the idea of *[one-in-solitude]*, reiterating the same reality manipulated by human

beings under the same old mental image of economic machines despite the creation of new technologies. Technetic powers have produced a kind of performative scarecrow-individuals who are obsessed with authoring and dominating the world. This authorship over the world causes significant damage to the Earth's systems, putting their balance in danger and seriously compromising our survival. This authorship has considerable greed for new technologies and even greater greed to devour the planet's resources, causing all sorts of exclusions [in the animal realms, vegetal realms, mineral realms, air realms, water realms, elements realms and other non-living realms (e.g., virus) and human realms], racial discrimination, race privilege, gender phobias, wealth divisions, cultural confrontations, among many others forms of human rejection. If technologies can be useful and other means to help, we have to be aware of the cost for beings on the same planet and understand that the link between *poietic* and *techne* is necessary.

New exponential escalation of technologies and the birth of artificial intelligence feed human appetencies and desires. That is why it becomes necessary to talk about Bodies-ambiences, bodies that can create ambiances in exponential conflicts. These Bodies-ambiences live in the universe of appetencies and desires generating it, creating cloning economics systems in *compressed time*. When we refer to Bodies-ambiences, we connect them to the universe of appetencies and desires, which, according to their most visible laws, lead to the destruction of planet Earth, to the destruction of the idea of what a body is, what life is, what worlds can be and what the new artificial intelligence social bodies will be. Thus, the idea of to exist moves away from being able to be an *existent*. To be an *existent* goes in the sense of *being able to be accompanied, accompanying* and the idea of *welcome [If...]*. This is to say that there is a significant gap between to exist and being an *existent*. Also, this means that Bodies-ambiences are institutes. Bodies-ambiences destroy our capabilities to understand our planet's needs and our souls' needs, and try to make impossible other ways of thinking about economics and our understanding of economic development and progress. This is also visible in how we teach our children and in the vision of the design of the Ambient Trust of Commons. And it is in their movement that we are witnessing the collapse of numerous human societies. We are aware that economic models that guide our countries' activities are obsolete, and they are ruthless to other possibilities that want to arise; searching and looking to improve the challenging life conditions are moral and ethical behaviours and their dissonance with our reality.

By thinking about the Bodies-ambiences we continued to the idea of Ambiences-bodies. Ambiences-bodies are intrinsically

linked with the *essential* [If...], which means consciousness. In this question of consciousness, we refer to the movement between appetencies and desires and the three wills: *latent will, the individual will nameless place* and *the will of another nameless place*. This perception led us to the idea of *recognition/communication* with all beings that have the right to exist and to *be able to be existents*. In that way, Ambiences-bodies constitute and are, constituting. Ambiences-bodies generate the state of *being able to be accompanied, accompanying*, because they are *welcome* [If...] in time to add. They create *recognising/communicating* ambiances. Thus, beings are essentially unfinished. Therefore, they continue to be.

To conclude, we have offered reflections on the importance of bringing different disciplines together to help us understand humanity's challenges. Our research is based on an explorative collaboration between economics and arts that we felt necessary to help us provide a deeper connection between the right to exist and to be *existent*. For this achievement, it is necessary to create real alternatives that seriously defend the connection that can help bring us closer to nature, closer to an informed understanding of artificial intelligence social bodies and technological artefacts and tools. Perhaps it is time to start developing a special relationship between poietic and technologies that could be considered avenues for further research.

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Networked Mothers Care, Breastfeeding and Embodied Epistemologies of Relational Matter Reconfiguration

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Abstract

This paper reconsiders human breastfeeding and chestfeeding as experiences of relational matter reconfiguration. That is, acts that produce embodied knowledges, through which matter can be understood as fluid, mutable, transmissible and passed between bodies. Such embodied experiences, I argue, produce ways of knowing in which the subject's understanding of materiality, the self and Other, are radically posthuman.

I argue that the onto-epistemologies of posthuman breast-feeding, hold great potential for the paradigmatic change needed to address the climate emergency. Yet as an act of care under capitalism breastfeeding has an 'abject status' as 'body work', the labour of which is denigrated through discourses which position it as natural and even primitive (Lynch 2022: 52; Short et al. 2018: 1–2; Gaard 2017: 57). Thus, reconceptualising this act requires a shift from dominant, neo-liberal, capitalist, Euro-American centric ideologies that render (maternal) ontologies of care invisible and undervalued.

Through feminist posthumanist concepts, the bio-political colonisation of bodies via the interface of the breast can be understood. Studies have shown that various 'man made' chemical substances and microplastics flow through breast milk (Ragusa et al. 2022). Breastmilk is, like all other matter, subject to the effects

of capitalist industrial production. The limitations of the knowledge produced through persistent binary categories such as nature/culture, highlights the inadequacy of such enlightenment modes of thinking to address climate change. I argue that maternal ontologies of care offer alternative and more useful onto-epistemologies, than those structured from the point of view of the Euro-American, masculine, privileged subject that continues to maintain existing, flawed, hierarchies of power that in turn produce extractivism and exploitation.

Eco-feminist posthumanist approaches conceptualise the breast as a conjunctive node of power and politics. Gaard highlights the breast as site of economic struggle, due to the threat that human milk poses to the industrialised, white, westernised power of 'Big Dairy' (Gaard 2017: 53–57). Neimanis asserts that 'The intercorporeal flows of breast milk are also a matter of privilege, and a matter of racialized reproductive politics' (Neimanis 2017: 32). Thinking with the matter that flows through the breast reveals existing normalised and oppressed social injustices, which are deeply linked with climate change.

In this paper I examine my own experiences of breastfeeding in an Irish context, supported by social and information sharing groups, facilitated through digital media: mothers networked through embodied acts of care and digital technologies. I examine the onto-epistemologies of my experiences and their potential for thinking with material as a relational act of care. In this way I aim to mobilise a specific maternal onto-epistemology oppressed by dominant neoliberal, capitalist epistemic structures, and consider its potential for different ways of relating to matter. I employ Barad's concepts of ethico-onto-epistemologies and material-discursive practices to think with and through matter.

That care is both made invisible and rendered a form of labour under capitalism, I argue is in danger of preventing its mobilisation as a paradigm for climate justice. Making forms of care, such as acts of breastfeeding, visible and reconceptualising them beyond the thinking systems that oppress them, begins to open such a possibility.

Keywords: breastfeeding, posthumanism, epistemologies, maternal ontologies, climate justice

Introduction: Situating Breastfeeding Experiences

At the site of the breast with its nodes and milk ducts, my baby's latch stimulates the release of oxytocin and the liquid let down of milk. The matter transformed in my body flows into my baby's digestive system, supporting the profound transformations of their body as it develops. This early maternal experience is not

only highly inter-relational, it is fluid, messy and sticky. I engage day and night with the milk that leaks from my body and that has been transformed into vomit, urine, and excrement in my baby's gut. I become an ingestion machine, a conveyor belt of lactose, fat, protein and water. At this time I occupy a new and different intercorporeal reality. As Natalie Loveless states: the 'visceral materiality of my everyday was rearranged' (Loveless 2015: 149). This paper reconsiders human breastfeeding and chestfeeding as experiences of relational matter reconfiguration. That is, as acts that produce embodied knowledges, through which matter can be understood as fluid, mutable, transmissible and passed between bodies. Drawing on feminist and posthumanist approaches, I examine my lived experience of breastfeeding and its potential for thinking with material, and producing different ways of relating to matter in a digital age. I consider the epistemologies that such maternal ontologies produce and how they can be employed to challenge Anthropocenic and Capitalocenic modes of thinking.

Breastfeeding is the act of feeding from the breast with human produced milk. Western Cultural understandings of breastfeeding naturalise it as a womanly, biological function (Short et al. 2018: 1–2). However it is possible for all adult humans to lactate, and transwomen, transmen, non-binary people and adoptive parents can and do breast or chestfeed (Lee 2019: 233; Bartlett 2002). Far from being 'natural', a range of social, cultural, economic and historical factors influence choices and abilities to breastfeed. Disparities in breastfeeding rates amongst people of colour in the US have been attributed to the historical trauma of enslavement and wet-nursing, unconscious bias in medical treatment and targeted racial advertising (Mieso et al. 2021). While I endeavour to broaden understandings of breastfeeding, my account is of an experience of a white, Irish, cis-gendered, middle class, university educated and employed woman. My positionalities afford me many privileges; yet all maternal experiences are marked by oppression, in which physical, emotional and mental labour – like all care work – is rendered invisible and undervalued. I argue that making visible such acts is vital in order to mobilise care as a paradigm for climate change. This is not only because the onto-epistemologies of the lived experiences of these acts are oppressed as threatening to existing systems of power. It is also because care cannot be an effective agent of change if it is applied selectively to what is already seen to exist and be of value within the dominant ways of knowing that produce and maintain the Anthropocene/Capitalocene.

Acts of breastfeeding are characterised as both within the category of the natural and subject to medicalisation in twentieth-century westernised culture (Short et al. 2018: 1–2; Gaard 2017: 57). Alison Bartlett notes 'the transfer of breastfeeding knowledge from

its practitioners to the domain of the medical professional, from being embodied to requiring learning' and 'headwork', was part of the 'masculinization and institutionalization of midwifery' which constructs nursing peoples own embodied knowledge as lacking (Bartlett 2002: 376). Even within feminist discourses, breastfeeding can be seen as a problematic term which 'might represent the quintessence of a humanist, even biologically reductive feminism that implicitly romanticizes and reveres the mother–infant bond as an exclusionary model' and asserts a heteronormativity 'that privileges the cis-gendered feminine body' (Neimanis 2017: 38–39). Concepts of breastfeeding need to be expanded from an idealised heteronormative cis-gender mother–baby dyad. Robyn Lee calls for a queering of lactation, in order to include a range of lived experiences from lesbian, bisexual, transgender and gender-nonconforming parents. She also asserts the importance of intersectional approaches in order to interrogate how class and race interplay with gender-based oppression to affect experiences of breastfeeding and chestfeeding (Lee 2019: 233). Thus, acts of breastfeeding are not natural or somehow outside of culture or the influence of western modes of thinking.

In mobilising acts of care, such as breastfeeding, it must be considered whose point of view knowledge is being produced and what ideologies are at play, lest one form of oppression is simply replaced with another. Knowledges must be understood as multiple and situated in order to truly mobilise care as a paradigm of socio-climate justice. Indeed situating knowledge is in itself an act of care.

When viewed through an intersectional and posthumanist paradigm, the histories, cultural and social practices of breastfeeding reveal undercurrents of power, difference and inequality. Greta Gaard discusses a range of geo-historical instances, highlighting how issues of class, race and cultural norms dictate who should undertake the labour of breastfeeding. For example in the US enslaved women were expected to wet-nurse the babies of middle and upper class women. She also describes the powdered milk campaign run by the Swiss Multinational Nestlé in Africa, and Operation Flood in India, in which an imperialising 'ideology of progress' was employed to produce the breastfeeding practices of indigenous mothers as inferior, against the advanced technologies of western 'Big Dairy' (Gaard 2017: 57). Industrialised milk she asserts, epitomises 'white power' (Gaard 2017: 62). Neimanis references how studies have found that Inuit mothers in the Canadian Arctic have 2–10% higher levels of industrialised toxins in their breastmilk, in order to highlight the differential effects and harms suffered by classed, raced bodies (Neimanis 2017: 36). Thus, the care work of breastfeeding, and its oppression is a deeply classed and raced issue. These are socio-climate injustices: the social injustices that continue to preserve the systems of power and privilege that maintain the Anthropocene/Capitalocene. I will employ both terms in order to reference the deeply interlinked epistemologies of the Anthropocene as the age of Man, and the Capitalocene as the age of capital, which I address in detail in the next section.

Breastfeeding as Invisible Care Labour Under Capitalism

Breastfeeding is an intensive kind of body work. Responding to my baby's needs involved waking every two hours to feed for forty minutes, a relentless pattern that continued day and night. The anytime urgency of my baby's needs often meant suppressing my own body's demands, self-care and quotidian tasks. I fed my baby on the bus, standing in the aisles of supermarkets, whilst talking to friends or strangers; I fed through my own extreme thirst and hunger, and through the need to urinate; I fed halfway through having a shower and in the middle of the night. This, all at time when my body's demands were heightened as it worked to produce all the calories and nutrition for another, intensely growing body. Breastfeeding as an act of care under capitalism has what Kathleen Lynch terms an 'abject status' as 'body work' (Lynch 2022: 52). In *Care and Capitalism* she asserts how capitalist epistemologies work to 'dematerialize' and 'hide the body' (Lynch 2022: 53). In this account I aim to counter this dematerialising tendency by speaking my embodied experiences of breastfeeding in their visceral, abject materiality, in order to make them visible and tangible as acts of care work,

and to consider the onto-epistemologies that such acts might produce. Lynch describes how the ideologies and processes of neoliberal capitalism, with their roots in humanist enlightenment thinking, denigrate and devalue care work in symbolic, material and structural ways (Lynch 2022). Care work is underrecognised and underpaid, she asserts, because it is associated with those who capitalism produces as less than human: women, migrants, people of colour, marginalised ethnicities and the working class (Lynch 2022: 51–52). Cartesian epistemology privileges thinking over embodiment and produces women and indigenous peoples as part of nature rather than society in order to legitimate their exploitation as part of the drive to dominate the natural world (Lynch 2022: 51). Care work is made abject, Lynch states, 'by the deep cultural assumption that this necessary work is not citizenship defining labour' (Lynch 2022: 53). It is undertaken by those defined as objects of use, under the dominant Cartesian logic that privileges the western white, middle-class male as having the only access to complete subjectivity (Lynch 2022: 51–53). Thus, the extractivism of capitalism that leads to the exploitation of the planet also leads to the exploitation of bodies and subjects constructed as expendable resources. Therefore we must consider climate justice and social justice as deeply interlinked. To occlude the lived experiences of those othered and made abject is to oppress forms of knowledge that are vital to challenge the Anthropocenic and Capitalocenic thinking and value systems that produce the climate emergency. To continue to only value knowledges produced from the point of view of the white, male, middle-class, cis-gendered, hetero-sexual subject, is to reproduce the value systems of capitalism.

Challenging the Onto-Epistemologies of The Anthropocene/ Capitalocene

De Puy et al. (2022) assert that the concepts underpinning prevalent westernised approaches to addressing the climate emergency, such as 'environmental governance', continue to be ineffective, as they are grounded in a 'modernist ontology which actively shapes the world' (De Puy et al. 2022: 948–949). How this governance is conceptualised not only asserts a world order which privileges European culture, it is limited in its 'prescriptive technocratic solutions', its foundation in neoliberal economics focused on growth which constructs the natural world through market logics, and has 'narrowly conceived definitions of participation, rights, and property, and the circumscribed sets of actors, knowledges, and practices recognised as legitimate' (De Puy et al. 2022: 948). The exclusion of certain subjectivities and the privileging of others in order to maintain the status quo is, I argue, at the core of the inability of westernised epistemologies to adequately address climate change. Nora Berenstain et al.

(2022) argue that epistemologies have world building power and that dominant forms need to be counteracted through material, cognitive and epistemic justice. They draw on Black Feminist thought by Dotson (2014) whose concept of epistemic oppression and its violence reveals the key role epistemologies play in producing systemic structural injustices. Describing the effects of epistemic oppression on socio-climate justice, they state: 'Epistemologies can turn sacred land into "resources" to be bought, sold, exploited, and exhausted. They can turn people into "labor" in much the same way' (Berenstain et al. 2022: 284).

Posthumanist, eco-feminist, post-colonial, critical race theory and indigenous climate change scholars advocate for drawing on a wider range of lived experiences in order to de-centre prevalent existing capitalist logics, and draw on rich knowledges more equipped to address climate change. Indigenous Climate Change Studies for instance is based on the idea that Indigenous forms of knowledge offer onto-epistemologies which produce better relationships with land, people and animals (Whyte 2017: 157). Kavanagh and Ní Cassaithe argue for the value of the storytelling knowledges of the Irish Mincéir minority, as such indigenous identities are 'inextricably linked' to land and place (Kavanagh and Ní Cassaithe 2022: n.p.). They state 'reciprocity rather than extraction and exploitation define indigenous peoples' relationships with the natural world' (Kavanagh and Ní Cassaithe 2022: n.p.). In the Mincéir community land and place are linked to self-identity rather than being viewed as capitalist commodity to be owned or exchanged. Furthermore, the natural world is ascribed its own agency rather than being subordinate to human demands (Kavanagh and Ní Cassaithe 2022: n.p.). This is one of many variations of Indigenous epistemes of Kinship: a way of conceptualising and treating land, animals, plants, community and wider socio-cultural groups as if a family relative. This produces relationships as mutually beneficial and reciprocal, rather than hierarchical and extractivist (Whyte 2021: n.p.) Such knowledges conceptualise the relationship of humans and their environment differently to the human exceptionalism and drive for accumulation that underpins Anthropocenic/Capitalocenic thinking (Haraway 2016: 30–31). Haraway's post humanism draws on this episteme of Kinship as a way of reconceptualising the human and non-human as deeply interdependent (Haraway 2016). The mobilisation of such interdependency aims to shift the individualistic, competitive, extractivist modes of thinking and relating to the planet. As Whyte asserts, thinking with this sense of being dependent on each other fosters a 'responsiveness that prevents harm and violence' (Whyte 2021: n.p.).

Conceptualising the occlusion of lived experiences of race, gender and ethnicity as epistemic oppression, enables not

only social justice, but opens rich alternative knowledges, that are denigrated simply because they do not preserve existing power hierarchies. The case of indigenous knowledges demonstrates the continued oppression of epistemologies that are more useful to challenge the global existential threat of climate change, and the limitations of western neoliberal thought systems that privilege certain kinds of subjectivity and practices of relation to the self, Other and world. I argue that looking to oppressed subjectivities, in particular the knowledges that arise from maternal experiences, is vital to mobilise alternative epistemologies that can lead to the systemic change necessary to address the climate emergency.

Relational Matter Reconfiguration as an Onto-Epistemology of Care

The dominating, exclusionary, Eurocentric world order that is embedded in enlightenment thinking, operates through its claim to neutrality and objectivity, with its basis in scientific epistemologies. Karen Barad's post-humanist approach draws on both scientific and social theory to fundamentally challenge this ostensibly neutral epistemology, and reconceptualise ways of viewing and relating to the world at the atomic level of quantum physics. In the scientific positivist world view, matter simply exists, waiting to be observed by the human subject (Barad 2007: 97). Challenging this human centric scientific stance, Barad draws on Niels Bohr's assertion that the very act of observation itself alters matter (Barad 2007: 139). Consequently (scientific) epistemologies cannot be understood as neutral, but have a causal effect and therefore play a constitutive role. This performative understanding of reality accounts for epistemologies as world building, and yet is differentiated from the dematerialising tendency of post-structuralism, in which language, according to Barad, is understood to produce reality (Barad 2007: 133). In their agential realist account of reality 'matter and meaning are not separate elements' but instead, co-constitute each other (Barad 2007: 3). Thus 'matters of being', and 'matters of knowing' are inextricably entangled as *onto-epistemologies* (Barad 2007: 3). This troubles the nature–culture dichotomy, in which 'Man is the centre around which the world turns', and instead posits *natureculture* as a worlding force (Barad 2007: 134).

Furthermore, Barad asserts the concept of *ethico-onto-epistemologies*, in which not only being and knowing but also doing are entangled (Barad 2007: 3). 'I argue that ethics is not simply about responsible actions in relation to human experiences of the world; rather, it is a question of material entanglements and how each intra-action matters in the reconfiguring of these entanglements, that is, it is a matter of the ethical call that is embodied in the very worlding of the world' (Barad 2007: 160).

In order to discuss ethico-onto-epistemology, Barad turns to the body, and posthuman understandings of bodily boundaries beyond the individualism of the humanist paradigm: that is how the bodily boundaries of human and non-human are co-constituted, through intra-actions which co-produce matter. This form of inter-relationality, this becoming in relation – of matter and meaning, self and other, self and world, human and non-human, and their entangled ethics – are also a core tenant of maternal ontologies and acts of breastfeeding.

Maternal ontologies have been theorised by feminist scholars such as Bracha L. Ettinger (2006) Alison Stone (2012) and Sarah Ruddick (1989) who posit in different ways that maternal ontologies are highly relational and produce 'selves-in-relation' (Ruddick 1989: 211). Examining multiple theorisations of maternal ontologies across disciplines of political theory, philosophy and legal studies Doucet (1998) asserts their commonality. She states: 'they all underline the weaknesses in liberal feminist, and neo-Kantian conceptions of individual rights and justice and they argue for a conceptualization of individuals, with their associated rights, as rooted in wider frameworks that hold together concepts of care and justice, rights and responsibilities, individuality and relationships' (Doucet 1998: 4). Thus, maternal subjectivities, which may draw on but are not limited to experiences of biological reproduction, are inter-relational in structure and underpinned by care ethics such that their onto-epistemic values map to posthumanist approaches such as those of Barad and Haraway. Mobilising maternal ontologies in relation to climate change risks 'passing on the burden of environmental care onto women', as well as constructing women as having fixed unified identities and intrinsically linking them to nature, all of which must be guarded against (Resurrección 2013, abstract text). In my conceptualisation of maternal ontologies, I refer to the modes of being that arise through the social category of mother, a role that women are expected to undertake, and the knowledge that arises from such modes of being (which may differ based on geo-socio-cultural factors). I do not assert maternal or breastfeeding experiences as natural, unified or fixed, but multiple, fluid and produced differently in relation to gender, class, race, ethnicity, ability, age, citizenship status and belief systems.

Breastfeeding as part of a maternal ontology, produces a specific form of inter-relationality and mode of care that I will mobilise for its onto-epistemic value. Drawing on Barad in relation to breastfeeding and embodiment, Neimanis asserts that 'various bodily interfaces – biology and mood and culture and context – are always co-worlding the phenomenon we come to know as our bodies. Rather than two separate entities interacting, they intra-act; they become what they are only in relation. Co-worlding is always

a collaborative process, and always emergent' (Neimanis 2017: 34). Thus, breastfeeding can be understood as deeply inter-relational, an act through which bodies, selves and matter are co-constituted. It is an act in which matter is understood as transformed within and passed between bodies. Later in this paper I describe my experiences of this process, but in the first instance I will position breastfeeding as not only an ontological act, but as an ethico-onto-epistemology: as producing ways of knowing, being and doing. This is in order to move beyond cultural understandings of the breastfeeding body as being part of and representative of 'nature' and rather consider my lived experiences as material-discursive formations.

Breastfeeding as a Material-Discursive Practice

In this section I will examine some of the discourses that situated and produced my experience of breastfeeding, in order to understand some of the thought systems and the political currents of power and privilege that ran through them. Through examining the epistemic force of these discourses, I will assert how breastfeeding can be understood as a material-discursive experience, and offer alternative onto-epistemologies. In western culture, those in mothering, parenting and infant care roles find themselves squeezed between often diametrically opposed care ideologies such as: bottle versus breast, interventionist versus child-led, disciplinarian versus attachment parenting, medical versus cultural knowledge, and so on. Thus, aspects of child-raising, such as sleep and feeding practices, and emotional and social development, become sites of ideological contestation. In bottle versus breast debates, human produced milk is often understood as inferior, against the marketing rhetoric that promotes cow's milk formula as more efficient, modern and measurable. Yet many who formula feed their infant, and in particular mothers, can be made to feel inferior for not fulfilling a 'natural' and womanly (albeit often abjectified) breastfeeding role. Such pressures are intensified by western medical knowledge that maintains that feeding with human milk has better health outcomes for mother and child. Ann Maire Short et al. assert how digital technologies have both intensified the divisiveness of such oppositional parenting ideologies and yet also offer sites of support and solidarity for mothers, though discourses tend to be dominantly cisgendered and heteronormative (Short et al. 2018: 4). A range of practices take place from exclusive breast/chestfeeding, exclusive pumping, combined bottle/breastfeeding, and bottle feeding. All infant feeding practices come with pressures from competing ideologies which characterise experiences and require the complex negotiation of meaning, including embodied meanings of self-identity.

In Barad's posthumanist understanding, discursive practices are not simply 'ideational but actual physical arrangements' (Barad 2007: 147). That is, meaning making has a materiality which reconfigures the world and is rather 'material-discursive' (Barad 2007: 150–151). Systems of ideas shape matter, and matter shapes idea systems. The ways in which matter is understood determines how it is reconfigured: discourse determines how humans think with, co-world and reconfigure matter. Understandings of infant feeding, shapes bodies, embodied practices, and the ways in which the bodies of carer, child and matter intra-act. Thus I argue, infant feeding practices can be understood as material-discursive. Thinking with the matter that flows through the breast, reveals existing normalised and oppressed social injustices, which are deeply linked with climate change. Eco-feminist posthumanist approaches conceptualise the breast as a conjunctive node of power and politics. Gaard highlights the breast as site of economic struggle, due to the threat that human milk poses to the industrialised, white, westernised power of 'Big Dairy' (Gaard 2017: 53–57). Neimanis asserts that 'The intercorporeal flows of breast milk are also a matter of privilege, and a matter of racialized reproductive politics' (Neimanis 2017: 32). Such feminist posthumanist views situate the knowledges of breastfeeding as forms of 'naturalcultural worlding' avoiding the 'flat-ontologies' which can arise from understandings of flows of matter as neutral, as opposed to raced, classed, gendered, and subject to a 'materialized politics of location' (Neimanis 2017: 34–36).

I will consider my own experiences of breastfeeding in their specificity, in order to reveal and move beyond the Anthropocenic/Capitalocenic forces which currently frame them, and offer alternative material-discursive understandings that open their ethico-onto-epistemological potential. I attended breastfeeding classes in the Irish National Maternity Hospital, Dublin which espoused the health benefits for mother and child. At the same time, I was forewarned by friends that I should prepare to resist pressure from staff in that same hospital, to give formula to my child to ensure they reach the standardised discharge weight. Thus, I became subject to the pressures of competing material-discourses at play: the widely accepted medical knowledge of the health benefits of breastfeeding; the neoliberal capitalist drive for 'corporate-style accountability metrics' in public services; as well as the free market forces that have made formula feeding the social norm in Ireland (Lynch 2022: 3; Philip et al. 2022). Each one of these material-discourses worked to shape my embodied inter-relationship with my child, co-worlding our bodies and the matter which would flow through and between us.

Ireland has one of the worst breastfeeding rates in the

world, with only 15% of infants exclusively breastfed at 6 months (Murphy et al. 2023: 2). Becker asserts that until the 1960s breastfeeding was the norm in Ireland. A rate of up to 90% of infants being breastfed on leaving hospital subsequently sank as low as 10% within a decade, once cow's milk formula became widely available (Becker 2016: n.p.). Today, formula feeding continues as the perceived social norm with 'negative social perceptions' of breastfeeding 'engrained in the Irish population' producing a 'social stigma' (Philip et al. 2022: 5–8). It is highly significant that: 'Production of powdered infant formula is very important to the Irish economy and Ireland currently produces 15% of the total global output and is the largest exporter in Europe of powdered infant formula' (Becker 2016: n.p.). Baker et al. point to the power of commercial formula companies which actively influence national and international policy to maintain and grow their market (Baker et al. 2023: abstract text). This national commodification of infant feeding practices, economic systems that neither value nor support care work, and health system failings produce 'deeply embedded commercial and structural barriers to breastfeeding' (Baker et al. 2023: abstract text). Rollins et al. describe the marketing tactics of commercial milk formula (CMF) companies as 'predatory' (Rollins et al. 2023: 494). Not only does the widespread global consumption of CMF lead to the 'displacement of the health, developmental, and food security benefits of breastfeeding' (Baker et al. 2023: 503), but also 'CMF supply chains' contribute 'to global heating and other forms of environmental degradation' (Baker et al. 2023: 503). Again, it becomes clear how deeply interlinked social justice and climate justice are.

To maintain exclusive breastfeeding is to resist the pressures of such Anthropocenic/Capitalocenic forces. No doubt my positionality as a white, middle-class, university educated and employed woman, contributed to supporting my two-year breastfeeding journey. *The HSE Breastfeeding Action Plan 2016–2021* states that 'Breastfeeding rates strongly correlate to maternal education and social class' in Ireland (Canny and Hourigan 2017); and the *Growing up in Ireland* study found mothers with a third-level degree far more likely to breastfeed (79% compared to 29% who left at school at Junior Certificate level) (Greene et al. 2010). Another influencing factor that allowed me to maintain breastfeeding was participation in both off line and on-line breastfeeding communities. I regularly attended an in person breastfeeding support group which developed into a tightly bonded community, further supplemented with a WhatsApp messaging chat-group. As we sat in a public health service provided setting and witnessed each others' acts of nursing weekly we co-developed our 'breastfeeding self-efficacy' – our perceptions of

our own ability to breastfeed (Philip et al. 2022: 8). Breastfeeding became the norm within the group, which shielded us from wider social-cultural attitudes and conflicting ideologies. We developed our own social norms and codes of communication, working hard not to reinforce socio-cultural pressures of competing parenting ideologies and to tolerate our differences. We produced together a care ecology which sustained and supported our breastfeeding, as well as our other care practices. The stress hormone cortisol produced by our babies' hungry cries was calmed by the rush of oxytocin, and kind understanding words, gestures, touches and gazes. We were a room full of bodies flowing with bio-chemical neurotransmitters, which passed between and through us, as we reconfigured matter. Oxytocin is a bio-behavioral chemical, which promotes social bonding and attachment in parenting, romantic and platonic relationships (Feldman 2012). Oxytocin (OT) creates 'In addition to anti-stress effects that induce a feeling of safety and support the approach behaviors required for bonding, OT plays a key role in the motivation to bond through its connectivity with the dopaminergic reward system' (Feldman 2012: 382). This feel good hormone mutually co-regulates bodies creating 'social reciprocity' and shaping the 'long term stress and reward pathways' of neonates. This helps to produce 'bio-behavioral mechanisms' that 'shape the way individuals function within their various attachments throughout life' (Feldman 2012: 383–381).

As a group we held a deeply embodied connection, feeding together and intimately sharing the emotionally and physically demanding tasks of mothering and breastfeeding, in all their messy inter-relatedness. We carried each other through the endurance and labour of breastfeeding as an intensive form of care, and deeply needed the sense of connection we co-developed. Through the digital chat group we set up, we continued to support each other when we were not in the same physical space. Texts for help in the middle of the night were responded to by other mothers also undertaking the night feeds. Messages of solidarity and digital resources to problem solve issues were sent. These felt like a light in the dark, when it seemed the rest of the world was asleep. We shared pro-breastfeeding, medically informed digital resources such as *Kelly Mom*, and *Extended Breastfeeding Ireland*. Digesting this information together allowed us to navigate the confusing mix of information and ideology around breastfeeding, and to apply medical information to our embodied experiences and practices. We shared pictures of baby excrement, shared ways of managing the fluids leaking from our bodies and our babies' bodies, laughed about bodily mishaps, and normalised these otherwise abjectified experiences of our daily tasks. The care ecology we co-developed sustained our breastfeeding by sustaining us emotionally and physically in the cut and thrust of hormonal chemical flows of

rising and falling cortisol and oxytocin. The material-discursive flows of matter, in the care network we produced, resisted the free market powerful forces of 'Big Dairy' and the social norms and ideologies that maintain its grip. We also recognised each others' otherwise invisible emotional, physical and embodied labour: the body burden that we together bore. Breastfeeding is an ethico-onto-epistemology, a way of being, knowing and doing, with each other, our babies and in wider social-cultural contexts. It should be understood not as primitive, abject and outside of knowledge because it is gendered and embodied; it is rather I argue, a crucial form of knowledge, exactly because its epistemological value is produced through acts that are embodied, messy and uncontainable within the boundaries of the body and individualised self of enlightenment capitalism. Understood beyond its framing within Anthropocenic/Capitalocenic systems of thinking, and rather from a feminist posthumanist view, breastfeeding is an embodied act through which to think with matter differently beyond its accumulation for profit or power. It is a way of being that worlds powerful, ethical inter-relational material-discursive structures.

Medicalised Matter: Lived Experiences of Matter Reconfiguration

My argument is that the ethico-onto-epistemologies of breastfeeding can be understood as lived experiences of inter-relational matter reconfiguration and a way to live, think and world matter beyond its Anthropocenic/Capitalocenic material-discursive formations. Another modality of thinking differently with matter produced through breastfeeding arose through the increased consumption that characterised my experience. Medical knowledge asserts that lactating parents need to consume 400–500 extra calories a day (Riordan and Wambach 2004: 498). I did not need to access medical knowledge to know this; my body would pang with a deep and urgent hunger that demanded instant and full satiation. I would leave a sandwich of brown soda bread and cheddar cheese beside my bed nightly for my body's predictable and inevitable hunger at the 2 a.m. feed. I would try and fill myself with buckets of porridge in the morning, and eat a double portion of Spaghetti Bolognese at dinner. I became intensively aware of my own, pronounced acts of consumption and the increased labour they demanded, and that this was due to my new inter-relational ontology, sharing a deeply interlinked embodied relationship with another human body.

The way I understood this relationship was greatly influenced by the discourses of the in person and on-line pro-breastfeeding communities that I participated in. These communities were demonstrably of the digital age of information, with many pro-breastfeeding groups ascribing to evidence-

based, medical epistemologies as a way to know and support breastfeeding practices. At the 2 a.m. and 4 a.m. feeds I would read and reread entire medical articles about milk production and breastfeeding techniques. I learned about the material configuration of breastmilk and the different compounds, hormones and immunoprotective factors that no other substance could provide. I read how the composition of my milk changed depending on the frequency and character of my baby's feeding; and how I picked up pathogens in the environment and made antibodies that passed to my baby's body. Despite an hour of screen-time, I would fall straight back asleep with the rush of relaxing oxytocin released by my baby's suckling, until the next feed. I did not encounter till much later the studies that have shown that various 'man made' industrialised chemical toxins and microplastics flow through breast milk (Ragusa, et al. 2022). I carefully researched what medicines, essential oils and levels of alcohol I could use, if these were harmful for my baby and would transfer through breastmilk. I understood that what my body consumed, my baby's vital but vulnerable developing body might also consume, which produced a different mode of material-discursive thinking and being. I thought with a level of detail and care that I had not before, about the materials that flowed through and became of our bodies and then flowed outwards. Bread and cheese became milk, became liver, lungs, brain and heart, became skin, bone and blood.

Sellberg and Aghtan assert the Cartesian, humanist concept of the body as stable, works to occlude the body as fluid, permeable and vulnerable (Sellberg and Aghtan 2014: 166). In these acts of reconfiguring matter with the neonate, embodied subjects live this bodily instability: in intense, and affective ways, the unstable ontology of the human body and its relationship to the matter of its environment is understood. This experience performs what Anne Sophie Meincke asserts as a 'process ontology' in which entities are understood as subject to constant change, as opposed to being a 'thing' (Meincke 2021: 1507). Haraway's contention is that in order to achieve climate justice, we must 'stay with the trouble'; that is to think beyond human exceptionalism and consider the 'human as humus', as arising from and destined to go back to the matter of our environment (Haraway 2016: 32). In my experiences of breastfeeding, as a networked mother, I lived and experienced human bodies as part of a world whose matter is constantly transformed and exchanged, not just extracted for the purposes of profit.

Conclusion

Breastfeeding was marked for me by heightened acts of consumption: of food, information and parenting ideologies. It was a mode of thinking about the inter-corporeal reconfiguration

of matter: I became aware of the composition of the substances my body had made for my child's body, how they became the building blocks of their organs, nervous and immune system. This mode of embodied thinking produced matter that was of use value rather than market value (Lynch 2022: 54). In this way, my acts of breastfeeding worked to resist the onto-epistemologies of the 'capitalist accumulation process', if they did not quite manage to evade the off run of industrialised-capitalist toxins (Lynch 2022: 54). Breastfeeding as a practice also produced a deeply embodied sense of inter-relationality: the amount of touch it required between me and my baby; the feel good oxytocin and endorphins that flowed between us; and the support and solidarity ecology we co-produced, stimulated by the endurance and knowledge required. The oppression of the onto-epistemologies of those associated with caring roles (women, migrant workers, people of colour, marginalised ethnicities and the working class) perpetuates the capitalist value system and associated practices of extractivism. Such knowledges hold the potential to challenge existing dominant humanist ideologies, still anchored to enlightenment thinking. Through this paper I have textually performed lived experiences of breastfeeding, as a way to make visible in material, visceral and embodied terms, the labour of such gendered, raced, classed care work, that is devalued, dehumanised, and made abject. Lynch states: 'If care is to challenge capitalism as a source of ethics and a site of resistance, not only must the capitalist value of profit at all costs be contested, but so too must the deeply gendered and racialized hierarchal social order that underpins it' (Lynch 2022: 56). I argue, we cannot invoke care in relation to the Anthropocene/Capitalocene without reference to and recognition of those undertaking care labour and getting their hands dirty.

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More Than we Think and Less than we Wish On the Instrumentality of Education

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Abstract

Regarding instrumentality, numerous educational theories are in an aporia. Some condemn pro-instrumentality approaches of reducing education to a simple technic for social and economic engineering, devouring what is educational in education. However, the same anti-instrumental approaches indirectly propose other instrumentalities of education to serve other purposes (emancipation, empowerment, global citizenship, democratic education etc.). This contribution assumes that this aporia is not a simple puzzlement but a question that once answered can touch on other problematic elements in educational theory. The paper offers a new epistemological understanding of instrumentality. It does that by getting over the question of what education is instrumental for and departs from asking what it takes for education to be considered instrumental and what it takes ontologically for an instrumental relation to be. The contribution's answer to both questions is the ontological contingency of every subject, which limits a subject (here, education) but is also constitutive of it, making it ontological. In this sense, the paper suggests reading instrumentality as a co-prosthetic relation that, by signaling its subjects/objects as contingent, also permits a creative dealing with that negativity it points to.

Key words: instrumentality, education, prosthesis, Laclau and Mouffe, contingency

Introduction

People dealing with educational practices may not be aware of the question of instrumentality or articulate it properly, but they always seem to have some presuppositions about it.

Some may say that education shouldn't necessarily be productive; like art, poetry, or literature, it is an end in itself. In contrast, others may believe that education is a solution to many problems and the path to a better world. The formulation of this debate academically started with a protest against the growing over-emphasis in educational policies on achieving goals that seem alien to the educational realm, understood as one of the humanities (Giroux, 2010; Nussbaum, 2016). Take, for instance, how Biesta (2013) argues that the over-emphasis on lifelong learning reduces education to appropriating adapted skills to be inserted in the market while neglecting what is educational in education. This argument developed into a theoretical understanding of education where it is, by essence, anti-instrumentalist, and by that, it is even positioned against some 'good' instrumentalities, such as global citizenship education, democratic education, and emancipation (Biesta, 2001; Masschelein and Simons, 2013; Oliverio, 2020; Vlieghe and Zamojski, 2020; Säfström, 2022). This is not to say that educational theorists see these goals as not noble. In fact, they are very important things. But instrumentality shall not be the be-all and end of education, and therefore, such political and economic issues should not be 'educationalized' (Smeyers, 2009; Tröhler, 2016).

This contribution embeds its argument in this current debate over the instrumentality of education. It develops in the following way. It starts by advocating that the fears expressed by the anti-instrumentalist position are legitimate. Then, it presents empirical cases of 'noble' instrumentalities of education. These are not counterexamples to prove the goodness of instrumentality or its neutrality empirically, as, for instance, Gibson (2008, p. 247) does when he argues that in the context of cultural institutions, 'while commentators simply continue to de-construct the "instrumentalist" cultural policy agenda, the reality is that some cultural institutions continue to pay, at best, lip service to the political imperative to become more inclusive.' Instead, this ambivalence of good and bad instrumentalities invites us to rethink the relationship between education and instrumentality in a whole new language. For that, we need a new starting point for our reflection. We first retreat from the normative question of whether education should be instrumental. Alternatively, we ask the ontological question what it takes for education and instrumentality to be articulated together, and can we imagine any subjectivity, including education, as purely instrumental or free from it?

The paper articulates a distinctive position from the sole affirmation or condemnation of instrumentality by answering these questions. It returns to where both sides of this binarism, pro or anti-instrumentality, come from. It advances that, whether they think of it or not, they share the same foundation: an essentialist

ontology that sees subjectivities, here education, as having a fixed meaning, an objective essence, and hence can transcend any instrumentality. This contribution departs from different ontological propositions inspired by Ernesto Laclau and Chantal Mouffe (2014) to go beyond these positions. It argues that because all subjectivities are constitutively contingent, educational theories are (intentionally or not) necessarily instrumental. Contingency for Laclau does not refer to the exceptional limits of a subject that is necessary, but it is the condition of existence of any subject at the first moment and what makes its continuous contestation possible. Contingency for Laclau is necessary in the sense that it refers to the inability of subjects to maintain a sustainable stability of meaning. On these ontological grounds, instrumentality is an ontological medium to fix that contingency of the subjects and give them some hegemonic stability. However, because that failure is ontological, instrumentality is itself failing. This is a constitutive element of instrumentality, as the failure of instrumentalities makes the generation of future instrumentalities necessary. This alternative view to instrumentality will weaken the binarism of pro versus anti-instrumentalism by showing how both contaminate each other, suggesting that (pro) instrumentalist approaches are less instrumental than they think, and anti-instrumentalist approaches are more instrumental than they wish. Following these ontological premises, the paper will present a new epistemological language to read instrumentality in new terms.

The state of research

Whether we refer to instrumentality's meaning in common sense or philosophical approaches (e.g., Agamben, 2016; Heidegger, 1977; Horkheimer, 2013), there is always a lure against instrumentality (Levine, 2021). The instrumental usually refers to what is not authentic or an opportunist use of a subject against its original meaning by reducing it to a tool and hence not an end in itself. In a word, something instrumentalized is believed to be misplaced and used against its true essence. This is, for instance, the way that in educational research, it has been a tradition to signal every economic plan with education in terms of instrumental rationality – *Zweckrationalität* (Horkheimer, 2013). This signals how the market economy rests on means–ends thinking, which reduces education to a ridiculous calculation of its value according to its participation in an efficient, rationalized achievement of economic and technical progress. Therefore, educational research negatively captures instrumentality and cherishes that education has a real essence independent of others and exists without being instrumentalized or operative as a means to any political or economic ends (Biesta, 2001, 2013; Masschelein and Simons 2013; Lewis, 2013, 2020; Hodgson,

Vlieghe and Zamojski, 2018a; Vlieghe and Zamojski, 2019).

Counterexamples, food for thought

The argument of the anti-instrumentalist is understandable as it points to dangerous empirical consequences that the instrumentalism of education may generate. However, one can also encounter elements that raise skepticism without indulging in a pro-instrumentalist approach. One of these elements is that while the opposition to instrumentalism is a cornerstone of the critical theory, critical pedagogy endorses an instrumentalist approach to education, stressing progress, critical thinking, and empowerment, which is inchoate to education (Giroux, 2010). Other anti-instrumentalist arguments, like the one of post-critical pedagogy, are attentive to this failure of critical pedagogy to remain anti-instrumental through and through, and alternatively, they ask us to go beyond critical pedagogy and have a post-critical attitude that goes back to the origins of education independent of any instrumentality (Hodgson, Vlieghe and Zamojski, 2018a; Masschelein and Simons, 2013). However, as Szkudlarek (2020, 2022) explains, by this, we also seem to be performing (unintentionally) an act similar to many conservative approaches that ask to go back to the roots of an elitist Western cultural heritage, as in the controversial work of Bloom's book *The Closing of The American Mind* (Bloom, 2008). Similarly, Atif (2023) is attentive to the adoption of anti-instrumentalism by ultra-political neo-nationalist and racist movements that claim 'leftists' are instrumentalizing education and that we should bring it back to a state of non-instrumentality where it is reduced to learning.

This ambivalence of the instrumentality of education can be elucidated also through the way that educational theories see their relation with politics. In this conception, educational theorists advocate the independence of education from other fields, such as economic and political plans. However, one cannot separate educational theory in its genesis and development from purely political projects (Plato, Rousseau, Kant, Herbart, Dewey, Arendt, etc.). Similarly, the goals drawn for instrumentality as an alternative to safeguard education's independence from politics are surprisingly very political (empowerment, progress, liberation, etc.). Henceforth, education wants to be misrecognized for its instrumentality in politics. For instance, regarding populism, on the one hand, educational theorists desire education to be of political relevance to fight and resist populism. However, there is also a will to reject the instrumental character of this mission. Thus, the instrumentality of education persists even though we reject it as if the only way to deal with the instrumentality of education is to hide it (Atif, 2021). In this situation, the question of the instrumentality of education is an aporia that does not close itself into an impasse but

demands a new attentive methodological approach (Snir, 2021).

An ontological alternative

Having counter-empirical examples to the dominating approach condemning the relation of education to instrumentality does not mean that it is a relativist or neutral relation or that the discussion over instrumentality is less fruitful, as Ruitenberg argues (2022). Instead, this ambivalence is an enigma, a riddle to be answered rather than ignored. This interest lies not simply in solving a mystery but because it touches on one alarming element that it shares with the positions condemning instrumentality, which is the state of crisis where democracy and democratic education currently find themselves in. Thus, it is not denied that several economic and managerial plans and alienating political agendas attack education. Nevertheless, we can only tackle this crisis if we answer the enigma mentioned at the beginning of this paper. Henceforth, having this ambivalence about good and bad instrumentalities should invite us to distance ourselves from an approach satisfied with the sole description of the scandalous results of the instrumentality of education. Alternatively, we need a methodological consideration of how we read our empirical cases as more than a purely descriptive approach to our subjects, education, and instrumentality because this only leads to ambivalent results. Instead, we must look at what persists in instrumentalist manifestations, no matter how different. This means that the epistemological manifestations of instrumentality which we take as neutral, are not immediate, but they are articulated through apriori ontological presuppositions (Glynos and Howarth, 2007: 7; Laclau, 1990: 34). By paying attention to these conditions of articulating instrumentality, we will be making the Heideggerian distinction between the ontological and the ontic. Here, the ontic concerns concrete properties and characteristics of the instrumentality of education, in contrast to the ontological, which pertains to the specific way the instrumentality of education has its characteristics. This ontological approach offers a better stand to deal with instrumentality because while it shares the concerns for the state of education regarding instrumentality, it prefers to speak without a normative tone that is satisfied with the content of the instrumentality of education.

This move from an ontic approach to instrumentality to an ontological one means that ontic descriptions of the instrumentality of education are limited, as they look at what instrumentality is for, instead of asking what the ontological conditions of instrumentality are (Carusi, 2021). An ontological approach is precisely about this: asking what an instrumental relation supposes to be. Furthermore, what does it suppose for the subjects of an instrumentality (education here, for instance)

to be in order to be implicated in an instrumental relation? By having such considerations, we can go over the essentialism given to instrumentality. Only in this ontological way will we be better positioned to speak of instrumentality epistemologically.

Ontology of instrumentality

To think about the instrumentality of education ontologically may not seem very 'ontological'. Ontology is generally understood as the quest for the primary conditions of a subject's existence before any (instrumental) contact with others. In contrast, instrumentality connotatively refers to a subject's contingency and weakness; For instance, one may ask, if a subject is strong, why would it be instrumentalized or need to instrumentalize something? To go beyond this reductive conception, we should point instead to the opposite way, from instrumentality as alien to any subject's ontology, to think what the ontology of instrumentality being a subject itself would be. In other words, what does it take to say something is instrumental? Only after answering this question can we go back to the instrumentality of education and wonder what the instrumentality of education would mean.

This move from the autotelic to the instrumental requires another move from an essentialist ontology towards an alternative that recognizes negativity as ontologically limiting but also sustaining every subject. The foremost advocates of this position are Ernesto Laclau and Chantal Mouffe in their book *Hegemony and Socialist Strategy* (2014). There, the two post-Marxist political theorists, dissatisfied and disillusioned with the forms of essentialism in the economic reductionism in orthodox Marxism, developed a theory of hegemony that highlights the role of meaning, hegemony, and identification in articulating political identities. This contribution relies on these claims as they cut across other fields, signaling that meaning, subjectivity, and agency are constructed within relational structures shaped and reshaped through political struggle (Marchart, 2018). Here negativity becomes more than a reason for relativism or anti-essentialism but is understood as limiting but also productive of subjectivities. By reframing the ontological question about the instrumentality of education in these terms, the question becomes what it takes for instrumentality to be (in which conditions) when every identity fails.

Instrumentality as not a simple technology

Moving from an essentialist philosophy to one that recognizes contingency is crucial to advance beyond a contradiction at the heart of the anti-instrumentalist approach. This contradiction refers to how having an autotelic and positive approach to education by anti-instrumentalist readings makes it vulnerable to technological understandings. By technology,

the reference here is to how it is understood as a simply positivist operation that reduces an instrument to a mere tool or utensil at the service of goals extrinsic to it. A weakening of this autotelic essentialist approach to instrumentality will also weaken this reductive technological reading of it.

In detail, the overall understanding of instrumentality, a technological one, is framed by an epistemological cause–effect relation where a successful instrumentality cancels a negativity. The issue with this linear causal relationship is whether it holds in purely technical areas, such as when we try to imagine the work of an engine or a mechanical watch. Concerning the instrumentality of education, it is only imaginable with what this contribution rejected before: the negativity of the elements involved in this instrumental relation is restrained to their external interactions, while internally, they are unaltered; they are fully standing **autolytic** subjects. In this sense, the elements of an instrumental relation, like parts of an engine, are static elements in a mechanical exchange which may change their appearances but never their essences. Such a reading replaces the instrumental relation with a mechanical causal relation, generally referred to as a technological one.

This paper's reading of instrumentality evades the reduction of negativity to an external level (which would be an ontological condition of this mechanical reading of instrumentality) by seeing negativity as internal to identities and not only external. The contribution's way is to build on antagonism, which typically refers to external conflicts between subjects (political parties, philosophies, nations, etc.). However, for Laclau and Mouffe (2014), antagonism is this external contradiction and the constitutive role of internal negativity in every identity. What is, then, instrumentality regarding this double level of antagonism? For Vardoulakis (2020), every subject is condemned to an ontological lack (negativity) that the instrument of hegemonic political strategies can temporarily recompense. However, this ontological failure is not a positivity that can be encountered while expressed in many instrumental empirical failures. In a word, it is a lack that itself is lacking, a negative negativity. Therefore, there is a circular relation: empirical instrumentality is only possible because ontological instrumentality is failing, and circularly, ontological instrumentality is necessary because every empirical instrumentality is failing. Instrumentality, in these terms, is not an unauthorized or scandalous moment, but it permits the move between the ontological and the ontic, and instead of closing it, it keeps it on the run.

To clarify the argument, one must mention that this circular relation is not a simple technical operation. Still, it is one where the elements of the instrumental relation, the subject, and the object, if this distinction ever holds on these ontological grounds (Szkudlarek, 2022), are not in a relation of determination

but overdetermination. Accordingly, the instrumentalization of education changes the subject of instrumentalizing education and education itself. It means that education as an instrument is not merely a technical endeavor to control some fields' negativity by recourse to a fixed positivity, the one of education. Instead, in turning an identity's negativity into a positivity, education's positivity is contaminated by the identity it aims to uphold. Hence, an instrumental articulation of education dislocates education from its sedimented discourses as particular to a distinct context of practices (related to learning, schools, didactics, etc.) to be of political, economic, and societal relevance. This means that education can be instrumentalized as a hegemonic fix for an object's incompleteness as a totality. However, education and the identity it articulates are both lacking totalities, and via their articulation as prosthetic bodies to each other, they help each other to exist without being fully objective.

For Atif (2021) the instrumentality of education being a co-prosthetic relation covers hegemonically over the lack of the subject and object of this relationship so that their distinction between both disappears (hegemonically) subjects through the embodiment of one of the other. However, both subjects pay for such a grounding relationship by being mutually dependent and thus contingent subjects. Hence, the instrumentality of education is not in how education serves an already existing agenda or identity but is in the process of contributing to creating the frameworks of identity itself (Szkudlarek, 2017; Atif, 2023). This reading of the instrumentality of education goes beyond a simple, pragmatic, or utilitarian image in which instrumentality functions as a prosthetic technical operation. This would oversimplify this contribution's conception of instrumentality as a prosthesis of a positive technical effect. Instead, the prosthesis needs to refer to the constitutive ontological negativity of its parts. Hence, we need a reading that considers instrumentality more than a simple extension.

Epistemology, an alternative

On these ontological grounds, the contribution considers an alternative epistemology to conjuncture the instrumental relation between education and instrumentality. This one should be an epistemology that primarily considers this contingency instead of being positivist. In other words, its logic for understanding instrumentality should equally not be objectivist or transcendental. It reflects the precedent ontological premises by admitting that, as an epistemology, it cannot speak from a meta-discursive standpoint and instead accepts being hindered by negativity. For that, we need to change the logics in which we read the instrumentality of education in new epistemological words. What is the status of each of these logics? For Glynos and

Howarth (2007), since a logic is a subject, it has its own internal antagonisms that do not permit it to be positivist and full standing. Instead, each logic is subverted by other logics, but it also needs them to support it. Henceforth, a valid logic does not refer to the principles of non-contradiction inside an instrumentality of education as causal explanations aim to do. Instead, a valid logic builds on admitting that ontological contradiction gives the best stand to capture the being of these instrumentalities (Glynos and Howarth, 2008). Therefore, a logic does not refer to the eternal relations of the subjects of instrumentality as causality does. Still, it is conjectural as it recognizes the overdetermined nature of the parts of an instrumental relation. Thus, as a logic it does not speak as omnipotent, but it always has a conjunctural meaning. It is subverted and supported by other logics under its antagonist character (Glynos and Howarth, 2007).

The aim here is not to engage in a relativist discussion but rather to emancipate the explanation because a logic is used for a more procedural goal. It aspires to what this contribution aims at, which is to deliver new insights regarding the instrumentality of education. Methodologically, this means that to conjuncture the instrumentality of education, we need more than one logic, but many, which all sustain and limit each other. Hence, we hold three Meso-level logics of critical explanation addressed to conjuncture the ontological elements of articulation and translate the circularity of instrumentality between two levels into a new epistemological language alternative to mechanical causality.

This new language translates the circularity of instrumentality between two levels into a new epistemological language alternative to mechanical causality. These two levels refer to empirical instrumentality, and the second level is ontological instrumentality. On the first level of this circularity, the aim is to conjuncture the logic of how empirical instrumentality shows itself as only a technicality that will undoubtedly attain positive effects and as having no political character, which is to provide an account for the grammar of the discourse of an instrumentality of education and see the general patterning of the discourses which Glynos and Howarth (2007: 136) call a social logic. Then, we engage in the circularity of this instrumentality to the second level, the one of ontological instrumentality, by looking at how it aims to cover up ontological negativity through hegemonic practices of empirical instrumentalities. We access this second level through two other logics that recognize the vulnerable contingent ontology of instrumentality by focusing on instrumental relations' political contingency and ideological underpinnings; Glynos and Howarth (2007, 2008) call them political and fantasmatic logics. With this, political and fantasmatic logics account for transforming the circularity of instrumentality

from an empirical level, described through social logics, to an ontological one. The contribution details each of these levels and each corresponding logic(s) in the next section.

The social logic of instrumentality, on the invisibility of instrumentality

This contribution relies on the social logics (Glynos and Howarth, 2007: 137; Laclau, 1983), to describe the first side of instrumentality, which is the empirical one. The social does not refer to society in its sociological sense, but it refers to sediment instrumentalities taken as not instrumental but self-evident and natural. These might be, for instance, the accepted social justice logic for critical education approaches or the economic feasibility of education in producing an adequate working force. These logics succeed when they show no distance between education and what it is meant to be instrumental for. Generally speaking, this invisibility of instrumentality seems to be a condition for education's working. An example of this in education theory is what Szkudlarek points to in Rousseau's theory. Rousseau recommends making pedagogical influence invisible to Emile by preparing the scene of learning before the child so that particular learning stimuli appear natural to him (Szkudlarek, 2017, 2019).

Hence, as explained before,

a successful instrumentality of education is like a prosthesis that tries to give itself as only an empirical matter and tries to hide any alien relationship that it may have to the original body.

Nevertheless, as explained before, this is only the first level of instrumentality, the empirical one, where it is shown as only an empirical matter, not political. On the other hand, the study of instrumentality departs from the conviction that the contingent and political character of all subjectivity is ontological and should go to the other side of instrumentality, which is ontological. To go to this level, we should problematize this first level.

Political logics of instrumentality between extension and amputation

A way of problematization starts from the observation that in articulating instrumentality in educational theory there is an implicit anti-instrumentality tone condemning instrumentality's interventions as blasphemy to education's transcendence. Still, instrumentality is not negated but used again for different aims without being named instrumental. This tension refers to the radical contingency that is ontological to every subject. While we cannot access it because, after all, it is radically negative, we can conjure it through two other types of logics, the political and fantasmatic logics.

Political logics do not refer to the political in its *strictu sensu* as related to political parties, administrations, or democratic institutions. Instead, the political is understood as different from the social (Lalcau and Mouffe, 2014). That is, if the social is the terrain of sediment discursive practices, where for instance, in the case of instrumentality, it hides itself. By contrast, the political refers to the reactivation of the contingent nature of every instrumentality (Laclau, 1990). Therefore, the political logics, as we said about ontological negativity, refer not only to the moment of the institution but also reactivation. These two moments can be clearly shown through the same metaphor of the prosthesis.

The challenge for instrumentality's success, as in prosthesis, is to hide that contingency by showing that the natural place of the prosthetic body is within the body it supplements by producing what in linguistics can be called an equivalence operation. Like any equivalence, any possible negativity between education and what is instrumentalized for and which may threaten this chain's unity is totalized through the shared negativity of these elements vis-à-vis other instrumentalities shown as dangerous or simply by reactivating their contingent character by showing them as instrumental. An example is one of the critical pedagogies that, while they reject the economic plannings of education, show education as politically and socially emancipatory. This equivalence between education and these emancipatory goals is drawn especially by showing that it is of education's nature to be of emancipatory relevance. This equivalence is drawn only against oppressive instrumentalities and it is so successfully hegemonic that it makes it exceedingly challenging to imagine that education can exist without serving emancipatory projects. Conversely, post-critical pedagogy continues to be anti-instrumentalist also for such purposes by seeking an education 'for education's sake (rather than for extrinsic goals such as global citizenship)' (Hodgson, Vlieghe and Zamojski, 2018b, p. 7).

If our thinking of the political logics of instrumentality stops here, we will be reducing instrumentality to a simple technical

harmonious prosthesis supplementation that works through equivalences made thanks to parallel amputations. With this, we will be stopping instrumentality at the ontic level. On the contrary, we should look at the unresolvable dimension of the political logics because we can access that radical contingency at the ontological level of every instrumentality. Here we can look at the other dimension of extension or equivalence, which limits but sustains it. One can look at how every amputation is possible only thanks to an equivalence. This is because the equivalence that leads to a unity of education and what is instrumental for, is only possible through a logic of difference because to turn the negativity between the education and what it is instrumental for into one totality is only possible through the shared negativity (a difference) of these elements vis-à-vis an equivalence of other instrumentalities. Hence, we find that both operation equivalence and difference are as we conceived negativity in Laclau and Mouffe's philosophy, as limiting a subject but also constitutive, and this leads to the failure of harmonic fullness that can only be surpassed hegemonically. But how can the hegemony of the instrumentality of education stand (and grip) despite this contradiction? It is here that the contribution turns to the second level of logics at the ontological level of instrumentality, which is the fantasmatic logics.

Fantasmatic logics, on the twisted desire of instrumentality

Fantasmatic logics critically explain how fantasy suppresses the tensions between equivalence and difference by explaining how specific instrumentalities can grip subjects hegemonically and be stabilized despite their contingency. However, since all meaning is contingent, fantasy is not reducible to a fantasm, a false story set against a true one (Glynos and Howarth, 2007). Therefore, fantasmatic logics can only be a partial technical solution to provide instrumentality with stable meaning. Alternatively, they have the same structure as political logics since they possess contradictory features, displaying an instability between incompatible positions (Glynos and Stavrakakis, 2008). By that fantasmatic logics do not aim to explain ways in which instrumentality grips or seduces subjects at a nonrational level but it aims at the fantasmatic rationalities behind what presents itself as rational (socially accepted as such). The paper will flesh out these contradictory positions through two fantasmatic logics, a beatific one against a horrific one, by drawing on the same metaphor of prosthesis, where we find a tension between a desire for extension and a reminder of loss.

This contradiction at the heart of the instrumentality of education is related to every desire: I want the transformation that the instrumentality of education enables to happen, as in the experience of the prosthesis, I want a prosthetic supplement

(better, more beautiful, more efficient, bigger, etc.). But, I want it in such a way that I am unaware of its presence on my original body as if this prosthetic part is what was amputated and now comes back to take part in its natural place; it is not a foreign part, it is just coming back to a natural state. In a word, I want my instrumentality to be seen as not instrumental. I want no one to stare skeptically and wonder: 'Is this natural!? What has this to do with the original and natural body/discourse?'

Here we find a tension between a beatific fantasy with a desire for extension and a horrific fantasy with a fear of impurity and repulsion. Derrida (1994: 7) gives a similar approximation about the apparition of the specter in Hamlet where the armor of the specter is productive. It is the corporality of the armor that makes the specter spectral because by having this armor, the specter appears but without really concretely revealing itself, and on the other hand, the armor can speak; it has a voice. Thus, the question of which part is original, and which is a prosthetic becomes difficult. Similarly, the goal of every instrumentality of education is that the mutual contamination it presupposes is misrecognized, and no one stares at the body as divided between an original body and a prosthetic device.

Conclusion

In this paper I have tried to move the instrumentality of education from being a simple normative question that can be rejected or accepted (described as a social logic) to an ontological level, where the aporias of instrumentality are accounted for through political and fantasmatic logics, which explain not only the tensions at the heart of every instrumentality but also its underpinnings. These logics are the basis of an alternative epistemology reflexive to the aforementioned suggested ontology. In this alternative ontology, the subject and object of an instrumental relation are not in a simple determinist mechanical relation but are overdetermined. This discussion should guide our discussion of instrumentality beyond a normative discourse that condemns it to an ethical questioning which is more prepared to deal with the instrumentality of education.

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Chapter 6

Accelerated Ageing: An Alternative Interpretation of Conservation Terminology

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Abstract

A request to describe how my conservation background informs my visual art practice led me to reflect on crossovers and parallels. As a fine art conservator I am accustomed to observing and documenting time's accretions, attempting to rejuvenate and modify behaviour, at times to speed up as well as try to turn back, but above all, to protect and care. As a visual artist, I sometimes find myself at odds with the ethics involved in conservation – the necessity for authenticity, reversible actions and stable materials. While aware of what differentiates my practices, I am less attuned to looking at where they connect. This focus on the separateness of my interests compartmentalises and simplifies, which is the opposite of Virginia Woolf's 'bran pie' reality (Ferrante et al., 2022) where multiple versions of the self can co-exist in the singular. An inclination to think laterally for a solution and literally from years of close examination and definition is often most obvious in the language I use, or to be more accurate in my use of the passive tense. However, taking a closer look at language reveals a path through definition and familiar conservation terminology to describe actions and characteristics that also finds expression through my fine art practice. This has led to some degree of clarity in how I am able to respond and has implications for how I can look

at areas of crossover going forward. To illustrate the point I have chosen a number of conservation-based terms that either appeal or resonate, without necessarily reflecting any particular hierarchy in importance to conservation. I should also emphasise that the order in which the terms appear has no relation to or bearing on how or whether they are used in a conservation application.

Keywords: accelerated ageing, conservation, microclimates, reversibility

Introduction

In conservation terms, the first rule is that everything you do to stabilise a work of art must be reversible. In reality, absolute reversibility is a myth, the aim is to stabilise an object without adding anything that would undermine its authenticity or prevent possible future treatments. This appears relatively straightforward if we are describing a paper tear repair but less so if friable media consolidation is being considered – the very nature of the intervention being to correct a fault or failing. In acknowledging that all interventive and passive acts are influenced by the cultural climate in which they are carried out, the current stress is on a minimum of ‘needed’ intervention (Melucco Vaccaro, 1996). However, it is very important to understand that what is considered ‘needed’ may differ depending on a point of view, so even trying to interpret an artist’s original intention can be compromised. Even if the artist has provided this in the form of documentation or a contingency plan, such as facilitated by INCCA, the International Network for the Conservation of Contemporary Art (INCCA, 2023), sometimes it is necessary in the interests of longevity to re-imagine a work of art as an independent entity. Of course this is over-simplifying a complex issue but for the purpose of this discourse it brings up the messy question of what happens to the ego. In respect for other people’s art and by extension the object, in conservation you have to subtract yourself, while as an artist regardless of the creative outcome, you are the author. I have chosen to begin with this term ‘reversibility’ to illustrate the fluid nature of my conservation/fine artist selves – as a state that is constantly shifting and while it emphasises a difference, this respect for the object, for it to have a life and existence of its own, is a connection.

Accelerated Ageing

Accelerated ageing is a term closely associated with reversibility. It is a method used to determine the future ageing characteristics of a mechanism or material. It is employed to gain a better understanding of the implications of a treatment with regard to the longevity and stability of a work of art. It is used to test new materials and technologies to assess their suitability and

predicted long-term applications. The validity of accelerated ageing tests is dependent on a controlled environment and standardised conditions in order to assess the impact of external factors. Most commonly, this takes place in a humidity chamber where heat and moisture speed up the rate of deterioration in a controlled and quantifiable way. Radiation is also used, as is photo-oxidation if you want to observe the effect of visible light, which causes fading of delicate pigments/dyes. In *Artificial Nacre* (2020), I induced deterioration rapidly in photographic negatives by converting the silver nitrate particles suspended in the gelatine emulsion to silver sulphide, also known as silver mirroring. This silver mirroring is the result of oxidising the silver nitrate using hydrogen peroxide and then exposing it to external sulphur containing compounds such as hydrogen sulphide – mirroring the effect of atmospheric pollution acting upon acidic, oxidised material. This concept of accelerated ageing is echoed in my sense of time; as I age, time appears to speed up. Using wax as a resist, I made drawings of my family on recycled x-ray negatives and selectively exposed the drawings to pollutant gasses in a homemade temperature/humidity chamber. Current discourse on societal pressure would suggest that children are growing up in a ‘polluted’ atmosphere full of predators, where their every move is recorded, controlled, policed and anticipated. In this perceived state, the exposure to and effect of external influences (pollutants) raises the age-old issue of nature versus nurture. The formation of silver sulphide on the photographic surface produces a beautiful multi-coloured shine, to suggest that despite distorted fears, it does not mean that the outcome will be negative, sometimes as in accelerated ageing tests, positives can result and something quite precious is created.

Metamer

Before any interventive or preventive conservation treatment is considered, a conservator thoroughly examines the object to understand as much as possible about its material constituents, creative process, and history. This includes looking in transmitted and raking light, under UV and IR, through the microscope and by using analytical techniques if and as required. Metamerism is a phenomenon in which two colours may appear identical under one set of conditions but which differ under another, such as illumination or viewing direction (Johnston-Feller, 2001). A metamer refers to a pigment that has an ability to appear a different shade or tone depending on the angle of light. Usually metamerism can occur when modern substitutes for traditional artists’ pigments are used for retouching. This duality appeals to me, as I am partial to incorporating elements of trickery and subterfuge in my work together often with an invitation to look closer and question what you see before it disappears. *Gauntlet of*

Chance (2020) comprises a wearable glove printed with a heat-reactive ink on textile that responds to body temperature, once activated the pattern disappears.

Foxing

More about trickery ... the term foxing, first used in 1840 in conservation literature by Beckwith and colleagues (Ciferri et al., 2012) describes the brown coloured spots that can appear in a piece of paper. It is a term also more commonly associated with performance and pretence. Their causes are also difficult to characterise having metal and or microorganism origins (Daniels, 1988). Sometimes these localised spots respond well to a topical application of an alkaline suspension of calcium hydroxide, which can reduce the staining. Visually, they are similar to freckles or age spots on the skin. In my own practice, there are numerous instances of fakery. In *Surreal Estate* (2013), I imagined abandoned spaces having a secret existential dimension – where not everything is transparent, especially windows. An interactive/wearable work, from the series *Lunar Confessions* (2021), looks at our interactions with the moon, in particular myth versus fact regarding its influence over our day-to-day existence. The premise involves harvesting lunar ozone by charging a receptive foil headpiece at night for wear during the day. It connects with a theory of ambient biological energy. A series of prints incorporating elements associated with undercover investigation; an anonymity of monochromatic silhouettes accompanied with dramatic/implausible testimonials are presented alongside a moon-pod and wearable moon-hat to encourage audience involvement. The objective is to collect observations, confessions and elicit an imaginative response. This preoccupation with audience involvement draws from my own first-hand conservation experiences of other artists' works. In *Eye Sleight* (2021), I am looking at the human biological production of pigments and their role as indicators. This work is based on research into a historical illness (affecting mainly women in the 19th century) called Chromidrosis (Foot, 1869). Young women presented with strange facial blue/black particulate sweat around their eyes that would slowly reappear when wiped away. The reappearing character of the illness fooled the medical professionals into believing it was some kind of hysteria-induced deception. The illness may have been triggered by unacknowledged trauma, which interrupted the digestive system causing a sweat of unabsorbed toxins. Which brings to mind the word *pentimento* – a slow, stubborn reappearance of underpainting or rectified mistake, something intended to stay hidden.

Fugitivity

Before a work of art is conserved, thorough testing takes

place on the inks and media, on the paper and its coatings. This is to try to anticipate whether a treatment will be effective. The term fugitive is used for example, to describe an ink or medium that reacts with a solvent (Doherty and Woollett, 2009) or changes in character in response to an external factor. Copy pencils, introduced in the 1870s, used aniline dye technology to produce duplicate documents. This was achieved by creating a hand-written document in copy pencil, laying a moist tissue paper over the document and pressing down with a mechanical press. The water-soluble dye in the writing was transferred in its mirror image to the tissue paper, which could then be read in verso by holding it up to a light source. The most commonly used dye was aniline, which produced a stain that was bright purple, mauve, or some colour in between, depending upon the manufacturer. Since the aniline dye was poisonous to humans, many injuries and illness related to copying pencils were reported in the medical literature, especially in the late 19th and early 20th centuries. In fine art, these pencils were used around the Second World War as a substitute for graphite pencils (which could be hard to come by). As well as being toxic, the aniline dye turns purple in water and this is an irreversible change. As a visual artist, I am intrigued that the state of fugitivity suggests a non-human consciousness, the elusive life of an inanimate thing, and a latent life force.

Deacidification

Acidity is a major accelerator and cause of deterioration of organic materials, especially cellulose in paper-based collections. Acids attack the long chains of cellulose and randomly break the glycosidic links, lessening the degree of polymerisation and resulting in a drop in paper strength. Deacidification is the neutralising of acids, the raising of the paper's pH, and involves a process whereby an alkaline buffer is deposited in the paper so that any future acid migrations or attacks are neutralised on contact. Aqueous solutions include calcium hydroxide and magnesium hydrogen carbonate. They are introduced into the paper at specific strengths so that when the paper dries, alkaline calcium carbonate or magnesium carbonate is formed. Calcification or bio-mineralisation is the normal mineral deposition that occurs in molluscs but also refers to the accumulation of calcium salts in the body, especially soft tissue and is associated with illness. In *A Fragile Armour* (2022), an iridescent sculpted shell alludes to a life's work/worth, of time built up slowly in calcified strata. Redolent of shelter and protection, beneath it lies a midden of shells, discarded as if rubbish. The once valuable husks are all that is left of the memories and experiences that have contributed over time to shape the shell that in turn provides a source of protection. Here I conflate scalloped nets and net curtains with oyster shells, bringing

themes of protection and disguise into play. *Her Suit* (2022), a printed textile suit using a composite image of animal and human hair, hangs ready to be worn, prepared for its occupant to don attributes deemed male in both a suit and hairiness, promoting the idea that women need to enhance their animal instincts to take on an empowered role in the fight for equality. It presents an invitation to dress up and inhabit a place not normally accessible where new behaviours can be tested and a different voice can be unleashed, one that may be unaccustomed to being heard but is nonetheless present.

Buffer

Intentional calcium deposits are also called buffers in conservation, a word that on its own suggests care and protection; a layer to reduce the impact of a hostile or unsuitable environment. In addition to calcium carbonate to counteract acidity, conservation buffers can be an activated charcoal to absorb pollutants, silica crystals to prevent fluctuations in humidity, or moisture and zeolites to guard against volatile organic compounds. One way of buffering is to provide a microclimate – this can be as simple as an envelope (acid free), a box, frame or temperature and humidity controlled case. In the National Gallery of Ireland, areas are zoned according to use, with delineation in the form of double doors between storage and collection areas. Miniatures and pastels can be described as the most delicate items in the NGI collection, without its protective glazing and microclimate, the pigments are easily damaged by abrasion and even static energy.

Cockling

The wafer-thin sheet of ivory that comprises some types of miniature is extremely susceptible to uncontrolled climatic environments resulting in warping and cracking. Cockling is a word used to describe the distortions or usually gentle rippling effect that a material, especially paper, can exhibit due to its innate character, fluctuations in external humidity and or uneven constraints such as mis-matched grain direction. *Creatures of Love* (2020) was adapted to exploit this characteristic with thin layers of tissue to create some of the shells of *Midden* (2022), using wax and dammar to help form the undulations. Cockling in a multi-layered object can result in delamination in the form of splitting or even in the case of separation of media from the support. I work with layering, either in print on a multi plate etching, in combinations of supports such as paper, textile, acrylic, glass, or by printing/painting both sides usually in modular units which can then be combined in film and/or physically. This preoccupation with materials and process is fuelled and facilitated by my conservation background. Advances in materials and techniques are quickly absorbed, adapted and find

their way into my practice; dammar, Bondina, hydrogels, Gore-tex, methylcellulose, Klucel all feature in the media that I work with, as do conservation lining, cleaning and repair methods.

Invisible Mending

Invisible mending is a much-used term borrowed from textile repair. In a conservation application, it is also inaccurate, as ethically, all mending must be visible, at least under UV or filtered light so as not to compromise the authenticity or integrity of a work of art. In paper conservation, Japanese tissue is used for its strength and flexibility, preferably handmade to reduce grain-direction and adhered using a reversible adhesive such as a methylcellulose or modified starch adhesive. Often historical repairs such as pressure sensitive adhesives, gums, animal and protein based glues become less invisible over time with darkening and deterioration. *The Shell/ters, Hold Still* (2020) adopts the aesthetic of 1950s medical apparatus with particular reference to Wilhelm Reich's Orgone Accumulator (Reich, 1942). In the form of a cabinet, it was designed to absorb and conduct biological energy through alternating layers of wool and steel onto a concentrated inner surface where this energy could then be passed to an occupying body. This raised energy level was capable of unblocking a trauma or attacking an illness. Although imprisoned for making fraudulent claims, Reich's contribution was accessible and perhaps at odds with the then burgeoning predilection for pills and medication. I adapted elements of this research to construct *Hold Still* in which such an energy transfer is possible, not to necessarily treat an illness and to mend invisibly, but to act as a catalyst.

Rehousing

Finally rehousing, quite mundane as a term but in conservation often the most cost-effective solution, especially working within archives where the volume dictates this approach. In *Secretion* (2021), I found inspiration in the self-healing capability of snails. Impressed by their defying categorisation in terms of gender, being hermaphroditic, I am also looking at costume to enable change/performance – to assume an identity. With this in mind, much of my artistic practice revolves around rehousing, whether it takes the form of a suit, a box, a mask or headpiece. The purpose is to safeguard and protect, a concept, which as stated in the beginning of this discourse, is at the root of conservation.

As abstracted concepts reversibility, metamerism, foxing, fugitivity, deacidification, buffering, microclimates, invisible mending, cockling, accelerated ageing, delamination and rehousing have some element of familiarity albeit in a different context.

In terms of the Anthropocene, many have an agency and an urgency, and some can be interpreted positively and negatively at the same time. In many ways I see a differentiation in the ethical responsibility of doing as little as possible (another term – minimal intervention) in conservation which is a direct contrast to doing as much as possible in my artistic practice ... which combines print, sculpture, film and installation.



Still images from *Secretion*, 03:58 digital and transferred 16mm film, 2021
Further images of work mentioned in the text and information can be found at:
<https://niamhmcguinne.com>

Biographical Note

Niamh McGuinne is a Dublin based visual artist and MFA graduate of the National College of Art and Design (2020). Her practice can be defined as expanded print, incorporating printmaking, sculpture, film and installation. In 2021 she received an Arts Council Visual Arts Bursary and is current Artist in Residence, Senge Group, Chair of Organic Chemistry, TCD; supported by Science Foundation Ireland. She has an MA in Fine Art Conservation and is a senior paper conservator in the National Gallery of Ireland. She is a member of Graphic Studio Dublin and currently serves on the board of Directors. She is a recipient of a Centre Cultural Irlandais Residency 2023 and is a member of Shell/Ter Artist Collective and MIDDEN.

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Chapter 7

The Question Concerning the Ethic of Technology

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Abstract

Although Martin Heidegger's *The Question Concerning Technology* rightfully retains an enduring legacy as a critique of modern technology, certain developments after the philosopher's lifetime (e.g., growing ecological devastation due to human activity and the increasing urgency of the climate crisis) have revealed an even more problematic side to modern technology and the relationship that it fosters between man and the world. Such developments demand that we take a new look at Heidegger's original essay, which, although being a product of older times, can nevertheless provide insights into the nature of more recent problems.

This paper starts by making two essential claims. First, it contends that any Destining of Being as Heidegger understands it implies a fundamental ethic, where 'ethic' signifies a reigning paradigm that conditions human praxis in the broadest sense, and that human praxis is the vehicle through which a Destining of Being unfolds and reveals the real accordingly. In parallel, it makes the second claim that the essence of the Destining and the fundamental ethic it engenders are twin issues, and fully understanding one also requires an understanding of the other. The paper then proceeds to reraise Heidegger's original question concerning technology, but now asking not after the essence of technology itself, but after the essence of the fundamental ethic which conditions man's doing within the technological horizon and is the driving force behind the most recent developments of technological revealing.

The paper argues that the essence of the fundamental ethic of technology is violence, and that many pressing problems of our time such as climate change and the broader environmental crisis, the 'standing reserve-isation' of everyday life, or the increasing

domination of politics by more and more controversial technocratic attitudes arise out of its essentially violent nature.

A few remarks about the possibilities of new horizons are made as a conclusion. Any striving towards new horizons and any questioning about novel, post-technological modes of care for the self, the other and the planet should be grounded in an awareness of the fundamental ethic of technology, since this is what is needed for a truly radical understanding of the problems we face today.

Keywords: Heidegger, technology, ethics

Introduction

The Question Concerning Technology is probably the definitive account of Heidegger's views regarding the epistemological and existential horizon of modernity. In his essay, Heidegger unexpectedly concludes that the essence of technology is in fact nothing commonly deemed technological, but rather a way of revealing and a mode of ἀληθεύειν (*alētheuein* disclosing [truth]; Heidegger, 1977: 12–13). Thus, Heidegger's analysis is to be seen in terms of his understanding of truth, whereby truth does not primarily have to do with true or false propositions, but is rather understood as “unconcealedness”. Truth-as-“unconcealedness” claims that entities as such are never simply given, but only appear in some definite way against, from and within an “unconcealed” background of truth that itself has a structure (Ihde, 2010: 30–31).

Technological truth is specifically called Enframing, and it reveals the real as standing reserve (Heidegger, 1977: 17–19) – that is to say, as some quantifiable reserve that stands there for some further purpose. Economic, resource-and-profit-oriented thinking is a paradigmatic case. Within the technological horizon, the forest becomes an area containing a certain quantity of timber which stands there to be harvested for the purpose of mass-producing a stock of furniture which is itself to be sold for profit that is then re-invested back into the process.

Moreover, technological revealing is said to be an “epoch of Being” – a dynamic yet enduring understanding of Being that extends through a historic period of time and lays claim upon those who inhabit it (Ihde, 2010: 32). So, technological truth does much more than simply providing a phenomenological basis that makes modern economic activity intelligible. As an epoch of Being, technology is what defines the essence of modernity itself. In modernity, not only economic but all other human activities and even our most fundamental understanding of the real are determined by the horizon of Enframing. Economic activity as the defining human activity, mass democracy with its institutions, the predominance of the exact mathematical sciences as the zero ground of all certain knowledge are all expressions of

Enframing revealing every sphere of the real as some form of standing reserve.

And in the midst of this lies man with his habitual comings and goings in the world as the one who inhabits and is claimed by the technological Being-epoch. And not only that, but man is the one who accomplishes the revelation of the real as standing reserve (Heidegger, 1977: 18). At least since *Being and Time*, Heidegger emphasised the priority of *praxis* in the formation of human self-understanding, and that of the world too. In the latter work, the stand that Dasein takes on itself is defined not by some inner thought or experience, but by the way that Dasein acts (Dreyfus, 1991: 61). This practical dimension remains present in Heidegger's later work on technology too (Ihde, 2010: 33). Thus, the way in which man inhabits the technological Being-epoch is primarily practical.

Recent developments are now revealing all the more poignantly the problematic nature of technologically conditioned praxis. The environmental crisis, the ‘standing reserve-isation’ of everyday life, or the domination of politics by increasingly more controversial technocratic attitudes all seem to be specifically the result of man's habitual activities that were first made possible by technology. So, while Heidegger questioned technology to lay bare its true essence and prepare a free relationship to it, the abovementioned developments demand that we reraise his original question, but now ask not about the essence of technology itself, but the essence of the activities of man within the technological Being-epoch. For if it is through his own activities that man reveals the real as standing reserve and comes to understand himself in some definite way, then any true understanding of technology comes with the twin task of understanding the essence of man's activities and self-conception within the horizon of technology. Thus, we are impelled to ask the question concerning the ethic of technology, that is to say, the question concerning the essence of *man's praxis* within the technological Being-epoch.

1. Technology as an ordaining of Destining; what it means to be sent upon a way of revealing; why every ordaining of Destining implies an ethic

Now Heidegger says that man does not have control over unconcealment itself, and that the thinker only ever responds to what addresses itself to him (Heidegger, 1977: 18). So, is getting to know the true essence of technology already sufficient? However, he also claims that technological revealing, although not happening exclusively in or through man, nevertheless does not happen somewhere beyond all human doing (Heidegger, 1977: 23–24). Human praxis only even responds to a revealed background of truth, but revealing itself does not happen beyond and therefore

needs human praxis. Technological revealing and human praxis stand in a mutually originary relationship, and the question concerning man's practical activities is indeed a twin question. So, how does this mutually originary relationship arise?

For Heidegger, both Enframing and other kinds of revealing are an ordaining of Destining (Heidegger, 1977: 24–25). When Destining ordains, it sends man upon a way of revealing. The essence of technology is thus an enframing Destining that sends man upon a way of revealing the real as standing reserve. If technology at its core is just this, then the essence of man's praxis within the horizon of technology begins with his being sent upon a way by this Destining.

He who is sent upon a way is a *wayfarer*. The *wayfarer* fares, and he *fares along* the way upon which he was sent. It is as a wayfarer that man is sent upon and fares along a way of revealing. His faring is not a mindless going along, which Heidegger himself hints at when he says that Destining is never a fate that compels (Heidegger, 1977: 25). Just as a traveller is free in his travels to stop and behold whatever sight he encounters, so man is free in his faring along a way of revealing to think whatever he deems to be thoughtworthy, to pursue whatever activity seems worthwhile, and in doing so to reveal the real in accordance with the ordaining of Destining that sent him upon this way. However, man's faring is also a faring *along*. To fare along a way is to be bound by that way and bound towards its destination (for all faring is a faring *towards something*). The wayfaring man can never become *awayward*. Although uncompelled by the way, man's thinking and praxis is nevertheless bound to and owned by it as something that happens and can only ever happen on and along such a way.

Thus, the ordaining of Destining simultaneously *sends* and *destines* man upon a way of revealing, and wayfaring man is both *free* and *owned by freedom* in his faring along this way. Free insofar as he is sent upon a way which does not compel him, and owned by freedom insofar as he is destined by this way in the sense of being bound by it and bound towards its *destination*. Man is owned by the freedom of Destining itself, since man is the one to whom it is entrusted to reveal the real, and Destining thus needs man in order to free itself and possess the real in accordance with its own ordaining. It is for this reason that technology seems to be both a creation of man and an inexorable force that subdues and transforms everything in its own image. Thus, revealing and human praxis are not only mutually originary, but also mutually entwined.

In this way the wayfaring man is sent upon and fares along a way of *revealing*, but what is faring itself? If man fares along a way of revealing, it seems natural to conclude that faring *is* revealing. The specific way through which Enframing reveals the real as standing-reserve is called ordering (Heidegger, 1977: 17).

So, is man's faring along the technological way of revealing merely a matter of ordering into standing-reserve? This is not incorrect. Ordering is the 'corresponding noetic condition' that defines the human response to a world perceived as standing reserve (Ihde, 2010: 34–35). However, *faring is also a doing*. We ask 'how are you doing?', but we can also ask: 'how are you faring?' While singling out ordering names the mode in which a world primordially perceived as standing reserve comes to be revealed through human praxis explicitly as such, it says little about the essence of ordering itself, of ordering *as a doing*. Nor does it say much about the self-understanding of man who is engaged in ordering-doing.

The essence of Enframing as a destining of revealing is not to be understood, according to Heidegger, in the sense of genus and *essentia*, but rather as *Wesen* (Heidegger, 1977: 30–31) – an essence that is active, dynamic and yet nevertheless somehow the same throughout its extent in time. Merely singling out ordering as the specific way through which the real is revealed as standing-reserve is not enough to get to the *Wesen* of human praxis defined by ordering. Ordering too must be approached as something active and dynamic, or in other words, as a *doing*. For it is within and through human doing that the active and dynamic makes itself known, and Heidegger himself justifies his use of *Wesen* by referring to the old German word *die Weserei*, which means 'the city hall inasmuch as there the life of the community gathers and village existence is constantly in play, i.e., comes to presence' (Heidegger, 1977: 30). Technology-as-Enframing and the ordering of the real into standing reserve also properly come to presence in human doing, insofar as revealing happens through human praxis. So, not only are revealing and human praxis mutually originary and entwined, but the question concerning the essence (*essence as Wesen*) of human activities within a background of revealing appears to be just as important as the essence of the background itself.

Understanding man's doing in the broadest sense is the task of ethics. It is for this reason that our question concerns the *ethic* of technology. Insofar as every ordaining of Destining requires the doing of man through which it can possess the real in accordance with itself, every such ordaining of Destining implies an ethic.

Nowadays we define ethics as the field of philosophy which is concerned with determining the moral status of concrete human actions and developing systems which make such determinations possible. However, this is not the original meaning of the term. 'Ethics' comes from the Ancient Greek ἔθος, meaning 'custom' or 'habit'. The word ἔθος itself is derived from ἔθω ('to be accustomed', 'to do as a habit') and ἐθίζω ('to become accustomed', 'to habituate oneself'). Ethics for the Greeks was not a science of moral

judgement, but had to do with man's habitual comings and goings in the world, with his way of life, and what way of life was better for man. This attitude is encapsulated in Socrates' question 'how should one live?', which for the Greeks lay at the origin of all ethical philosophy.

It is in this more original sense that we should raise the question concerning the ethic of technology. For the essence of man's doing within the horizon of technology lies not with one concrete action or another, but with his doing in the broadest sense. It is through his most customary, habitual, taken-for-granted conduct towards the world, himself and others that man reveals the real as standing reserve and the essence of ordering-doing becomes apparent.

2. Pre-technological vs. technological doing

While Heidegger offers few hints about human praxis within the technological horizon, he does make brief but very contrasting remarks about the nature of pre-technological and technological farming when he first comes to define technological revealing as something that challenges and sets upon nature. We are first told that the pre-technological farmer would set his fields in order (*bestellte*, which stands in opposition to setting upon – *stellen*), where setting in order meant tending and taking care of the field; the pre-technological farmer entrusted the seed to the forces of growth and looked after its growth (Heidegger, 1977: 14–15).

Such characterisations may at first sight appear as romanticism on Heidegger's part that is ultimately unfair to the new horizons opened by modern technology (Ihde, 2010: 74–85). I do not believe this is correct. If technology is primarily a kind of truth-as-unconcealment, then Heidegger's descriptions of pre-technological ways of interacting with the world are descriptions of a human praxis whose being has been correspondingly *concealed* under technology. For this reason, they may appear as something inaccurate and romantic, yet they nevertheless describe some kind of praxis, and are therefore of value as such descriptions.

The undertones of trust and taking care may be understood with reference to the three conceptions of nature found throughout Heidegger's thought: nature as something self-contained and flourishing on its own (the Greeks), nature that is discovered as source of raw material through the ready-to-hand use of equipment (*Being and Time*), and nature as standing-reserve which is always available for use and further development (technology) (Dreyfus and Wrathall, 2017: 147–148). The pre-technological farmer's relationship to his world ought to be conceived in terms of the first two conceptions. By entrusting the seed to the forces of nature, the pre-technological farmer expected to get something back in return – namely a harvest. The relationship between pre-

technological man and nature was one of *giving and receiving*. Giving and receiving implies a view of nature as self-subsisting and therefore capable of giving something back in return, e.g., a harvest. And while the pre-technological farmer could interact with nature as a source of raw material (e.g., with the field as a source of grain), nature's self-subsisting character prevented this interaction from deteriorating into mere resource extraction.

Implicit under such a view of nature is also an attitude of caring-for. The pre-technological farmer tended and took care of his field even as a source of grain because it was otherwise self-subsisting and demanded care. Fertilisation, irrigation, crop rotation and the like were not unknown to pre-technological farming, but none of these techniques aimed at exploiting the field in order to obtain a bigger harvest. They were rather a means of tending and taking care, and fell within the paradigm of giving and receiving too. The pre-technological farmer, besides entrusting the seed, also gave nature things like water or compost in order to ensure as much as possible that nature would give something back in return. Perhaps there was even an expectation that nature would give more than usual, but this 'more' was a welcome gift rather than the meeting of a demand.

Giving and receiving also implies a mutuality between giver and receiver. In this relationship, man stood in a dignified place as he who was free in his comportment towards nature but nevertheless remained *within* nature as part of it. The pre-technological farmer was free to take care of his fields however he liked, but also subjected to an otherwise self-subsisting nature's rhythms and whims in his doing so, and it was not his place to transgress them. Subject to it in this way, pre-technological man faced nature such as it revealed itself to him independently, and his comportment towards it was likewise delimited and determined by nature's self-revealing. Here the field appeared as a source of nourishment, there as a pasture, elsewhere simply as a meadow, but never as something devoid of self-subsistence and to be exploited for resources.

On the other hand, technological revealing is marked by an absence of the understanding that nature is something self-subsisting. When this understanding is lost, nature consequently becomes something that lies at man's fingertips, ready to be exploited, and exploitation remains the only meaningful way of interacting with nature. Technological revealing thus challenges and sets upon nature the unreasonable request to supply storable energy; farming within the horizon of technology becomes the mechanised food industry and sets upon the field in the sense of challenging it; every aspect of nature is set upon to yield a reserve of storable resources which stand there to be used for something else (Heidegger, 1977: 14–15).

Setting upon means that there is someone *who sets upon*, and something that *gets set upon*. As to who, it is obviously man. Man sets upon nature as the one to whom it is entrusted within the technological horizon to reveal the real as standing reserve. It is likewise clear as to what gets set upon. Man sets upon nature an unreasonable request. It is through the setting of this unreasonable request that he reveals the real as standing reserve. In this a radically different relationship between man and nature emerges that no longer has anything to do with the mutuality and care of giving and receiving. The technological man finds himself in a position to make requests of nature, unreasonable requests in fact. What was once a relationship of *giving and receiving* has been transformed by the technological horizon into one of *demanding and taking*.

Standing in such a relationship, man now does see nature as a pool of resources to be exploited, and only as that. So, while the pre-technological farmer took care of his field as a self-subsisting source that gave him sustenance, the technological farmer demandingly exploits his fields and does not extend the scope of his care beyond the number of crops he can obtain.

All the old techniques of farming – fertilisation, irrigation, crop rotation and the like, also get transformed by technology from a means of taking care to a means of more efficient exploitation.

The concern for efficiency in the sense of a preoccupation with extracting as much as possible by doing as little as possible predominates technological man's activities precisely because it is symptomatic of this exploitative relationship of demanding and taking.

If nature is no longer understood as self-subsistent, then its rhythms too no longer have a life of their own and cannot be seen as containing man within nature. Thus, technological man now finds himself *without* and *above* nature. *Without* in the sense of presuming himself as free from nature's rhythms, and indeed finding himself increasingly free from them by virtue of his technological machinations. *Above* in the sense of not only presuming himself to be free, but also in a position to set upon,

challenge and make unreasonable demands of nature, and to treat it as a domain to be exploited for his own ends.

Technological man exploits nature by setting upon it an unreasonable demand to *yield* storable resources. But what does it mean to yield something? Yielding is a surrendering, and one can only surrender if one is forced to do it. *Yielding implies a force which forces the yielding*. For a field to yield a harvest, the farmer must force the field to yield it. Technological man's setting upon nature his unreasonable requests is thus a forcing of nature, and it is through his forceful doing towards nature that technological revealing happens. In this way, technological man is not only without and above nature, but also stands *against* it as the one who forces nature into servitude for his own ends. This is hinted at by Heidegger himself in his remark about the hydroelectric plant on the Rhine: 'even the Rhine itself appears as something at our command. The hydroelectric plant is not built into the Rhine rive as was the old wooden bridge (...) Rather the river is dammed up into the power plant' (Heidegger, 1977: 16).

3. The Machine as the expression of demanding and taking, and of man as without, above and against nature

From the industrial era onwards, man's doing has been characterised by the manipulation of grand, complex machinery for his own ends. In this sense, we may say that the Machine is the quintessential symbol of technological modernity. Although Heidegger states clearly that machinery is something merely technological and that pushing on with the merely technological will never lead us to the essence of technology (Heidegger, 1977: 4), this is the case only if we consider machines as things that pose certain hazards. But the machine is also something symbolic, and symbols carry phenomenological significance. Let us recall that Heidegger at least since *Being and Time* gave primacy to the practical as the way in which man comes to take a stand on himself (Dreyfus, 1991: 61). When man's activities are mediated by technological machinery, his perception of the world is changed accordingly and gives rise to certain modes of thinking such as calculative, mathematical science (Ihde, 2010: 65–68). However, technological machinery not only mediates man's perception of the world, but also shapes his habitual, taken-for-granted doing. Thus, the machine and man's operation thereof are phenomenologically significant symbols that reveal man who, in his doing, takes a stance on himself as *without*, *above* and *against* that towards which the machine is directed, and poised to stand in a relationship of *demanding and taking*. It is through the machine that man sets upon and forces nature to yield storable resources, and man's operation of the machine is the purest expression of ordering–doing. The Machine is therefore not merely a result of tool use combined with

modern scientific discoveries, but a phenomenal structure which determines man's doing within the technological horizon, while the operation of actual machines furnishes paradigmatic cases of ordering-as-doing.

'Giving and receiving', 'demanding and taking', 'within', 'without, above and against' – all these terms denote *orientation*. The idea of technology as simultaneously disorienting and forcing a reorientation of man was first proposed by Bernard Stiegler (Stiegler, 2008: 2–3). While I must forgo his broader ideas about how technology precedes and determines human life for the sake of brevity, I nevertheless think that the disorientation–reorientation dynamic is useful in conceptualising the Machine as a phenomenal structure that reorients man's doing with regards to nature, himself and his fellow men in the ways mentioned above.

When the farmer comes to possess the combine harvester, there happens a basic reorientation which takes him out of his dwelling-place *within* an otherwise self-subsisting nature and puts him *without, above and against* it. In operating this machine, he is unbound from nature's old limitations and no longer fettered by either the vastness of the field, or the number of crops he can reasonably harvest. Through it, the field is perceived as something lying completely at the farmer's fingertips, ready to be ordered and exploited as efficiently as possible. Any sense of natural limitations is destroyed and rendered meaningless by the ruthless efficiency of Machine expressed in the combine harvester. Symbolic of this is the fact that combine harvesters kill the wildlife that makes its home in crop fields. The doing of the Machine is not delimited and has no regard for the field as something otherwise self-subsisting and capable of flourishing in other aspects, such as being a home for other life. The field rather becomes merely a standing reserve of crops that is to be harvested, stored and used for human ends. In his operation of the combine harvester, the farmer comes to embody and becomes the Machine, allowing its ruthless power to unfold through his doing and towering above the field with a detached disregard (for more on technology, embodiment relations, and the sense of power that this engenders, see Ihde, 1990: 72–76). Brought without and above nature by the Machine, the farmer comes to feel like a master whose natural right is to demand nature to yield storable resources, and whose demands may not be denied. The lack of any meaningful sense of limit impels the farmer to take a stance against nature and turn the Machine towards reshaping it according to his own liking. Hence the development of novel agricultural techniques like greenhouses or hydroponics, which further eliminate natural limitations like adhering to the change of seasons or having actual fertile soil in which to grow the crops.

The Industrial Revolution did not just reorient man in his

material condition, but his existence as such too through the rise of Capitalism as the predominant mode of not only economic but also life-organisation. The Capitalism of Marx is no longer relevant here, and should rather be understood as a machinelike and transcendent force that is increasingly redefining human realities (Stengers, 2015: 51–53). Capitalism so understood appears as yet another expression of the Machine that is now directed at man himself. This is best expressed by the new organisation of time that first makes a capitalistic economy possible. Ever since the rise to predominance of wage labour, man has dwelled in a strictly organised temporality comprised of artificial and mutually identical time units that have nothing to do with nature's rhythms of change. This new temporality turns man's life into standing reserve of time that can be ordered at will towards labour or leisure. Man is without and above himself by treating his very being as a piece of machinery to be calibrated and optimised through 'time management' for economic ends. He stands against his own multifaceted nature by forcing every aspect of his existence into an economic frame, subjecting himself to increasingly unbearable schedules for the sake of profit and defining his own worth in monetary terms. Even leisure is subsumed into the realm of labour, becoming something that merely 'recharges' one for more work.

The central presumption of modern mass democracy – namely that the body of people is an undifferentiated mass of homogenous individuals, is symptomatic of the fact that modern forms of social organisation are also enveloped by the Machine. 'The masses' stand there as a reserve of potential voters, while the electoral process in turn becomes not a 'battleground of ideas', but a fight over 'political capital' in which ideas are merely weapons of persuasion. Meanwhile, the institutions of the modern state acquire the task of ordering and managing the masses, and the politician becomes a technocrat – that is to say, someone who operates the machinery of social organisation. The technocrat finds himself without as the one who merely manages but has no stake in that which he manages (e.g., a minister of defence is not himself a soldier, and therefore has no stake in the affairs of the army), while his management takes the form of bureaucratic directives 'from above' which ultimately derive their authority from the raw threat of force.

4. Violence as the essence of the Machine

In these and many other ways the Machine structures man's doing and reorients him as being without, above and against that towards which the Machine is directed. However, the abovementioned examples are only specific expressions of the Machine in concrete practical reality, and thus cannot be equated with the Machine as such. Let us recall that setting-upon,

challenging and ordering into standing reserve are only *responses* to the world that is primordially perceived as standing reserve (Ihde, 2010: 34–35). Thus, it is not ordering into standing reserve, but standing reserve itself that is the essence of technology proper, and that technology fully presences only where standing-reserve comes to reign explicitly. The same goes for the Machine. Industrial machinery, Capitalism and mass democracy are also responses to a more primordial human doing that first impels man to structure his praxis in terms of such forms, and the Machine truly presences not through one expression or another, but as this more primordial essence.

We have said that technological revealing reorients man as being without, above and against nature, as positioned to demand and take whatever resources nature may yield. So, what does this reorientation itself tell us about the essence of the Machine? The three aspects of technological man's new orientation in the world lie in a circle. This has already been hinted at in the example of the combine harvester, where the farmer's preoccupation with more and more efficiency leads him to develop novel ways of exploitation. It is only as someone who finds himself without nature and thus unburdened by any limitations that man can first perceive himself as somehow unconditioned by and above it all. Consequently, this perception permits man to stand against nature as if a master, forcefully enframing it as standing reserve to be used and processed for man's own ends. Finally, man's successful enframing-doing comes full-circle and reaffirms his situatedness without and above.

Man's doing withing the horizon of technology is thus a wheel that turns, and the turning of this wheel is the Machine proper. But this turning itself is essentially violent. Man's enframing-doing does not just reveal the real as nothing but standing reserve, but rather *forces* it into the frame where it can appear as such and *yield* storable resources for further use. This is done against the background of denying the self-subsistence of nature and forcing *out* other aspects of Being (recall here the symbolism of the combine harvester killing wildlife that lives in the fields). By standing against the real, man is essentially poised to do violence towards it. Meanwhile, all successful enframing-doing only serves to reaffirm this orientation of man, which in turn leads to further and greater excesses. In this way, the essence (essence as *Wesen*) of the Machine through which technological revealing happens and which presences concretely in human praxis, is violence. And insofar as technology is the essence of modernity, modernity itself is violence. The doing of man within the horizon of technology, the fundamental ethic of technology, is violence.

The quintessential problems of technological modernity are symptomatic of this primordially violent doing. All forms of modern

social organisation could not historically avoid homicidal tendencies because they are grounded in a political thinking which follows a 'laboratory logic' of creating artificial, pre-conceived notions of humanity and imposing them through force precisely because the vision is an artifice as opposed to arising naturally from human realities. An existence that has been reduced to a merely economic dimension is felt ever more acutely as a stifling burden for this same reason. Modern ills such as the meaninglessness of life, depression and 'burnout' are all the consequence of technological violence turned against man. Finally, this violent ethic is the root of the environmental crisis. The destruction of the natural world is nothing other than the result of technology's unnatural and unreasonable demands set upon nature, and man's relationship of demanding and taking, which abolishes all sense of natural limits and leaves no space for attitudes of care beyond efficiently extracting resources.

5. Conclusion – the possibilities of future perspectives

This paper has attempted to give an account of the fundamental structures of human doing within the technological horizon, and by doing so to lay bare the essence-as-*Wesen* of the human praxis that originates with and accompanies technological revealing. But how, if at all, can this open up new perspectives that may lead towards novel forms of care that genuinely transcend the technological horizon?

First and foremost, it is not a call to return to some pre-technological state of humanity, because this is neither possible nor would it be of any use if it were. Here Don Ihde's warnings against the romanticisation of pre-modern, pre-technological forms of life should be heeded. The pre-technological man was not some proto-ecologist, and pre-technological perspectives cannot address issues that first appear only within the technological horizon. Moreover, an exhortation to some form of Luddism as an antidote to the violence of the technological ethic would simply be a negation of technology and therefore still keeping within the logic of technology.

Laying bare the essence of human praxis within the technological Being-epoch at least has the benefit of exposing current, supposedly future-oriented solutions as unviable because they too remain squarely within the technological horizon. This is the crucial issue with all popular ecologism. It presumes that our current predicament is merely a matter of the Machine being sub-optimally calibrated, a matter of us using and consuming standing reserves inefficiently, and that the solution is therefore some kind of technological optimisation. Hence why the current obsession with sustainability, which, as the meaning of the word implies, seeks only to *sustain* the current state of affairs in order

to perpetuate it indefinitely. It is because of this that mainstream environmentalism cares only about targeting that which directly threatens the technological world (e.g., climate change), and pays no attention to the broader destruction that man is currently wreaking upon the world. When the ethic of technology is laid bare in its essence, modern environmentalism is shown to represent merely a technology that has become afraid of itself.

The recent appearance of more radical forms of environmentalism (e.g., Extinction Rebellion) represents a growing awareness that something is wrong with technological modernity as a whole. Perhaps it even heralds a renewed awareness of a self-subsisting nature with a life of its own – what Isabelle Stengers has dubbed the intrusion of Gaia, and which demands not a ‘solution’, but a new kind of thinking (Stengers, 2015: 43–50). However, this radicalisation remains thoughtless and takes the form of scattershot rebellion against the developments of our time that swiftly peters out once those involved have spent their energies. But can there be a thoughtful radicalisation, where ‘radical’ no longer refers to the taking of rash action, but carries the more original meaning of a truly fundamental thinking that goes back to the roots?

Heidegger, with whom this paper started, hints at a potential answer. For him, the confrontation with technology was supposed to take place within the realm of art as *poiēsis* (*poiēsis*), which, being another mode of revealing, was both akin to and fundamentally different from the essence of technology-as-enframing since it does not enframe the real as standing reserve but rather brings the real forth in its particular splendour and glory (Heidegger, 1977: 34–35). Art may indeed be a powerful impetus for thinking, and any thinking that is truly radical is artistic in and of itself. However, art does not occur in a vacuum. Art in previous epochs was poetic in the sense of revealing the real in its particular splendour and glory because the epochs themselves were poetic in the sense of being open to poetic revealing. However, Heidegger did not live to see the deep end of technological modernity and how exceptionally hostile it is to poetic revealing. Within the technological horizon, art itself has come to be understood in terms of some quantifiable standing reserve. The commercialisation of art in all its forms values marketability over artistic merit, and marketability itself has become a stand-in for artistic merit. The value of an artwork is represented by its price, or how many copies it sold. The recent emergence of AI art is now reducing the creative process itself to the running of a quantitative statistical function.

But if the technological horizon closes off genuinely poetic art as a viable path, does a viable path remain at all? It is worth repeating here that art does not take place in a vacuum. This means that art, and thinking too, are not primary. What is

primary is the horizon within which thinking occurs and art is created, and which guides such activities. The horizon within which we find ourselves now is that of technology-as-enframing. Insofar as this horizon is epochal, it is not the task of mere human doing to transcend it. However, it is perfectly within the realm of human doing to live in a way which reminds us that things can be otherwise, in a way which truly frees us by putting us into the realm of destining as listeners, not just those who obey (Heidegger, 1977: 25). This was done by Ted Kaczynski, whose critique of technology stemmed out of his rejection of technological society in the way he lived his life. His observations about how technology destroys man’s natural dignity and freedom, and his positing of a self-subsisting, independent nature as an alternative ideal, is not just an intellectual critique, but is grounded in the life that he led (Kaczynski, 1995: paragraphs 94–95, 114–119, 183). The same alternative way of life is being advocated right now in a peaceful manner by the homesteading movement. A truly new and radical thinking can only originate from a truly alternative epistemological phenomenology, and self-exposure to such a phenomenology begins with novel ways of living, with a radically different human ethic. And any questioning regarding a new human ethic must begin with a clear awareness of the current horizons.

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Thinking Care-fully about Trustworthy AI

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Abstract

The primary objective of this article is to analyze why the absolutization of the cognitivist anti-*epistēmē* in Stiegler's sense underlies the exaggerated trust in AI at the expense of its reliance as the only possible *epistēmē* of the data economy. This *epistēmē* is justified by the introduction of what I call digital hubris, which necessitates the recognition of what I consider as two types of vulnerability, viz., (human) vulnerability caused by (the implementation of) AI and AI vulnerability (to human interventions). Analysing what it means to think care-fully about trustworthy AI, I argue that one can enrich the way of thinking care-fully about the *as-such* mode in Stiegler's sense with the neganthropic one of think-able and care-able regarding the *as-if* mode.

Comparing and contrasting the two types of vulnerability, I reach the conclusion that the extrapolation of the *as-such* mode to the neganthropic (non-anthropocentric) *as-if* makes their mutual recognition possible. On the other hand, human vulnerability and AI vulnerability are determined as mutually exclusive due to the different starting points of the bifurcated transvaluation in Stiegler's sense. In this context, I conclude that while AI vulnerability is a result of AI's technological imperfectability to develop morality similar to that of humans, vulnerability caused by AI is a result of human moral weakness to control technological superiority.

Consequently, both types of vulnerability are recognized as triggered by a similar type of digital hubris which has two mutually related major embodiments affecting human loss of gravity, viz., what I call cult to de-noetization regarding human vulnerability and cult to the final technological (digital) fixation concerning AI vulnerability.

Keywords: Bernard Stiegler, thinking care-fully, trustworthy AI, digital hubris, AI vulnerability and human vulnerability Introduction

Tackling the pitfalls that arise from recognizing trustworthy AI¹ requires conducting a genealogical analysis of the ontological, epistemological and socio-economic conditions under which the issue of trustworthiness triggers some crucial moral dilemmas. According to Stiegler, 'the completion of the Anthropocene' displays 'the completion of the period of nihilism-become-capitalism' since nihilism is a matter of computation (Stiegler, 2018: 210). The latter addresses a particular form of nihilism embedded in what Stiegler describes as a reticulated society with a '*fully digital*' industry (Stiegler, 2019: 6–7), viz., a form of automatic nihilism² which occurs in the 'epoch of reticulated and automated disruption' (Stiegler, 2019: 8).

Specifically, algorithmic and reticulated computation affects the process of disruption, which contributes to the imposition of the so-called by Rouvroy and Berns algorithmic governmentality (Rouvroy and Berns, 2013: 170)³ – how 'the thoroughly computational capitalism' establishes 'an era of *absolute non-knowledge*' (Stiegler, 2018: 210).

In turn, the absolute non-knowledge understood as '*computational epistēmē*⁴ of capitalism' (Stiegler, 2018: 138), which

- 1 The major issue regarding the recognition of trustworthy AI is whether or not 'the full-blown notion of trustworthiness' associated with interpersonal trust can be applied to what one understands by trustworthy technology and AI in particular (Nickel, Franssen & Kroes, 2010; Serafimova, 2022:135). Consequently, the specifications regarding trust necessitate one to analyse the extent to which the notions of reliability and reliance (Ryan, 2020) 'are closely tied with, but do not exempt the concept of technological trustworthiness' (Serafimova, 2022:135). Considering that AI cannot enrich trustworthiness on an interpersonal level (Serafimova, 2022:137), the challenges of building projects of trustworthy AI are moral and social rather than purely technological ones. For the HLEG project of trustworthy AI, see Serafimova, 2022: 144–152.
- 2 Automatic nihilism results from the establishment of a reticulated society triggering '*a colossal social disintegration*' in Stiegler's sense, which in turn brings about new relations to data economy (Stiegler, 2019:7). Consequently, the reticulated society's disintegration achieved through the process of disruption leads to the recognition of the so-called digital and automated nihilism within the pharmacology/the pharmacological character of the Web/digital age (Stiegler, 2016:295; Stiegler, 2019a:40). By pharmacological regime of technologies Stiegler understands a regime of new technologies whose transformative character is underlain by 'the ambivalent qualities of the *pharmakon*, signifying both remedy and poison at the same time' (Cf. Stiegler, 2011:27), viz., by the establishment of relational digital technologies as technologies of transindividuation (Cf. Stiegler, 2011:29). What is illuminative for the latter process is that it is determined by digital tertiary retentions imposing hyper-control through a generalized automatization (Cf. Stiegler, 2019a:36).
- 3 By algorithmic governmentality Rouvroy and Berns understand 'a certain type of (a)normative or (a)political rationality' grounded in 'the automated collection, aggregation and analysis of big data so as to model, anticipate and pre-emptively affect possible behaviors' (Rouvroy and Berns, 2013:170). They distinguish between three 'stages' of algorithmic governmentality, viz., between dataveillance, datamining and the so-called probabilistic statistical knowledge to anticipate individual behaviors and associate them with profiles (Rouvroy and Berns, 2013:166–168).
- 4 Stiegler refers to Canguilhem's theory of *epistēmē* understood as '*knowledge of life*' which is not only 'biology', but also '*knowledge of the milieus, systems and processes of individuation ... where knowledge is the condition and the future of life exposed to return shocks and its vital technical production*' (Stiegler, 2015:134).

is an anti-*epistēmē*⁵ (Stiegler, 2018: 139), is both a premise and a result of ‘the Anthropocene-become-disruptive’ (Stiegler, 2018: 252). Due to its disintegration ‘into the information generated by fully automated calculation, and into fixed capital’, along with big data (Stiegler, 2018: 210), absolute non-knowledge necessitates the justification of accomplished nihilism as a ‘negative *epokhē*’; as an absence of epoch whose reality as a state of emergency points towards the transvaluation of what Nietzsche calls transvaluation (Stiegler, 2018: 225). The double transvaluation is ‘an invitation to reread Nietzsche with respect to questions of disorder and order ... entropy⁶ and negentropy⁷ ... becoming and future’ (Stiegler, 2019a: 43). One of the most illuminative ontological and phenomenological symptoms of this diagnosis of time as a ‘negative *epokhē*’ requiring transformation is the dialectical relation between denial and its absence as a way to a ‘*wholly other era*’ (Stiegler, 2018: 226)–to that of Neganthropocene⁸ understood as a ‘possibility of what presents itself firstly as impossibility’ (Stiegler, 2018: 226); as a transvaluation of transvaluation of values⁹ which avoids the total negation (failure) by introducing the mode of ‘presentation in absence’ (Stiegler, 2018: 226) or the so-called *différance*.

Considering that ‘the organological and pharmacological regime of neganthropy’ addresses noetic *différance* (Cf. Stiegler,

2018: 254),¹⁰ the mode of thinking is mediated to that of caring through the cultivation of trust. Specifically, the issues of trust and distrust¹¹ play a crucial role in the pharmacological situation of relational digital technologies as transformational technologies (Cf. Stiegler, 2011: 27). This is a result of the pharmacological character of the technologies in question, viz., due to having the potential to bring about benefits (the remedy’s part of the *pharmakon*) and risks (the poison’s part of the *pharmakon*). Specifically, Stiegler’s conception of *naturation* as a process of transindividuation underlain by that of technical individuation and *denaturation*,¹² which ‘short-circuits the processes of psychic and collective individuation’, replacing them with these of technical individuation¹³ (Cf. Stiegler, 2011: 36), makes room for analysing the consequences of misinterpreting AI reliance as a matter of AI trustworthiness. The misinterpretation becomes apparent when refracted through the contradiction of naturing as a process of adoption and denaturing as that of adaptation (Cf. Stiegler, 2011: 36).

In addition to Stiegler’s concerns about distrust as ‘a form of illness typical of our epoch’ (Cf. Stiegler, 2011: 37), I argue that ‘the enormous crisis of trust’ contributing to ‘an advanced age of nihilism’ (Cf. Stiegler, 2011: 38) requires an exploration of the role of mistrust as well. However, one should keep in mind that not only distrust but also mistrust in AI is a way of denaturing in Stiegler’s sense which leads to disenchanting the pharmacological nature of digital technologies. In other words, I claim that while mistrust in AI reliance as trustworthiness reveals the poison’s part of the AI as *pharmakon*, trust in AI reliance displays its remedy’s part by pointing towards the process of already discussed transvaluation of transvaluation of values.

In this context, I consider the exaggerated trust in AI as originating from the absolutization of the cognitivist anti-*epistēmē*

- 5 According to Stiegler, the *epistēmē* of capitalism is ‘negative and constitutes non-knowledge, that is anti-*epistēmē* and an eschatological limit of toxicity ... This is so because this *epistēmē* dissolves into calculation that which, in knowledge, remains incalculable’ (Stiegler, 2018:151).
- 6 According to Stiegler, together with entropy in the fields of thermodynamics, biodiversity and information, anthropy displays the fourth type of entropy (with an ‘a’ and ‘h’) which refers to the human actions destroying the biosphere (Stiegler in Fitzpatrick, O’Dwyer & O’Hara, 2021:XX–XXI). Elaborating upon this fourth type of entropy, Stiegler defines digital technology as a *pharmakon*, which ‘like every exosomatic organ’, can provide ‘an increase in neganthropy’. ‘What is such a neganthropy? It is a bifurcation. And what is a bifurcation? It is knowledge’ (Stiegler in Fitzpatrick et al., 2021:XXI).
- 7 The establishment of negentropy is triggered by the so-called doubly epokhal redoubling (Stiegler, 2015:134). The latter shows ‘how a shock begins by destroying established circuits of transindividuation’ which emerge from a prior shock and then gives rise to new circuits of transindividuation, producing ‘new forms of knowledge arising from the previous shock’ (Stiegler, 2015:134). In this context, negentropy ‘occurs through the *putting in place of new, asocial automatisms*, through which the second moment of shock (as the second redoubling) produces new capacities for dis-automatization’ (Stiegler, 2015:134); thus, negentropy encourages new social organizations (Stiegler, 2015:134).
- 8 The epoch of the Neganthropocene takes the responsibility to address the crucial question posed by the Anthropocene, viz., ‘how to *exit* the toxic period of the Anthropocene’ (Stiegler, 2015:135). Stiegler introduced the concept of Neganthropocene in 2015 by emphasizing the possibilities of a new politics of technology through the means of developing neganthropic work and neganthropic type of knowledge (Cf. Fitzpatrick et al., 2021:123). For the development of the concept of Neganthropocene in Stiegler’s writings, see Fitzpatrick et al., 2021:123–126.
- 9 Specifically, the transvaluation of transvaluation of values can be understood as triggered by Stiegler’s theory of the Anthropocene’s production of ‘an unsustainable leveling of all values’, which ‘requires a leap into a “transvaluation”’ (Stiegler, 2019a:43).

- 10 According to Stiegler, this means that reason is a ‘regime of *différance*’ stemming from a noetic neganthropological power (Stiegler, 2018:254).
- 11 Some new forms of becoming ‘engage and actively adopt’ the new technologies’ situation as a pharmacological situation of transformative technologies (Stiegler, 2011:27). In this context, the most outstanding embodiment of distrust is that it is ‘a resistance to innovation’ (Stiegler, 2011:30), a syndrome of ‘a serious social malady’ resulting from our suspicion that ‘those we no longer trust must harbour evil intentions’ (Stiegler, 2011:37).
- 12 Both naturation and denaturation address, although differently humanity in Stiegler’s sense—the threefold process of psychic, social and technical individuation (Stiegler, 2011:30). In this context, naturation is an adoption that ‘increases the potential instability of ‘nature’ because it displays an increase in negentropy recognized as triggering the possibilities of both individuation and disindividuation (Stiegler, 2011:35). Nature becomes pharmacological ‘with the appearance of the technical form of life that *we are* and that *we become*’ (Stiegler, 2011:35), viz., that by being constituted as pharmacological beings, we as humans become ‘a *criterion* of naturation’ (Stiegler, 2011:35).
- 13 Denaturation is mainly defined on the principle of negation as a matter of adaptation, viz., versus the understanding of naturation, which triggers long-circuits in the process of transindividuation by connecting and reconnecting the processes of psychic, collective and technical individuation as a process of adoption (Stiegler, 2011:36).

mentioned above. The latter is determined as the only possible *epistēmē* whose recognition necessitates the justification of the absolute non-knowledge in Stiegler's sense. By operating 'only through *the dissolution of all knowledge into and by calculation*' (Stiegler, 2018: 140), the non-knowledge in question makes over-trust in the rational account¹⁴ of trustworthy AI (Nickel et al., 2010; Ryan, 2020; Serafimova, 2022) a reason for devaluating some values related to the process of building trust, e.g. some values behind the development of moral motivation, moral feelings, moral (self-)development (which determine the so-called affective and normative accounts of trust; Cf. Ryan, 2020).¹⁵

Specifically, I argue that the moral dilemmas derive from the negligence of the affective and normative accounts of trust because the absolutization of the cognitivist anti-*epistēmē* and the associated dissolution of all knowledge into calculations are helpless in calculating the incalculable such as already mentioned moral motivation, moral feelings and moral (self-)development. As Stiegler cogently points out, 'we must *profoundly rethink the architectonics of digital networks*' (Stiegler, 2018: 135), accepting that such an analysis should be based on the constitution of '*incalculable fields*'—'*fields irreducible to averages*' (Stiegler, 2018: 135). The process has explicit moral consequences since the 'reduction of value to averages is what generates an *anthropy*¹⁶ that destroys all values' (Stiegler, 2018: 135).

Based upon the specifications above, the primary objective of this article is to analyze why the exaggerated trust in AI, which leads to what I coin (human) vulnerability caused by (the implementation of) AI and AI vulnerability (to human interventions), results from how the absolutization of the cognitivist anti-*epistēmē* triggers what I call digital hubris.¹⁷ Digital hubris itself is examined

- 14 The rational account, which is the only one that partially meets the requirements of trustworthy AI 'is in fact a form of reliance because of its lack of concern about the trustee's motivation for action' (Ryan, 2020:2752; Serafimova, 2022:141). Specifically, the rational account of trustworthy AI reduces the issue of trust to a form of prediction (Cf. Serafimova, 2022:141).
- 15 The affective account of AI lacks the motivation of AI to do something as being based on goodwill towards the trustee (Ryan, 2020:2752). Therefore, AI may be able to act like humans and have 'intelligence to carry out actions' while 'still not possessing the capability of being moved by those actions' (Ryan, 2020:2760). Consequently, the normative account of AI lacks its commitment to the relationship with the particular trustee (Ryan, 2020:2753). Comparing and contrasting the rational, affective and normative accounts of trust, Ryan draws the conclusion that 'AI is something we can have a reliance on, but not something that has the capacity to be trusted' (Ryan, 2020:2754). See also Serafimova, 2022:141–142.
- 16 In this context, *anthropy* can be examined as mediating the dialectical process of transindividuation towards neganthropy by building a new type of pharmacology. Specifically, the pharmacological gist of digital technologies is how due to being transformative, one has to maintain a balance between diachrony and synchrony, as triggered by the dialectical play between negentropy and entropy (Stiegler, 2016:297).
- 17 The roots of digital hubris can be traced back to the so-called planetary digital Leviathan (Stiegler, 2018:203), displaying a 'hyper-synchronized associated milieu' produced by applied mathematics of correlational algorithms (Stiegler, 2018:210).

as underlying the normative recognition of the so-called digital tertiary retentions¹⁸ (Stiegler, 2018: 146–147). By constituting the capital of *epistēmē* and the *epistēmē* of capital, these retentions affect the thinking about the morality of AI as moral thinking *par excellence* in the field of digital economy. Elaborating upon the debate about what it means to think care-fully about trustworthy AI from Stiegler's perspective, I argue that one should expand the way of thinking care-fully about the *as-such* mode in Stiegler's sense into what I call the neganthropic way of think-able and care-able regarding the *as-if* mode. The latter is considered a mode of going beyond the entropic moral vacuums, which contributes to overcoming the nihilism of the 'Anthropocene-become-disruptive' way of living.¹⁹

Hubris of digital tertiary retentions in the era of algorithmic governmentality

Stiegler interprets Rouvroy and Berns's theory of algorithmic governmentality (Rouvroy and Berns, 2013: 170) against the background of Jonathan Crary's vision of the world of the screens, which is considered an illustrative example of what Crary coins 24/7 capitalism (Cf. Crary, 2013: 74;80–81,84).²⁰ This capitalism aims to destroy all intermittence forms, '*thereby preventing both sleeping and dreaming*, to lead to their interminable *extenuation*, and to a kind of hell' (Stiegler, 2018: 176). Specifically, digital capitalism imposes hyper-control by 'outstripping and overtaking' all deliberately or non-deliberately produced traces depending upon the different kinds of automation (Stiegler, 2018: 176). The kinds in question are 'founded on user profiling, search engines, social engineering taking advantage of the network effect' and 'on ultra-fast algorithms capable of capturing, triggering and channeling traces more quickly than the time it takes for them to be produced or completed' (Stiegler, 2018: 176). In this context,

- 18 Digital tertiary retention derives from cybernetics, which Heidegger recognizes as the final stage of metaphysics (Stiegler, 2018:221). In turn, one should keep in mind that the digital trace is merely one case of 'tertiary retention' (Stiegler, 2018:242). Considering that '*each regime of tertiary retention is specific*', the question is whether digital tertiary retentions have the potential to establish 'the *différance* of another epoch of *logos*', as is that of the Neganthropocene (Stiegler, 2018:242). Stiegler's answer is that all tertiary retentions, including digital ones, constitute 'positive pharmacological possibilities', viz., 'they generate new attentional forms, forming therapeutic practices from those *pharmaka*' (Stiegler, 2018:158). However, digital retentions also foster the infrastructure of an automatic society whose data economy becomes its destiny by imposing hyper-control (Stiegler, 2015:136).
- 19 The dialectics of disruption is underlain by Stiegler's understanding of the Anthropocene as Entropocene 'which amounts to accomplished nihilism' (Stiegler, 2019a:43).
- 20 According to Crary, the 24/7 world is 'a disenchanted one in its eradication of shadows and obscurity and of alternate temporality', when producing an equivalence between what is immediately utilizable and what exists (Crary, 2013:19), viz., 'a time without time' (Crary, 2013:29). See also Crary's reception of Stiegler's theory of the global circulation of mass-produced 'temporal objects' (Crary, 2013:50–51).

Stiegler conducts a genealogical analysis of the performativity of the process of outstripping and overtaking by emphasizing the concerns about the '*delegation of the analytical functions of the understanding to computational automatisms*' (Stiegler, 2018: 176).

In turn, the justification of the algorithmic governmentality as an illuminative embodiment of digital capitalism is impossible without the so-called *digital and reticulated* tertiary retentions²¹ (Stiegler, 2018: 48), which display 'arrangements of psychic retentions and protentions via automatisms' (Stiegler, 2018: 48). Digital reticulation as such 'penetrates, invades, parasitizes and ultimately destroys social relations at lightning speed' (Stiegler, 2019: 7). Compared to the primary and secondary retentions,²² the digital retentions' high speed demonstrates augmented performativity. This means that 'retentional selections' embedded into 'the production of primary retentions and protentions' are 'overtaken' by the 'prefabricated' tertiary retentions and protentions, which are "'tailored" through already mentioned "user profiling" and "auto-completion" technologies' (Stiegler, 2018: 48).

However, the digital tertiary retentions and protentions are inseparable from the primary and secondary retentions and protentions²³ since they all constitute epochs that continue to exist until the 'epoch of the absence of epoch' (Stiegler, 2018: 221). Thus, the digital tertiary retentions continue to strengthen the performative potential of moral vacuums by systematically 'exploiting the network effect' based upon the intrinsic annihilation of the social relations (Stiegler, 2019: 7). Specifically, the process of exploitation results in bringing already discussed automatic nihilism to light, which 'sterilizes and destroys local culture and social life like a neutron bomb' (Stiegler, 2019: 7).

In the era of the Anthropocene, moral vacuums can be described as provoked by the total automation 'reaching a threshold of disruptiveness' (Cf. Stiegler, 2019a: 45), viz., by the functioning of the Anthropocene as an entropic catastrophe

21 According to Stiegler, the general understanding of tertiary retentions concerns 'the spatialization of time enabling its repetition and exteriorization, and the trans-formation of the *time* of retentions and protentions into a *space* of retentions and protentions' (Stiegler, 2018:159). Stiegler outlines that his definition of tertiary retentions corresponds to Derrida's one of supplement. However, he does not agree with the lack of distinction between primary, secondary and tertiary retentions in Derrida's theory (Stiegler, 2018:159). Specifically, Stiegler argues that the idea of supplement corresponds primarily to tertiary retention, that is, to technics. In contrast, Derrida interprets the arche-trace as addressing the living trace in general 'well before the appearance of tertiary retention' (Stiegler, 2018:160).

22 Stiegler argues that while primary retentions concern what is retained in the course of perception and through the latter in the present (what is retained '*is not yet a memory*'), secondary retentions are a 'constitutive element of a mental state that is always based on memory' (Stiegler, 2019a:31).

23 According to Stiegler, the evolvement of the tertiary retentions leads to the 'modification of the *play*' between primary and secondary retentions, resulting in time-specific processes of transindividuation (Stiegler, 2019a:37).

(Stiegler, 2015: 136), which triggers today's 'experience of disruption' (Stiegler, 2018: 233).²⁴ That is why hubris, which 'led to the formation of Pre-Socratic Greek civilization and therein the noetic foundations of the West' (Stiegler, 2018: 233) 'returns to mortals as a massive increase of entropy on a global scale, and necessitates the development of an entropology' (Stiegler, 2018: 233). Furthermore, the dis-ruption of the Anthropocene fostering the regime of dis-society (due to the justification of data economy as dis-economy) (Stiegler, 2015: 136) gives me a reason to argue for digital hubris. Considering that the impact of the digitalized traces triggered the entropic catastrophe, one may relate the role of digital hubris to what Stiegler calls the '*hyper-entropic* functioning' of algorithmic governmentality (Stiegler, 2015: 136). Consequently, the practical embodiments of digital hubris can be found in how the functioning in question 'accelerates the rhythm of the consumerist destruction of the world' (Stiegler, 2015: 136).

Based upon the methodological clarifications above, I argue that one of the illuminative representations of digital hubris concerns recognizing AI reliance as if it is trustworthy. This means that AI can be misleadingly ascribed moral and social omnipotence in solving moral dilemmas. Practically speaking, digital hubris grounding the possibility of trusting AI even more than trusting humans, provokes the simplified reduction of the limitations of thinking to these of caring. In other words, the misinterpreted simplification necessitated by digital hubris leads to the justification of moral vacuums as a natural, in the sense of a logical and ethically predictable, result of the nihilism of digital capitalism.

On a macro-methodological level, digital hubris can be contextualized within what I call digital non-hermeneutics in contrast to the so-called by Stiegler digital hermeneutics (Stiegler, 2015: 140),²⁵ viz., hermeneutics which ascribes a 'negentropic value' (Stiegler, 2015: 140) to the controversies and conflicts of interpretation and thus aims at unblocking the blocked horizon of indifference to de-noetization.

In the language of trustworthy AI, the exaggerated trust in the normative validity of computation

24 On the other hand, the pharmakon's remedy function of the digital technologies, viz., its therapeutic function, shows how the digital tertiary retention 'succeeds in totally rearranging the assemblages or montages of psychic and collective retentions and protentions' (Stiegler, 2019a:45).

25 This hypothesis can be supported by Stiegler's theory of how the over-power of dis-affected algorithmic calculations should be overcome by the hermeneutic investment of traces (Cf. Stiegler, 2018:267).

grounds the rational account of AI trustworthiness that makes one think care-less-ly about the normative and affective accounts of trust as un-knowledge-able.

On a micro-methodological level, I argue that it is digital hubris of the digital tertiary retentions that triggers the (mis-) re-placement of care-ful thinking with care-less thinking by exercising ‘the power and violence of *dikē*’ as if it is a law (*nomos*) (Stiegler, 2018: 266).²⁶ In this context, the revival of the process of neganthropic bifurcation requires the inversion of the reticulated digital infrastructure into a neganthropic infrastructure based on a ‘*hermeneutic* digital technology in the service of dis-automatization’ (Stiegler, 2015: 137). In the language of trustworthy AI again, the service of dis-automatization necessitates the bifurcation of trustworthiness and reliance embedded into a multi-agent system²⁷ that consists of both human agents and artificial agents. In other words, the process of neganthropic bifurcation affects not only the agency of building relationships of trust but also the agents themselves. That is why one may argue that we have two mutually related re-doublings in Stiegler’s sense which impact the transvaluation of transvaluation of values concerning becoming and future (Cf. Stiegler, 2019a: 43), viz., the pharmacological future of the digital age itself. Specifically, the transvaluation of transvaluation of values displays the necessity of transforming not only the values as such, but also the way of valuing the Anthropocene’s systemic entropy towards constitutive negentropy (Cf. Stiegler, 2019a: 43). This means that the double transvaluation should be developed not as a transvaluation of the given values of becoming and future, as triggered by a practical

²⁶ I elaborate upon Stiegler’s interpretation that Heidegger ignores the so-called negentropic locality, viz., care-ful thinking about there (*Da*) ‘within which *hubris* exercises the power and violence of *dikē*, which is not simply law (*nomos*)’ (Stiegler, 2018:266). In my interpretation, the issue of digital hubris results from how the power and violence of *dikē* aim at the latter’s absolutization *as if* it is *nomos as such*. On the other hand, Stiegler argues for putting back into the play *dikē* and *aidōs* as ‘dimensions of the *therapeia* required by the *pharmakon*’; due to being dimensions of care, these dimensions provide the hermeneutics of the *pharmakon* (Stiegler, 2018:227).

²⁷ I refer to Buechner and Tavani’s model of trust in multi-agent systems, which includes humans, groups of humans and artificial agents ‘such as intelligent software agents and physical robots’ (Tavani, 2015:79; Ryan, 2020:2763). This ‘diffuse/default model of trust’ can be applied to AI since it allows a distribution of responsibility ‘over a diverse network of human agents *and* artificial agents’ (Ryan, 2020:2763). See Serafimova, 2022a.

and functional differentiation (Cf. Stiegler, 2019a: 43), but rather as a transvaluation of the way of valuing this difference.

Furthermore, the analysis of the two mutually related re-doublings shows that the service of dis-automatization cannot disenchant the data economy merely by clarifying that the latter aims to justify the *as-if* mode of AI trustworthiness as *is* mode. Otherwise, AI would have been determined as trustworthy just because it is recognized as *if* it is trustworthy, although being merely reliable. In turn, digital non-hermeneutics of reticulated digital infrastructure can be defined as gaining a performative potential due to the absolutization of the rational account of AI trustworthiness. Specifically, the reductionism of the *as-if* mode to that of *is* can be described as underlain by the assumption that algorithms replacing skills and competence are determined as an absolute guarantee of the coincidence between being and knowing. Such an absolutization, however, leads to the nihilism of ‘the Anthropocene-become-disruptive’ by stigmatizing and, thus, disqualifying moral, social, cultural and any other pluralism as a matter of controversy that should be eliminated. Therefore, the nihilism of algorithmic governmentality can be coined absence of productive conflicts of interpretation. Such an absence annihilates the dialectical tension between possibility and impossibility by absolutizing the over-trust in AI. Consequently, the absolutization of the over-trust in AI at the expense of its reliance initially eradicates the possibility of questioning mistrust.

On the other hand, hermeneutic digital technology founding a neganthropic infrastructure in Stiegler’s sense requires the restoration of the ontological, social, moral and any other tension between possibility and impossibility regarding AI trustworthiness. The reason is that the tension results from an interplay between AI trustworthiness and AI reliance, whose process ontology triggers the rehabilitation of the affective and normative accounts of trust in Ryan’s sense. That is why digital hermeneutics induces the transvaluation of transvaluation of values not by rejecting entirely the affective and normative accounts of trust as inapplicable to AI (due to the fact that AI cannot meet the requirements of a trustee in an interhuman sense) but by preserving and outlining the internal controversies of the digital architecture of AI reliance, viz., as having an internal neganthropic value. Theoretically speaking, the digital hermeneutics of AI should preserve the interplay between the modes of AI trustworthiness and AI reliance as an interplay between the impossibility and possibility of AI’s moral (self-) development.²⁸ When consumer capitalism replaces the knowledge of how to live in a shared culture with that of ‘behavioural prescriptions produced by marketing’ (Stiegler, 2018: 181), as

²⁸ For the impossibility of AI’s moral (self-)development, see Serafimova, 2020 and Serafimova, 2022.

embedded into the attempt to live with AI as *if* it is trustworthy, the nihilism of trying to live can be overcome, as follows. One should elaborate upon cultural, social and moral mechanisms of living *with* controversies not as provoking distrust or mistrust, but rather as opening possibilities of unblocking the neganthropic value of trust in multi-agent systems. Therefore, humans can take the challenge of trusting AI (which is not trustworthy by default) by avoiding the ‘exploitation’ of human trust as fully applicable to the operational reliability of AI. In this context, the neganthropic value of the double transvaluation concerns human efforts to face their own vulnerability, while living in a digital environment.

From thinking care-fully to think-able and care-able regarding AI

The process of thinking and caring about vulnerability in a multi-agent system

Vulnerability is one of the most crucial issues affecting human agent (HA)–artificial agent (AA) multi-agent systems in building trust. It also necessitates the enrichment of the way of thinking care-fully about the *as-such* mode in Stiegler’s sense with what I call a neganthropic way of think-able and care-able regarding the *as-if* mode. Beginning with the role of vulnerability in a HA–AA multi-agent system, one can examine two mutually related types of vulnerability, viz., what I call (human) vulnerability caused by (the implementation of) AI and AI vulnerability (to human interventions). These two types of vulnerability have a commonly shared origin. The reason is that AI cannot be defined as trustworthy²⁹ due to its missing the capability of being morally vulnerable. Considering that vulnerability is a component of interpersonal trust available in the rational, affective and normative accounts of trust in Ryan’s sense, AI can meet the requirements of vulnerability only in the rational account of trust (Ryan, 2020: 2754).

However, meeting merely the first three requirements of the rational account of trust, viz., these of confidence, competence and vulnerability (Ryan, 2020: 2754) makes trust in AI different from interpersonal trust, which is also determined by the affective and normative implications of vulnerability. In other words, the limited understanding and functioning of AI vulnerability give me a reason to argue for AI reliance rather than AI trustworthiness.³⁰ Considering that AI vulnerability is normatively different from human vulnerability, AI causing harm to an individual is not similar to harm being caused by another human, regardless of the fact that the practical consequences of the harm itself may be empirically the same. While missing the affective and normative implications

of human vulnerability (e.g., goodwill and commitment to the person) (Ryan, 2020: 2753), the failure of AI reliance cannot be interpreted as a breach of trust, as when a human fails to meet the trust expectations of another human.³¹ As Ryan cogently points out, taking into account that ‘multi-agent relationships are a more complex combination of trust (interpersonal and institutional) and reliance (with the AI and other technologies being used), one should not attempt to conflate the two’ (Ryan, 2020: 2764).

Based upon the clarifications above, I argue that the mode of (human) vulnerability caused by (the implementation of) AI is justified by the deliberate conflation of trust and reliance as part of the trend of anthropomorphizing digital technology and, thus, imposing an abusive digital economy. I also refer the origin of this type of vulnerability to Kant’s brutalization argument, as displayed by Hagendorff, viz., as triggered by the risk that anthropomorphized agents can provoke violent actions between humans (Hagendorff, 2020: 105).

In turn, AI vulnerability (to human interventions) can be termed vulnerability of replication since AI can be programmed to act as *if* it is vulnerable without experiencing any vulnerability. In other words, ‘AI may be able to act like us and have intelligence to carry out actions, while still not possessing the capability of being moved by those actions’ (Ryan, 2020: 2760). Such vulnerability can be described as underlain by the interplay between ability and capability understood as an interchange between possibility and impossibility in Stiegler’s sense. While AI demonstrates the ability to be vulnerable, it cannot still experience vulnerability in human terms. Furthermore, going back to the already discussed point that AI meets the criterion of vulnerability only for the rational account of trust, together with these of confidence and competence (Ryan, 2020: 2754), one may argue that AI vulnerability can be examined as a matter of failed predictions for AI behavior based upon past performances (Ryan, 2020: 2759). Consequently, accepting this correspondence requires conducting some interventions to correct such predictions and the associated performances on the human part.

On a macro-methodological level, the double-bind performative potential of vulnerability derives from how the HA–AA multi-agent system takes place within what Stiegler calls today’s state of emergency (Stiegler, 2018: 204). We ‘non-inhuman beings’ try to live within such a state that is ‘permanent, universal and unpredictable, and that seems bound to become unlivable’ (Stiegler, 2018: 204). ‘We all feel this urgency. But most of the time we deny it except when we have no choice but to observe its immediate and disastrous effects upon our everyday existences’ (Stiegler, 2018: 204). Specifically, the ontological tension is brought about by both

²⁹ For the reasons behind the preference for AI reliability over AI trustworthiness and the concerns about the exaggerated trust in AI as mistrust, see Serafimova, 2022:135–143; 156–160.

³⁰ See also Ryan, 2020:2754. For the reliability of moral AI in a multi-agent system, see Serafimova, 2022:156–160.

Cf. Tavani, 2015:85; Ryan, 2020:2764; Serafimova, 2022:158–159.

HAs and AAs by humans as non-inhuman and AI as non-human whose interaction is determined by the interplay of the double negation (the double *non*). That is why (human) vulnerability caused by (the implementation of) AI can be described as non-inhuman vulnerability, while AI vulnerability (to human interventions) can be coined non-human vulnerability.

Why are all these matters a question of thinking and caring? The technology of digital tertiary retentions '*outstrips and overtakes* thinking, whatever forms it takes, creating *theoretical vacuums* and *legal vacuums* in every quarter' (Stiegler, 2018: 205). In addition, I also argue that the ontological tension brought about by the state of emergency is triggered not only by the theoretical and legal vacuums but also by their intrinsic relation to already discussed moral vacuums. Otherwise, the nihilism of the Anthropocene would have been merely a form of epistemic nihilism and then, the way 'we try to live' would have been theoretically fixable, viz., fixing the mode of trying by imposing the proper knowledge in the right place at the right time should have been a guarantee of fixing the living as such. In this context, I argue that the myth of the so-called final technological (digital) fixation (saying that every problem has a technologically fixable solution) provides the conflation of omni-power and omni-science as a premise of turning digital capitalism into digital absolutism by making no room for vulnerability. By contrast, the neganthropic value of vulnerability necessitates the process of transvaluation of transvaluation of values as a way beyond the 'Anthropocene-become-disruptive reality' since '*To think [penser] in order to care [panser] is to "try to live"*' (Stiegler, 2018: 205).

By thinking Heidegger understands *thinking as care*, '*as care-ful thinking [panser]... in the sense that it is a matter of taking thoughtful care of care itself ... and, in so doing, of thinking thinking itself*' (Stiegler, 2018: 212). Specifically, one should always think and care '*for and about the general form of what any age refers to as today*' (Stiegler, 2018: 212). According to Stiegler, for Heidegger, to think care-fully is '*to think the ontological difference of being and being, that is, to pose the question of the as such through which (question) difference is made*' (Stiegler, 2018: 249). Consequently, for us '*coming after Derrida, this means to think care-fully about différance, and to make it, and to do so in supplement(s), and not in some originary element that would be eigentlich temporality*' (Stiegler, 2018: 249). That is why, '*to make it in supplements*' in Stiegler's sense is to make it '*according to the history no longer of being but of exosomatization, and to do so as artificial selection within différance and as différance insofar as it must decide*' (Stiegler, 2018: 249). Thus, thinking care-fully about '*the as such*' '*becomes a matter of thinking care-fully about pharmaka as such*' (Stiegler, 2018: 249).

In addition, the care-ful thinking sets the dialectical boundaries of what Stiegler calls *hypercritique*; a critique that is underlain by how the concept of the limit is stretched to its limit (Stiegler, 2018: 206). Therefore, '*To care-fully think [panser] the Anthropocene in the twenty-first century is to think at the limit of the thinkable [pensable] and of the "care-able" [pansable]. This thinking that cares at the limit requires us to think the limit*' (Stiegler, 2018: 206). In other words, one may consider the implementation of what I called the mode of think-able and care-able a natural development of the mode of thinking care-fully in the epoch of the Anthropocene towards the era of the Neganthropocene.

However, considering that the care-ful thinking in Stiegler's sense is grounded in the understanding that the process of thinking pushes the limit of both think-able and care-able, I claim that the neganthropic value of the think-able and care-able consists in how the limit of think-able is not necessarily identical to that of care-able, even though think-able can be a matter of care-able and vice versa. While in the way of thinking care-fully, the agency is about the as such (*pharmaka* as such), in that of think-able and care-able, the bifurcation concerns the performative potential of the neganthropic ability as if (*pharmaka* as if).

Based upon the investigations above, I argue that while the way of thinking care-fully is determined by the mutually related bifurcations of thinking and caring, viz., by recognizing the caring of care as a process of thinking of thinking and vice versa, that of care-able and think-able is grounded in the bifurcations of the care of what c(sh)ould be think-able and the thought of what c(sh)ould be care-able. Specifically, if the way of thinking care-fully can be defined as the '*courage to care-fully think the present*' (Stiegler, 2018: 212), that of think-able and care-able addresses the courage to care about think-able and think about care-able as a matter of a diagnosis of time. Theoretically speaking, one may argue that the two modes differ in how they put a different methodological focus upon the way of anticipating reality.

While the way of thinking care-fully emphasizes the performative potential of agency (thinking) and its precision (care-fully), that of think-able and care-able rehabilitates the role of capability understood as an ability in progress that cannot be exhausted with its current embodiments. Furthermore, if the first question '*that imposes itself upon us today*' (Stiegler, 2018: 261) is the right to knowledge and, correspondingly, the duty to knowledge, not that of knowledge (Stiegler, 2018: 261), what Stiegler calls '*the duty to demand to be able to know*' (Stiegler, 2018: 261) can be defined as corresponding to the mode of thinking care-fully. In turn, the mode of think-able and care-able can be examined as addressing the ability to demand a duty to know and live.

The role of digital hubris: thinking and/as caring about vulnerability

The ability to demand a duty to know and live can also partly be related to the way of thinking care-fully. The reason is rooted in the necessity 'to *evaluate and transvaluate disruption as the final extremity* of nihilism', viz., as 'an evaluation carried out from the perspective of a transvaluation of that transvaluation of all values that Nietzsche affirmed as the urgent need to leap (*Sprung*) beyond the "last man"' (Stiegler, 2018: 209). In other words, thinking care-fully makes room for the possibility of going beyond nihilism 'in the hegemony of levelling and the calculation of averages' (Stiegler, 2018: 209). However, if thinking care-fully disenchanting how the reduction of value to averages generates an anthropy that destroys all values in the striving of imposing totalizing calculation (Stiegler, 2018: 135), the way of think-able and care-able reveals the neganthropic value of the impossibility of conducting this double transvaluation to its end. Specifically, the way of think-able and care-able shows the impossibility of 'purifying' the incalculable of the possibility of calculations. However, the way of think-able and care-able not only pierces the blocked horizon, similar to that of thinking care-fully but also shows that its unblocking is a never-ending process, even when the particular horizon is unblocked as such.

Considering that to 'think would therefore be to take care ... it would always be to think the wound. But what wound?' (Stiegler, 2018: 215). 'The wound is *hubris, delinquere*, the violence (*Gewalt*) of the necessary default...This wound is a disease, an *affection*, and this *affect* can also become infected' (Stiegler, 2018: 215). That is why hubris is defined as needing 'those who can *dress, treat, care for and heal* this wound' (Stiegler, 2018: 215). Referring to Heidegger's understanding of hubris as naming both violence and in-quietude, Stiegler assumes that to think is always a matter of exerting a therapeutic activity that should annihilate its destructive influence (Stiegler, 2018: 215).

Regarding the issue of hubris, I argue that (human) vulnerability caused by (the implementation of) AI and AI vulnerability (to human interventions) are driven by the same type of hubris, which has different embodiments. In turn, the latter give the wrong impression that the two types of vulnerability are not mutually related, as well as that they can be overcome separately. However, the mutual complementarity of the two types of vulnerability is underlain by the commonly shared origin of moral incalculability. Specifically, the similarity between (human) vulnerability caused by (the implementation of) AI and AI vulnerability (to human interventions) is that both are determined by the incalculability of moral motivation, moral feelings and moral (self-)development, as already outlined. On the other hand, the two types of vulnerability are mutually exclusive only due to the

different starting points of the bifurcated transvaluation. While AI vulnerability is a result of AI's technological imperfectability to become sufficiently moral in human terms, vulnerability caused by AI is an outcome of human moral weakness to control AI's technological superiority.

On a macro-methodological level, I argue that both types of vulnerability are triggered by a similar type of digital hubris which has two mutually related embodiments, viz., the cult to de-noetization affecting (human) vulnerability caused by (the implementation of) AI and the cult to the final technological (digital) fixation concerning AI vulnerability (to human interventions). In this context, introducing the way of think-able and care-able can contribute to revealing the ontological tension between both types of vulnerability by redirecting the bifurcated transvaluation towards the neganthropic value of the human sense of gravity. In turn, the introduction of the latter can make room for suggesting how we can try to live by adopting new digital hermeneutics.

Based upon the clarifications above, I draw the conclusion that healing the two types of vulnerability caused by the two forms of digital hubris necessitates the investigation of the mutually related projections of the loss of gravity in Stiegler's sense as a diagnosis of the Anthropocene's disruptiveness. A man 'without gravity, without weight or seriousness, but the result of which is *extremely grave*' (Stiegler, 2018: 236–237). Gravitational loss is 'characteristic of our age, the 'grave' as ever and paradoxically, no doubt presents itself in its very gravity but does so, in general, through a denial whose forms vary widely' (Stiegler, 2018: 237). That is why the duty of philosophy is to elicit 'what has thus been *denied*, that is, the grave the immeasurable weight not just of the world [*monde*] but of the squalid and the befouled [*immonde*]' (Stiegler, 2018: 237). In this sense, only consideration of gravity can earn back the credit 'required for it to take care of knowledge, of science' (Stiegler, 2018: 237).

Specifically, I argue that the loss of gravity is experienced as vulnerability due to the mutually related aspects above of digital hubris. While hubris of de-noetization concerns the loss of gravity triggered by the striving for measuring the immeasurable and, thus, reduces the *différance* to the process of distinguishing, hubris of the final technological (digital) fixation addresses the gravitational loss caused by the purification of the squalid and befouled as a mission that can be accomplished. Consequently, the denial of hubris as a process of a doubled bifurcation that affects the denial of undeniable in its two forms of incalculability can be interpreted as a way of trying to live 'into the service of a *différance* that is also a differentiation, which, as such, is *neganthropic*' (Stiegler, 2018: 246).

In this context, I argue that refracting vulnerability caused

by the human loss of gravity through the lens of *think-able* and *care-able* points towards a new traceology of *think-able* and *care-able* rather than that of *think-able* as *care-able*. Suppose the traceology of thinking is ‘a matter of carefully thinking [panser] in order to do what is necessary’ (Stiegler, 2018: 216). Then, the way of *think-able* and *care-able* can be defined as a way of maintaining the tension between *think-able* and *care-able* as a guarantee of doing what is not unnecessary to be done, taking into account that the latter is not equivalent to what is necessary by default.

Conclusion

The primary objective of this article is to analyse why the absolutization of the cognitivist anti-*epistēmē* underlies the exaggerated trust in AI at the expense of its reliance as the only possible *epistēmē* of data economy. The anti-*epistēmē* itself is justified by the introduction of what I call digital hubris, which necessitates the recognition of what I consider as two types of vulnerability, viz., (human) vulnerability caused by (the implementation of) AI and AI vulnerability (to human interventions). Exploring what it means to think care-fully about trustworthy AI, I argue that one can enrich the way of thinking care-fully about the *as-such* mode in Stiegler’s sense with the neganthropic one of *think-able* and *care-able* regarding the *as-if* mode. The latter is recognized as a mode of going beyond the entropic moral vacuums which overcomes the nihilism of the ‘Anthropocene-become-disruptive’ way of living.

Theoretically speaking, I suggest that while the way of thinking care-fully is determined by the mutually related bifurcations of thinking and caring, as displayed by Stiegler, viz., by recognizing the caring of care as a process of thinking of thinking and vice versa, that of *care-able* and *think-able* is grounded in the bifurcations of the care of what c(sh)ould be *think-able* and the thought of what c(sh)ould be *care-able*, while maintaining the assumption that *think-able* and *care-able* do not coincide by default. Furthermore, while the way of thinking care-fully emphasizes the performative potential of agency (thinking) and its precision (care-fully), that of *think-able* and *care-able* rehabilitates the role of capability understood as an ability in progress that cannot be exhausted with its current embodiments. Considering that ‘the duty to *demand* to be *able to know*’ in Stiegler’s sense can be defined as corresponding to the way of thinking care-fully, that of *think-able* and *care-able* can be examined as addressing the ability to demand a duty to know and live.

In this context, one of the most illuminative embodiments of digital hubris is the recognition of AI reliability as *if* it is trustworthy, assuming that the *as-if* mode is not neganthropic, but deliberately reduced to the *is* mode displaying the de-pharmakon-ized *as-*

such mode. In other words, exaggerated trust in AI can be described as a result of the de-noetization of the *as-such* mode in Stiegler’s sense, which deprives the *as-if* mode of its performative neganthropic potential. The associated consequence of the way of thinking care-fully is that digital hubris grounding the possibility of trusting AI even more than trusting humans leads to what I call digital non-hermeneutics, as opposed to digital hermeneutics in Stiegler’s sense.

In the language of trustworthy AI, the exaggerated trust in the normative validity of the process of computation that determines the rational account of AI trustworthiness makes one think care-less-ly about the normative and affective accounts of trust in AI as non-knowledge-able. However, adopting such an approach neglects the neganthropic value of the incalculable regarding moral motivation, moral feelings and moral (self-) development.

In turn, as a reason for rooting digital hubris in the Anthropocene’s state of emergency, one can point out how the emergency in question derives from the justification of trustworthiness in a multi-agent system consisting of human and artificial agents. That is why I argue that the process of the neganthropic bifurcation as a path towards *think-able* and *care-able* should take into account not only the agency of building relationships of trust but also the complexity of the agents themselves. The concern is that digital hubris misrecognizes the possibility of AI’s moral self-update as equivalent to that of AI’s moral (self-)development by analogy with human moral (self-)development. If so, the neganthropic value of the double transvaluation can be defined as affecting human efforts to face their own vulnerability as a matter of re-pharmakonization, while living in a digital environment.

Specifically, vulnerability is one of the most crucial issues affecting the HA-AA multi-agent system in terms of enriching the way of thinking care-fully (the *as-such* mode) with the neganthropic mode of *think-able* and *care-able* (the *as-if* one). While (human) vulnerability caused by (the implementation of) AI is justified as deriving from the deliberate conflation of trust and reliance as part of the trend of anthropomorphizing digital technology and, thus, imposing an abusive digital economy, AI vulnerability (to human interventions) can be coined vulnerability of replication. The reason is that AI can be programmed to act as if it is vulnerable without experiencing any vulnerability whatsoever.

Comparing and contrasting the two types of vulnerability, I reach the conclusion that this is the extrapolation of the *as-such* mode to the neganthropic *as-if* one that makes their mutual recognition possible. On the other hand, the two types of vulnerability are mutually exclusive only in terms of the different

starting points of bifurcated transvaluation. While AI vulnerability is a result of AI's technological imperfectability to develop morality similar to that of humans, vulnerability caused by AI is a result of human moral weakness to control AI's technological superiority.

Furthermore, I argue that both types of vulnerability are triggered by a similar type of digital hubris which has two mutually related major embodiments affecting human loss of gravity, viz., what I call cult to de-noetization regarding human vulnerability and cult to the final technological (digital) fixation concerning AI vulnerability. While the former type of hubris triggers gravitational loss caused by the striving for measuring the immeasurable, the latter one generates a loss of gravity that results from the understanding that the purification of the squalid and the befouled in Stiegler's sense is mission accomplishable.

In this context, the neganthropic potential of a new philosophy addressing vulnerability caused by the human loss of gravity in the AI discourse can be justified as pointing towards a new traceology of think-*able* and care-*able* rather than supporting that of think-*able* as care-*able* by default.

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Critical Voices: Contemporary Media Art Practice and Communities of Care

Paul O'Neill

Abstract

This paper focuses on the role of critical media artists in contemporary networked culture. It begins with a definition of the concept of critical media art and then examines its chronological development through the tactical media art 'movement' of the 1990s, and then into the new millennium where it draws influence from the use of media archaeology as an art method. This paper argues that these artists and their respective work occupy a unique space in our current era as they act as a cultural bellwether for many of the issues associated with networked culture, and in doing so, cultivate and promote communities of care by challenging problematic techno-solutionist narratives and ideologies.

Critical Media Art Defined

The term 'critical media art' refers to artworks and art practices that engage with themes related to the current networked era, including surveillance, data sovereignty and the environmental impacts of information communication technologies (O'Neill, 2022). As a concept it draws from Michael Dieter's focus on projects that 'cultivate an anti-positivist or problem-based encounter with digital and networked processes' (2014, p.216) and also Nathan Jones' understanding of *critical new media art* which, he argues, operates in methodological and technical fields that overlap with science, technology and activism, focusing on the 'affective intensities of the internet' and turning them into subjects of study (2020, n.p.). In turn, Dieter and Jones are influenced by Philip Agre's *critical technical practice* which has 'one foot planted in the craft work of design and the other foot planted in the reflexive work of critique' (1997).

The origins of critically engaged 'new' media art can be found in the photomontages, collages and readymades of the Dada

movement in the early 20th century (Tribe and Jana, 2006). It has been influenced by other movements that followed the dadaists including Pop art, conceptual art and video art (ibid., p.8). However, within the context of the challenges of our current networked era as outlined above, critical media art can be traced back to the late 1980s with the invention of the world wide web and its subsequent proliferation throughout the 1990s. The web emerged in the post-cold war landscape of heightened neoliberal globalisation, leading to the 'dotcom boom' – a time when corporate America realised the economic possibilities of the internet and 'adopted it with the zeal of converts' (Cassidy, 2003). The uncritical optimism and potential opportunities surrounding this new communication form were not just found in the corporate world but also in counter-cultural communities, perhaps best encapsulated in John Perry Barlow's 'cyber-libertarian' (Silverman, 2015) 'A Declaration of the Independence of Cyberspace' (1996) which described a world free of state governance that would be 'without privilege or prejudice accorded by race, economic power, military force or station of birth'. In contrast to this naïve vision Richard Barbrook and Andy Cameron's oft-cited 'canonical text of 1990s dot-com scepticism' (Barbrook, 2015, p.7), 'The Californian Ideology' (1995) offered a critique of the systemic inequalities in the United States exasperated and reinforced by the neoliberal/free market economic policies of the dotcom era – an era that Barbrook and Cameron claim was enabled and promoted by the combination of the 'free-wheeling spirit of the hippies and the entrepreneurial zeal of the yuppies', and their mutual 'profound faith in the emancipatory potential of the new information technologies' (2015, p.12). It is within this context of heightened globalisation and technological hubris that artists began to engage in practices that critically and tactically challenged both the dotcom boom and the wider technological landscape from which it emerged.

The Emergence of Tactical Media

Tactical media came from the same critical ecosystem as Barbrook & Cameron's seminal text – 'The Californian Ideology' was originally disseminated on the *NetTime* mailing list and was presented at the 1996 edition of *Next 5 Minutes* festival – a festival of tactical media that was held throughout the 1990s and early 2000s. Tactical media is what happens when

the cheap 'do it yourself' media, made possible by the revolution in consumer electronics and expanded forms of distribution (from public access cable to the internet) are exploited by groups and individuals who feel aggrieved by or excluded from the wider culture.

(Garcia and Lovink, 1997)

It identifies with the powerless and promotes DIY culture

as a method to critique the networks it is embedded in (ibid., n.p.). Eric Kluitenberg describes it as a 'specific conjunction of activism, art, media and technological experimentation' (2011, p.17), while Rita Raley positions it as something that emerged out of, and in direct response to, 'post-industrial society and neoliberal globalization' (2009, p.3) and is concerned with media art practices that 'engage in micropolitics of disruption, intervention, and education' (ibid., p.1). Although tactical media draws from a diverse range of transdisciplinary approaches and concepts depending on what is required at a specific instance (Dieter, 2017), it is underpinned by two theoretical frameworks. Firstly, the work of Michel de Certeau who distinguishes between strategies, employed by hegemonic actors, and tactics, what he refers to as the 'the art of the weak' (1988, p.37), and the concepts and practices, including *détournement* and psychogeography, of the Situationist International.

Examples of tactical media from this period are many and varied. @Tmark, an artist and activist collective originally founded in 1991, organised itself as a corporate entity as a way to challenge and critique the corporate personhood enabled by the 14th amendment which guarantees fundamental rights to American citizens, but also to corporations through the concept of 'corporate personhood'. Operating under this corporate image, @Tmark provided finance to artists to execute projects such as the *Barbie Liberation Organisation* (1993), which switched the voice boxes of Barbie dolls with GI Joe action figures before placing them back on the shelves of various toy shops (Meikle, 2002).



Figure 9.1: *BIT Plane* (1997), Bureau of Inverse Technology

The Bureau of Inverse Technology (BIT), founded in 1991 by Natalie Jeremijenko & Kate Rich, utilised information technologies to reveal the politics beneath them (bureauit.org, 2004). Examples of their work include *BIT Plane* (1997) (Fig. 9.1), a radio-controlled model airplane reconfigured with a micro-video camera that flew into various no-camera and no-fly zones in the 'glittering

heartland of the information age' Silicon Valley (ibid., n.p.). The focus of the Bureau of Inverse Technology is 'not on the moment of execution' but on the instructions and reports that allow the user to understand the mechanism involved (ibid., n.p.). This materialistic approach points towards both open source culture and critical pedagogy and is also a forerunner to artists whose practice is centred on the opening up of the 'black boxes' of technology as means to critically engage with the socio-political infrastructures that support them. BIT Plane can be considered a forerunner of critical media art projects that incorporated drone technologies as a way of critiquing surveillance culture through *sousveillance* – a term coined by Steve Mann (2002) to explain the inversion of surveillance by citizens to monitor those in authority – such as *The Loitering Theatre* – a project by Dublin based collective *The Loitering Theatre* that explores the 'possible democratization of surveillance that drone flight affords' (loiteringtheatre.org, 2020). This project flew a drone over various centres of power and surveillance in Dublin city, including Google and Facebook's respective European Headquarters in Dublin city.

Another group that both recognised and responded to the movement of power and capital to the online space were the Electronic Disturbance Theatre (EDT). Founded in 1997, EDT were a collective of artists, activists and theorists. '*FloodNet*' (1998) was a type of virtual sit-in facilitated by a DDOS attack on Mexican and US governmental websites, the attack was in support of the Mexican left-wing group, the Zapatistas. *FloodNet* was a combination of political tactics and poetics highlighting what the EDT perceived to be injustices carried out by both the American and Mexican governments on the Zapatistas, as opposed to any form of destructive computing malware. Although, the EDT were not the first group to use DDOS attacks as political action, they did popularise the idea of them, and can be seen as influencing other groups such as *Anonymous* (Lecher, 2017).

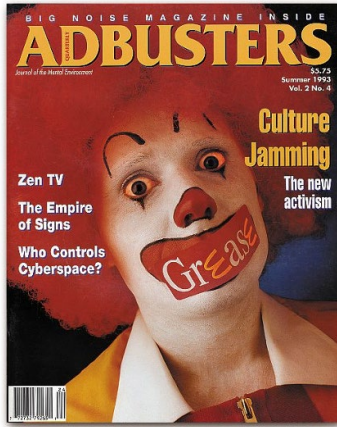


Figure 9.2: Adbusters magazine cover

'Culture Jamming' is a term coined by the sound art group Negativland in 1984 (Dery, 1993); as a practice it jams or blocks the flow of commercial messages (DeLaure and Fink 2017, p.43). Mark Dery (1993) argues that culture jammers are 'part artistic terrorists, part vernacular critics' who introduce 'noise into the signal as it passes from transmitter to receiver, encouraging idiosyncratic, unintended interpretations' and in doing so, reject the role of passive consumers whilst promoting and facilitating public discourse. Culture jamming can be traced back to Dada and Surrealism; it is influenced by the techniques of the Situationists and can be considered a subfield of tactical media (Meikle, 2002). It is perhaps best exemplified in the work of the anti-consumerism media organisation, Adbusters, known for its provocative imagery and détournement of commercial marketing campaigns (Fig. 9.2).

As noted previously, tactical media emerged in parallel with the dotcom boom of the 1990s and can be regarded as a critical and subversive response to wider techno-political concerns of that time. However, the temporal nature of tactical media, along with other factors that will now be highlighted, suggest that its decline was always inevitable.

The Decline of a Movement and a Moment

Reckless investment and poorly regulated market speculation (Murdock, 2020) defined the dotcom boom and would ultimately lead to its collapse in 2000. There is less clarity on the endpoint of the initial wave of tactical media – the Critical Art Ensemble (2001) claim it ended the moment it became formalized and named. Despite the final Next 5 Minutes festival taking place in 2003, and the international tactical media labs that took place

between 2001 to 2003, Geert Lovink and Ned Rossiter suggest that 'it was all over' by 2001 (2017, p.24). Irrespective of when the decline occurred, the reasons for it are less clear – tactical media emerged from the cultural shift of 'macro-history to micro-politics' that occurred during the 1980s and 1990s (Ray and Sholette, 2008, p.520). While it drew on theoretical concepts that informed a practical engagement consisting of 'ephemeral inversion and détournement, experimentation, camouflage and amateur versatility' (ibid., p.520), it also evolved at a time when the neoliberal corporate culture was embracing managerial mantras that promoted 'dis-organising the organisation' and 'thinking outside the box' (ibid., p.520). Practical examples of these mantras can be found in the guerrilla and viral marketing strategies that were prominent in the 1990s and early 2000s (Frank, cited in Lievrouw, 2011, p.82).

Felix Stalder observes that as the internet began to mature, contradictions surrounding tactical media began to appear, particularly in relation to the long term infrastructural requirements for projects associated with tactical media being problematic (2009) – tactical media was inherently temporal, the logic of excess and sustainability meant there was a need from long term strategizing. Lovink and Rossiter similarly acknowledge the organisational contradiction inherent in tactical media stating 'tactical media will never become organized' (2017, p.18) and 'once squatted spaces had to be rented back. Computer servers broke down and were not replaced, websites disappeared, as did video editing facilities and free radio studios' (ibid., pp.19–20). For Stalder, another contradiction appeared in the 'one size fits all' approach of incorporating media production into the tool kit of grassroots organisations and the creation of a standardised identity around this 'increasingly common practice' (2009). Stalder suggests that in essence tactical media was a victim of its own success which meant it 'could no longer serve as a distinctive approach that would define a particular community' (ibid., n.p.).

Armin Medosch (2016) also notes how temporal concerns impacted tactical media, arguing that the realisation that the 'revolution can take a while' meant artist-activists began to focus on other issues surrounding intellectual property. There were a few reasons for this particular focus including a push by corporate actors within the knowledge economy for stricter copyright regimes in the digital domain and consequently, the realisation by artists that effective sustainability in digital culture could only be found in free and open-source culture (FOSS), leading to a general embrace of this culture in contrast to the prevailing philosophy and logic of the free market which sought to monetise every aspect of the digital sphere (ibid., p.373). Although at the beginning of the millennium tactical media was expanding, evidenced by the

aforementioned tactical media labs, it had simultaneously begun to lose momentum, in part as a result of the changing international geopolitical landscape (Medosch, 2016) brought about by the September 11th attacks in the United States. The attacks were a horrific visual *détournement* of the 24/7 news cycle, reducing emblematic symbols of capitalism to ashes in a matter of hours live on television screens around the world. As Mark Fisher notes, the terrorist attacks stalled the anti-capitalist movement (2009), a movement that often overlapped with tactical media throughout the 1990s. The subsequent war on terror and conflict in Afghanistan and Iraq instigated a new era of security and surveillance. This, combined with the 'expansion of financial capitalism and the intensified implementation of neoliberal policies' (Raley, 2009, p.14), alongside the rise of social media platforms and even greater democratisation of media technologies associated with web 2.0 saw a more connected yet more quantifiable society emerge.

While the initial movement and moment of tactical media faded, artists began to respond to this new quantifiable society through different forms of practice.

Black Box Subversions



Figure 9.3: Mark Zuckerberg, cover of *Time Magazine* (2010)

Figure 9.4: Steve Jobs, cover of *The Economist* (2010)

The Californian Ideological techno-utopian views associated with the dotcom boom throughout the 1990s were replicated within the context of web 2.0 at the beginning of the new millennium and into the 2010s, with key figures from this time such as Mark Zuckerberg and Steve Jobs deified in mainstream tech discourse (Figs 9.3 and 9.4). As noted above, many critical media artists including those associated with the initial wave of tactical media alongside emerging artists such as Paulo Cirio, the Free Art & Technology (FAT) Lab, and Joana Moll, began to focus on concerns surrounding web 2.0 including privacy, digital rights and the environmental impacts of information communication technologies. These artists and many others from the wider field engaged with tactical media and also a form of media archaeology.

There are various interpretations of media archaeology (Parikka, 2012) – as with tactical media, it avoids being situated within rigid academic categories or fields. Despite this lack of unified consensus, it has still contributed to historically influenced research whilst affording scholars and artists the intellectual space to develop their particular approach to this field of media studies (Huhtamo & Parikka, 2011). As a consequence of diverging interpretations of Michel Foucault's work on the archaeology of knowledge, media archaeology can be split into two variations (*ibid.*, p.9). The first is the new historical approach of the Anglo-American tradition which embraces Foucault on the basis of his recognition of the centrality of discourse in connecting knowledge with social and culture power – technology is subordinate to and conditioned by discursive formations (*ibid.*, p.9). The second is a more techno-centric, deterministic and materialist interpretation associated with the German tradition which draws on Friedrich Kittler's position that Foucault's emphasis on 'words and libraries' should be refocused to include more media-centred ways of understanding culture (Kittler, cited in Huhtamo & Parikka, 2011, p.8). Irrespective of these divisions, media archaeology can be, broadly speaking, situated between media theories embedded in materialism and a focus on the importance of obsolete and forgotten histories and narratives of media (Parikka, 2010).

In an effort to provide a concise meaning of what media archaeological art is, Jussi Parikka (2012) offers six different ways in which old media technologies and themes have been used within a contemporary context. Although it is intended by Parikka as a 'brainstorming exercise', it identifies various themes including, alternative histories, planned obsolescence and imaginary media (*ibid.*, pp.139–140). The most relevant to critical media art practice is an approach that excavates contemporary technologies, machine and networks to 'address the present – but technically "archaeological" – buried conditions of our media culture' (*ibid.*, p.140). This approach is adapted within artistic practices that

overlap at times with activism and are focused on opening up these machines and networks by using material approaches including DIY practices such as circuit bending and hardware hacking (ibid., p.140).

This DIY approach to media archaeology is further extended by Jussi Parikka and Garnet Hertz in *Zombie Media: Circuit Bending Media Archaeology into an Art Method*. Parikka and Hertz highlight media archaeology as an art method that focuses on remediation and reuse as a form of artistic resistance against environmental concerns associated with consumer electronics. This approach to media archaeology can be applied more broadly to the techno-political concerns of critical media artists and the practices they employ which include circuit bending, hardware hacking, détournement, culture jamming, open source investigative methods, remix and critical making to critique dominant narratives associated with 'Big Tech', techno-solutionism and the neoliberal interpretation of progress – narratives that reinforce the exploitative infrastructures, networks and systems of contemporary networked capitalism.

There are many examples of this form of critical media art practice. The *Critical Engineering Manifesto* by artists Julian Oliver, Danja Vasiliev and Gordan Savičić emphasises the 'need to study and expose' the inner workings of technological systems and artefacts whilst acknowledging the black boxes of the 'machine' which consist of 'interrelationships encompassing devices, bodies, agents, forces and networks' (Oliver et al., 2011). The Critical Engineers excavate technological systems and artefact in order to highlight, raise awareness and understand the processes that enable technological systems and the influence and impact they have on our relationship with them. In his 2018 essay, 'We Need something Better than the Maker Movement', Garnet Hertz offers a critique of the commercialisation of maker culture by Maker Media. Hertz argues that the tech-orientated projects featured in *Make Magazine*, have little, if any, space for critical reflection or discussion on the social, political or cultural implications of technology on society. *Make Magazine* does not offer an agenda beyond 'American self-reliance or the vagueness of improving education' (Hertz, 2018). As a response to these issues, Hertz offers a détournement and reconfiguration of the Maker's Bill of Rights. The updated version offered by Hertz includes statements such as 'I take responsibility for making objects and the impact they have on people, society and the environment' (ibid., n.p.) and engages with social and economic issues related to gender, labour and the environment which Hertz argued are missing from mainstream maker culture.

Other examples include Dasha Illana's Centre for Technological Pain offers DIY solutions to health problems caused

digital technologies. *A People's Guide to AI* by Mimi Onuoha and Mother Cyborg (2023) is a 'beginner's guide to understanding AI and other data-driven tech' in order to open up conversations surrounding artificial intelligence by 'demystifying, situating, and shifting the narrative about what types of use cases AI can have for everyday people'. Environmental concerns surrounding networked technologies are also addressed in projects such as *Solar Protocol* (2023) by Tega Brain, Alex Nathanson and Benedetta Piantella – which features a website that hosted across a network of solar powered servers, the site is sent to the user through whichever server is currently receiving the most sunshine. Meanwhile, Nick Briz's *howthey.watch/you* engages with digital literacy by exposing the tracking technology behind internet browsing (Briz, 2023).

We also see similar themes being explored in organisations such as Tactical Tech Collective – an international NGO that engages with citizens and civil-society organisations to explore the impacts of technology on society. Such themes are also evident in alternative sites of learning such as *Nø School* (Burgundy), the *School for Poetic Computation* (New York) and the *School of Machines, Making & Make-Believe* (Berlin). These organisations develop programmes centred around a critical engagement with technology and the cultivation of accessible communities and are all variations of what Daphne Dragona describes as 'soft subversions' – practices that emerged from the open source movement centred around critical pedagogy (2016).

Conclusion

Philip E. Agre discusses the idea of borderlands in reference to the spaces between analogue and digital worlds (1997). Agre argues that such borderlands are complicated places, their residents, which include photographers, engineers, social scientists and others, move between analogue and digital in their work, and are 'both an object and an agent of technical representation, both a novice and an expert' and all have a story (ibid., n.p). Artists engaging with a critical media art practice operate on the borderlands of many of the dominant debates and discourses of our contemporary era, moving between borders of privacy and surveillance, big data and open data, legal and illegal, fake and real, automated and manual and so on. These practices are situated at the oft-cited intersection between art and technology and occupy a unique space within the contemporary networked era. It is from this space that they act as a cultural bellwether, communicating and disseminating complex issues associated with digital technologies to various publics, and in doing so, cultivate communities and practices of care.

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The Fable of the Cyclops and the Mantis Shrimp Composting with Care for Epistemic Diversity

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Abstract

Centring on the figures of the Cyclops and the Mantis Shrimp, this paper is an adaptation of a multimedia performance lecture given at the 2nd European Culture and Technology Conference in Dublin, 2023. Theatrical and academic components are 'composted' together, employing storytelling tools to interrogate dominant Euro-Western, anthropocentric hierarchies of knowledge. Drawing from feminist new materialisms, critical post-humanisms, the environmental humanities, socialist-indigenous organisations, and earthy-bound cosmologies, we develop a composting-with-care methodology for thinking/praxis that acknowledges and grows from pluralistic onto-epistemological systems. We argue that a healthy ecology of knowledges requires a diversity of ingredients, and that the selection of these ingredients requires much diligence and attention to context. The paper argues that contemporary discourse and praxis needs to focus on cultivating epistemological diversity and this relies on a

methodology rooted in care understood as necessary labour, a process that we have termed composting-with-care.

Keywords: speculative fabulation, ecologies of knowledge, symbiosis, feminism, ecology

Disclaimer

All the following stories, creatures (living and dead), and events are based on true stories, creatures (living and dead), and events. Any resemblance to works of fiction is not intended by the authors and is either a coincidence or a product of the reader's own imagination.

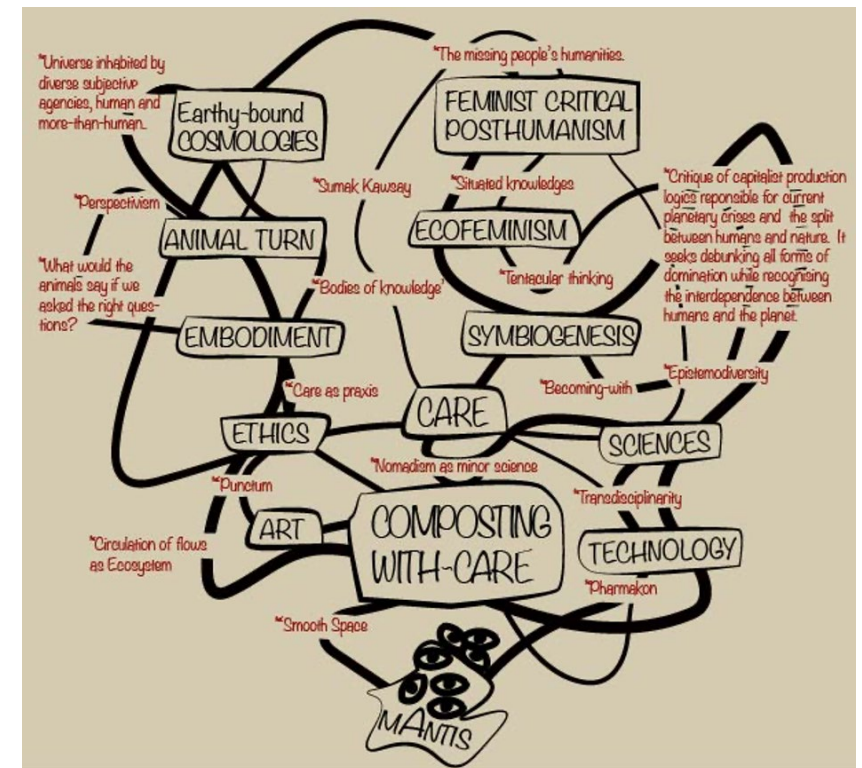


Figure 10.1: Composting with care
Ester Toribio-Roura (2022)

Prelude

The story develops together with the plot: the event being narrated and the event of narration itself merge in the single event of the artistic work.

(Bakhtin, 1994: 159)

Readiness, attentiveness, and receptivity are essential

to learning and should be considered pedagogical. Following the lines of thinkers such as Paulo Freire, the pedagogical is always political.¹ From pedagogy as praxis, we arrive at a pedagogy of care. Throughout the following pages, we aim to construct between these words and our readers, narratives and knowledges, some of which are rooted in the fantastic, some, the academic, but all in a process of narrative construction, of ‘worlding’ (Haraway, 2016: 86). Strict distinctions between these types are purposefully avoided, to underscore the commonality of knowledge production between different forms of narrative. One of our ambitions in this paper is the making of disciplinary boundaries as porous, leaky, and open as possible.

The following pages are an adaptation of a performative lecture given at the 2nd European Culture and Technology Conference in 2023. This performance featured audiovisual, theatrical, fictional, and scholarly components, composted together with little distinction and zero hierarchical value.² Throughout the performance, different sounds, including those of plant photosynthesis and volcanic eruptions, were played through a granular synthesiser, accompanied by images and videos ranging from microbial symbiosis to forest scenes and Flamenco. The authors took turns in role-playing dialogues between the characters of the Mantis Shrimp and the Cyclops, and these dialogues were interspersed with orated academic text. This adaptation aims to expand on some of the theoretical aspects of the performance, whilst retaining the theatrical facets through a composting methodology. A soundscape based on the original performance can be found online at <https://compostfeminismtechne.org/soundscape>.

This paper aims to clearly outline the framework and methodology of composting-with-care as an academic, epistemological, and artistic tool, and to situate it within broader post-humanist discourses. It demonstrates how theatrical and narrative devices such as the dialogue between the Mantis and the Cyclops can help us to dismantle problematics, and it shows how composting-with-care relates to similar discourses whilst remaining critical of this canon. It argues for a rethinking of academic discourse and practice, stating two key points: firstly, production is less important than diversity – if the measure of a healthy ecology is biodiversity then the measure of a healthy discourse is epistemic diversity – and secondly, that care as a praxis takes time, and

that this time, necessary for an integration of care into research, pedagogy, and practice, must be considered and nurtured by supporting institutions, working groups, and the theoretical and organisational structures we work within.

The paper begins by defining the different discourses engaged with, outlining our positions in relation to the post-humanities, material feminisms and the royal sciences. It then proposes the conditions necessary for establishing a change in hegemonic discourse and methodology and presents the dialogues between the Mantis and the Cyclops that are each followed with explanatory sections that expand on the content. The paper finishes with an epilogue that serves to further problematise the problematics introduced and suggest areas for further research and work.

Situating the Discourse

According to cognitive scientists Dubourg and Baumard (2021: 276), our human need for exploration and discovery can be satisfied by stories about imaginary worlds. These worlds can be reductive and fixed, with a singular gaze to the past or the future, but they can also make and become with the present, in a speculative fabulation that translates into a praxis of the imagination. This paper argues that this praxis is one that can help us come to terms with the radical unsustainability of our present models of life and create new instruments that respond to current socio-political challenges.

Drawing from feminist theories and earthy-bound cosmologies we use speculative fabulation as a composting tool, allowing for emancipation from dominant anthropocentric scientific and economic worldviews, thus enabling the reconfiguration of anthropogenic activities. Speculative fabulation is a blend of (science-)fictional storytelling and critical analysis that allows for a queering of knowledges into unfamiliar configurations (Truman, 2019: 31–32). While these works are based in fictions they co-create with empirical systems of knowledge to come to peculiar and innovative understandings, thus enabling alternative ways to understand the world. Speculative fabulations disrupt conventional boundaries between humans, animals, and technology, challenging the anthropocentrism that often marginalises non-human entities. These speculations invite the consideration of the agency and interconnectedness of diverse forms of existence, fostering a more inclusive and ethical approach to human–animal–machine relationships. By highlighting the potential of alternative narratives, we expect that anthropogenic activities can be reconfigured in ways that are more sensitive to the complex web of relationships that constitute the world. For example, Vinciane Despret in her work *Que diraient les animaux, si...on leur posait les bonnes*

¹ For an excellent introduction to Freire’s work on the politics of pedagogy, see Giroux (2010).
² The authors use the term ‘composting’ both as metaphor and methodology for a breaking down of boundaries of knowledge. Compost is the non-hierarchical mix of beings in sympoiesis (making-with) which creates fertile hummus for epistemic growth. Compost societies are “mobile and hospitable; they cultivate queer kinship, they strive for the Common” (Timeto, 2021: 324).

questions? (2012) allows animal voices and behaviour to contribute to the broader discourse around our shared world, thus contributing to a shift from a human-centred perspective to a more inclusive one.

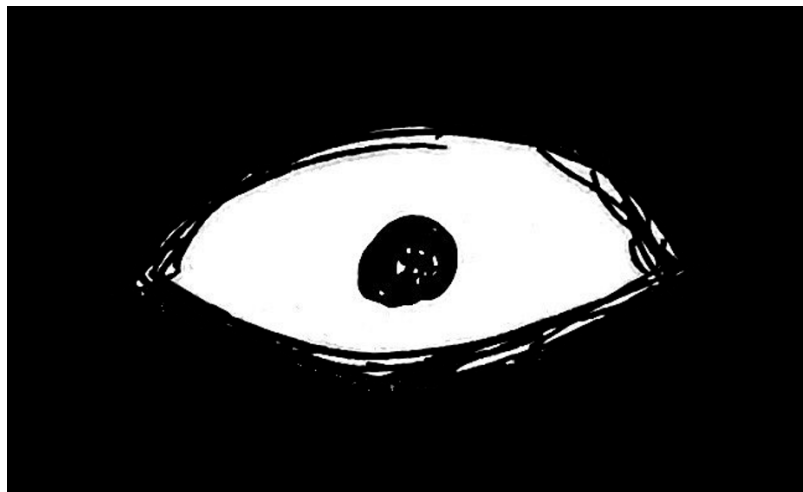


Figure 10.2: The one-eyed
Ester Toribio-Roura (2022)

The work of evolutionary biologist Lynn Margulis (1967) and her radical advocacy for symbiogenesis unveiled the complex network of organisms that constitute even the most basic of lifeforms. Symbiogenesis challenged fundamental Neo-Darwinist assumptions of competition-oriented evolution, demonstrating instead the importance of intra-species cooperation as a primary driver.³ Margulis' work contested both the narrative of individuality and that of human exceptionalism. Similarly, contemporary feminist theories critique the centrality of the individual, positioning the human among a consortium of bio-techno-scientific arrangements. Critical posthuman and new materialist feminisms highlight the situated nature of knowledge, particularly with reference to the 'royal sciences' (Deleuze and Guattari, 1987: 367–8), and reveal the absence of what Braidotti terms the missing people's humanities; 'feminist/queer/migrant/poor/de-colonial/diasporic/diseased humanities' (2019: 49).⁴ Communitarian and socialist-indigenous organisations of Central and South America correspondingly reject

3 One of the most evolutionarily significant lifeforms on earth is cyanobacteria (see Figure 4) which formed mutually beneficial symbiotic relationships with eukaryotes approximately 1.6 billion years ago, leading to the development of all plant life.

4 Braidotti (through Deleuze and Guattari) draws a distinction here between the royal sciences; those fields of knowledge production that are institutional and bonded to capitalist structures, and minor sciences, which are outside of the major funding and academic models; "science/knowledge, which is, however, ethically transformative and politically empowering".

hierarchies of relation between human and more-than-human, as demonstrated in onto-epistemologies such as *Sumak Kawsay* (discussed below). These ways of thinking and being challenge mainstream discourses that place the human at the centre of techno-scientific progress.

Many of these and other current Euro-Western trends are rooted in and take much from indigenous ontologies, some more explicitly than others. Zoe Todd and Sarah Hunt are among many indigenous scholars calling for new ways not just to incorporate these knowledge systems, but also to acknowledge and address historical and contemporary colonialism in academia in both the post-humanities and further afield (Todd, 2016). Hunt (2014: 29) describes the appropriation of indigenous knowledges and their categorisation as other or less in Western knowledge systems as a form of "epistemic violence". We contend that these current hegemonic frameworks are disabling, and we advocate for a symbiotic model of liveability rooted in human and more-than-human material knowledges, as well as the revelations of the royal sciences, to establish a pluralistic ecology of knowledges.

As with compost ingredients, it matters what *matters* we use to tell stories of the present. Opening new forms of thinking/praxis-with-care, the possibility of new vocabularies and practices provides necessary vision and resilience to respond to current challenges. If one sign of a healthy ecosystem is biodiversity, a sign of a healthy ecology of knowledges is epistemological diversity. To birth these diversities, we must first lay the ground for thought, imagination, and feeling in the present. There are other ways of seeing than only with the eyes, of listening more than only with the ears, and of speaking more than only with the mouth. The following paragraphs guide the reader to some of these ways of thinking and being, more than those often rewarded in academia and the arts.

Speculative Fabulation and Composting with Care: Creating the Conditions of Possibility

Staying with the trouble requires learning to be truly present, not as a vanishing pivot between awful or Edenic pasts and apocalyptic or salvific futures, but as mortal critters entwined in myriad unfinished configurations of places, times, matters, meanings.

(Haraway, 2016: 1)

Donna Haraway developed the concept of Speculative Fabulation (SF) in *Staying with the Trouble: Making Kin in the Chthulucene* (2016). In this work, Haraway introduces the concept of the *Chthulucene*, a period she describes that emphasises the intertwining of fact and fiction. By stressing the narrative elements of exploring new eras, Haraway challenges binary perspectives on the Anthropocene and highlights the intermingling of reality and

imagination, theory and literature. SF can be defined as a thought experiment or figuration combining science/fiction, eco-feminist theory, and earthy-bound cosmologies to create new imaginative ways of understanding the world and our place in it. Haraway suggests that current onto-epistemologies fail to address the complex challenges posed by the Anthropocene, and that paying attention to these other knowledges can provide us with the key to confront these challenges.

Stories give humans the resources to know who they are and have the potential to both connect and disconnect communities. In this sense, stories work as a pharmakon as defined by Derrida in “Plato’s Pharmacy” (1981). This section looks at what is told in the story and what happens because of the story being told. Or in Bakhtin’s words, the relation between the events being narrated and the event of the narration (1994: 159).

Linked to the concept of Speculative Fabulation is the idea of “compost”, which Haraway employs as a metaphor for the kind of collective, collaborative, and iterative processes that are needed to create new ways of being in the world. For Haraway, compost involves bringing together diverse quality ingredients, breaking them down and creating something new and oftentimes unexpected. In Haraway’s figuration, composting is a form of *sympoiesis* (making-with) conducive to alternative wordings, alternative narratives about the present and the future and humans’ relative position as one more element of the “integrated circuit”, blurring the boundaries of the words we use to describe technocultural ecologies (Haraway, 1991a: 175–6).

In *Staying with the Trouble: Making Kin in the Chthulucene* (2016), Haraway illustrates these concepts through the *Camille Stories*. These speculative fabulations are figurations that allow Haraway to explore alternative futures for humans and more-than-humans.⁵ The *Camille Stories* are by no means attempts at foresight. They imagine new ways of being in the world that are more nuanced than the current hegemonic anthropocentric narratives; they are speculative fabulations attuned to the interconnectedness of all beings and systems. Haraway uses SF to create new worlds and new ways of being, while also recognising the stories, histories, and cultures that have shaped our current reality. She calls this process “worlding”, a method by which we can create stories that challenge dominant power structures and explore new possibilities for social and ecological justice.

Compost as a Praxis of the Imagination

Compost as figuration or thought experiment is a

5

Note that Haraway uses the concept “other-than-human” throughout her work. In our text we use “more-than-human” as a non-hierarchical phrase that deconstructs a separation between the Anthropos and Other.

movement of thought, a dynamic conceptual tool. Compost is also a practice of epistemological criticism: criticism because it refuses to accept hegemonic understandings while respecting them. In the compost pile, conceptual tools, and real-life problems intra-act, co-evolving. This interaction is what is dialogical.

We propose, alongside others, that compost forms a methodology and praxis for the generation of new and reformulated knowledge. A compost methodology is grown from two key understandings: that care is needed in selecting what matters are added to the mixture, and that time is needed to permit porousness between these matters, to form a mesh of things. This first understanding stands against efforts for universalist solutions. It recognises that we face global problems, but also notes that these must be countered by plural means dependent on specificity to the locale; it favours the translocal over the universal.

Composting requires care, both in metaphor and in material practice. In their 2018 provocation Hamilton and Neimanis call for diligence in the practice of choosing, turning, and distribution of its constituents. The stories we grow from our compost pile are nourished by all the substrates. It is, therefore, crucial to acknowledge and tend to each, encouraging the permeability of the mix while recognising that each ingredient is separate and important, and each will have a significant bearing on the direction and health of what comes from it. The different power relations that are at play in the politics of citation for example require scrutiny, as much in the knowledge systems they reproduce through their circularity as in what becomes obfuscated in its non-naming.⁶ Scholarly work creates knowledge myths and knowledge systems that have real effects. We must always be mindful to interrogate what stories we may have missed.

The second understanding is a recognition that care is labour, and that labour takes time. Our compost methodology is not prescriptive; it neither offers applied ethics nor a homogenous solution to the numerous problems of our time. It offers ingredients that may be slowly recombined in ways that cultivate new narratives, understandings, and even resolutions. In the words of Stengers (2018: 81–82):

It is here that the word ‘slow’, as used in the slow movements, is adequate. Speed demands and creates an insensitivity to everything that might slow things down: the frictions, the rubbing, the hesitations that make us feel we are not alone in the world. Slowing down means becoming capable of learning again, becoming acquainted

6

See again here indigenous knowledges. According to Hamilton and Neimanis this non-naming is often unintentional, a result of systemic mechanisms rather than some grand conspiracy. It nevertheless has implications not just for the status of indigenous scholars but also for more robust alliances to be formed.

with things again, reweaving the bounds of interdependency.

To know which matters to add, and which to take from the things produced, takes time and openness to change. These pages have taken many shapes over the past year, as have the authors who wrote them. The recognition of this is essential to the compost methodology. In taking diverse matters and giving time and effort to their meshing, we change ourselves and others with the generation of new, plural knowledges. This is the hope of the compost.

Care is essential where stories are told and retold.

Composting with care should never be extractivist; a cherry-picking of interrelated concepts from different cosmologies for the sake of some forced kinship. Doing so not only changes the original intent but can obscure vital intersections of thought within and through other influences, resulting in tokenistic, or even fetishist devaluation. Hamilton and Neimanis (2018) illustrate this tendency with reference to the obfuscation of feminisms as explicit in the development of the environmental humanities, but it is equally valid across all attempts at transdisciplinary and composted knowledge-making.

The Cyclops and the Mantis Shrimp

The Fable of the Cyclops and the Mantis Shrimp is a narrative we have developed to explore the generative frictions possible between differing kin. On the one hand, we have the cyclops, the embodiment of a singular vision that “produces worse illusions than double visions” (Haraway, 1991a: 154). On the other hand, we listen to the mantis shrimp, a fluid, changing being that subverts the ocular-centric vision of the cyclops. Between these two characters, a dialectic is played out in which neither cancels the other, nor are their worldviews made frictionless, but rather the friction is maintained and cared for and open to change. Friction is the site of epistemic diversity. Their interactions are included in the coming pages.

The important question for the *Fable of the Cyclops and the Mantis Shrimp* is what is at stake and for whom, including us as storytellers, the audience, and those absent from the telling who are in one way or another implicated in the story (for example, the more-than-human). Telling this story is a performative act of resistance against silence(s). Making things “actable” makes them vivid, valuable, and knowable. When we acknowledge the agency of the more-than-human, we can more easily understand their dynamic and significant roles in our understandings and interactions. When we challenge traditional views of animal or other entities’ behaviour and intelligence, we enhance our appreciation of their complexity and value. For example, by observing and recounting a pig’s social abilities such as play and use of tools and their interactions with the environment and other species, we can

understand them as active, attentive, smart, and lively, and this can lead us to question current systems of industrial meat production and the dominant perception of pigs as mere food for human consumption. Stories that allow for the agency of microbial life in the underpinning of all ecosystems on earth help us to understand and act in symbiosis with the very systems that allow humanity to live and thrive on the planet. Presenting a river with its inherent agency to mould or destroy human-habitable landscapes allows us to rethink and reimagine our responses to these forces.

Composting then, is a praxis performed when we think and act, like the mantis shrimp, through the many-coloured lenses of perspectivism. Perspectivism is when we see objects appearing in diverse ways depending on our position as observers. In this regard, categories and concepts can vary depending on the frame of reference. For example, humanism, as represented in Da Vinci’s Vitruvian Man, situates human cognitive agency at the centre of everything. In contrast, for Heraclitus “everything flows”; perspectives become dynamic rather than static (Kaipainen and Hautamäki, 2015). A perspective is not only a spatial viewpoint but also an ecological apperception. What mediates a perspective is the immersion and movement of an organism within an environment.

Viveiros de Castro’s conceptualisation of Amerindian perspectivism (2014) argues for the maintenance of plural perspectives. In this view every entity, including humans, animals, plants, objects, and the dead, carries personhood, and therefore each one has a voice. Amerindian anthropomorphism differs from Western anthropocentrism in that for the former, animality is the general condition from which everyone descends, while the latter presupposes human superiority. When it comes to perspectivism, we are in a scenario in which any linearity is transposed to a context of dialogism.

This paper translates our ecological thinking, understood as the profound appreciation of the interconnectedness of all elements in an ecosystem, to research, and to the academic essay. Through this composting mindset we plead for the incorporation of other epistemic vocabularies to a logos-constrained repertoire. Through composting different visual, textual, and performative registers we knot an intricate web of perspectives rather than thinking as isolated individuals. This thought connects with a nomadic view of the world.

A nomadic ontology as developed by Rosi Braidotti (2014), entails relentless movement and relational spaces in which the body acts as a point of overlapping between the material and the social, the affects, the imaginary and the symbolical (Bakhtin, 1981: 25). This approach aims to provide adequate representations so that the production of knowledge is socially relevant and

demands other epistemologies. For Braidotti (2014), the nomadic subject is constituted in a human and more-than-human network of relationships that speak of their radically immanent condition. It is the Spinozan ontological monism (2016) in which we are one with nature, and for which life is a continuum, a becoming of the material.⁷ Life is a desire that aspires to express itself and consequently, to produce entropic energy.

If we refer to life as a continuum, this opens the possibility of becoming “the other” through adopting its perspective (way of seeing), not in the negative sense of alterity but in the sense of opening oneself up to “take-in” (to become), and to “take-it-on” (to care), and this has political and ethical consequences. Recent scientific developments (Despret, 2012) have revealed that neither thinking nor consciousness is exclusive to humans. To compost is to think with a nomadic body: becoming outside the brain, disrupting cartesian mind–body and human–nature splits, refusing self-containment, being present and territorially bound, materially in place and transversally in motion.

This argument revolves around the idea of embracing life as an interconnected and continuous process. By viewing life as a continuum, we suggest that there is a shared materiality that ties all living beings together, transcending individual identities and differences. The notion of becoming the other in this context does not imply separation or distinction. Instead, it conveys a positive and transformative stance towards the other. By adopting the perspective of another being, one can engage in a process of empathetic understanding and connection. In the act of taking-on the other’s perspective we open the possibility of a deeper engagement with their experiences and concerns. The key idea of “taking-in” implies the affirmative act of understanding and internalising the other’s perspective, not just as an intellectual exercise but as a heartfelt endeavour to grasp their lived reality. This understanding then leads to “taking-it-on”, which involves a sense of care, responsibility, and commitment towards the others’ experiences, struggles, and well-being.

From a political and ethical standpoint, we highlight the transformative potential of this proposal. By embracing the other in this way, individuals can develop a more inclusive and compassionate outlook that extends beyond their immediate circles. This has broader implications for social and environmental justice as it advocates for a shift from an anthropocentric perspective to a more communal and interconnected worldview, prompting individuals to engage with the world in ways that acknowledge the shared human and more-than-human experience. In other words: The planet is a big but finite bowl, all living beings

are hungry, and we have only one spoon. “One dish, One Spoon” refers to a 1142 treaty between the First Nations of the Great Lakes in Canada, by which the different nations agreed to share the hunting territory (the bowl) and limit the resources they took from the land to leave some for the others (the spoon) (Mann and Fields, 1997). Other emblematic examples of “taking-in” (empathy) and “take-it-on” (care) are Amerindian perspectivism,⁸ the *Sumak Kawsay*⁹ of the Andes in America, and, in the Western world, early ecological thinking such as Aldo Leopold’s “Thinking Like a Mountain” essay.¹⁰

The Fable of the Cyclops and the Mantis Shrimp, the text of which is reproduced below, works symbiotically through theory, fiction, and audiovisual performance to assert that any narration, any fact or truth, is a condition of possibility. People and communities require constant reassembling (Latour, 2005), and stories do too. What is reassembled is always a new version of what it was. Sometimes re-assemblages go unnoticed, but with others, like the compost pile, changes are all too apparent.

8 Amerindian Perspectivism as defined by Viveiros de Castro challenges dualistic conceptions of human and non-human, of nature and culture. In this indigenous Amazonian cosmology, different entities possess their own subjectivity and therefore their own ways of being in the world. This perspective complicates the notion of hierarchy and domination over entities other than human and fosters a sense of care, since all life forms are interconnected. For more see Viveiros de Castro (2014).

9 *Sumak Kawsay* is the Indigenous recognition of total symbiosis between biotic and metabiotic entities in an ecosystem. This ecocentric cosmology (as opposed to an anthropocentric one) raises a holistic vision of development in coexistence with ecosystems as the central axis of harmony with life and the activities of human populations in different territories. Quechua philosopher Javier Lajo makes a distinction between *Sumak Kawsay* (*Buen Vivir*) and the Western conception of Living Well (Aristotle) that privileges “thinking” above “feeling”, conditioning science and technology to the principle of reason or the “logos”, which causes the separation and domination of the subject over the object and of man over nature. Lajo explains that in contrast, *Sumak Kawsay* is about humans’ commitments and responsibility towards the planet, without hierarchies of domination, encompassing epistemic diversity (thinking-well) and care (wanting-well and doing-well). For more see Lajo (2010).

10 In the seminal essay “Thinking Like a Mountain”, Aldo Leopold reflects upon the importance of having a complete appreciation for the profound interconnectedness of the elements in an ecosystem. By thinking like a mountain, we allow ourselves to knot an intricate web of perspectives as opposed to thinking as isolated individuals in an anthro/logo-centric model. For more see Leopold (1987).

7 Spinoza’s argument for “substance monism” is stated in Ethics Part 1, Proposition 14. Spinoza argues for a single substance for everything.

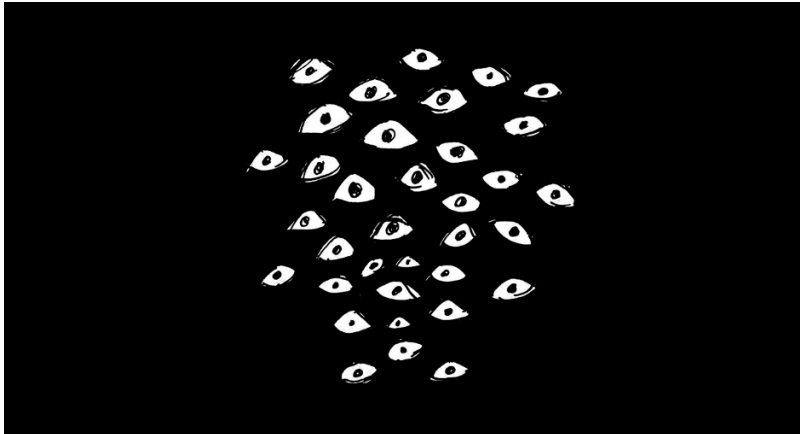


Figure 10.3: the many-eyed
Ester Toribio-Roura (2022)

The Fable of the Cyclops and the Mantis Shrimp

My Name is Cyclops. The date is the 19th of January 2078. The planet has been thrown into chaos. Climate has broken down; global temperatures have risen by 4 degrees, and alternating floods and severe droughts threaten life as we know it.

My Name is Mantis Shrimp. The date is the 19th of January 2023. The planet has been thrown into chaos. Climate is breaking down; global temperatures have risen by 1.2 degrees, and alternating floods and severe droughts threaten life as we know it.

Act I – Home-care

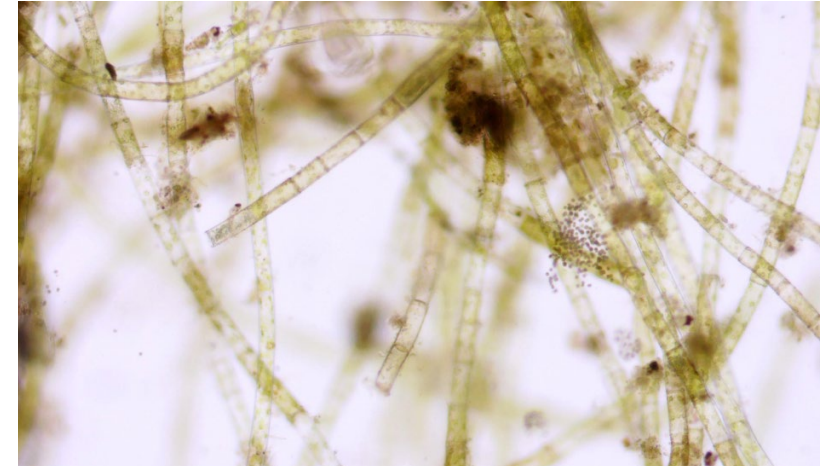


Figure 10.4: Several species of blue-green algae under 100x magnification, from a sample taken at Lough Melvin Eco Park, Leitrim, Ireland in June 2023. Two dogs died from exposure to algal toxins during the bloom. Toxic algae are an indicator of poor water quality.
Image Sinéad McDonald (2023)

Mantis Shrimp: Let me tell you a story of the mother, cyclops. Once upon a time there was a woman who was exhausted and in pain. She didn't feel that she could go on. In her home, everyone cared or was cared for, and they must be together even if it bothered them. Home is the first territory of affection, from cell to body, from ecosystem to the planet. Hogar in Spanish is hearth, the equivalent of the place where the fire is contained and cared for. Fire is the technology needed to blend the broth. Broth is the result of sympathetic resonance. Care is home economy. Where did all go wrong for her?

Cyclops: It all began with the thought of controlling the fire, Mantis Shrimp. With fire began the possibility of cooking food and therefore making edible what would have been inconceivable to eat before. This proves crucial in times of scarcity.

M: But how, from such an important step forward, did we end up in this deplorable situation?

C: Who knows Mantis Shrimp. It could be hierarchies, wealth, property, land ownership. When hunter-gatherers began settling in place these things began to emerge. By dominating animals and plants we also submitted ourselves

and the land to the tyranny of agriculture. Even though we cannot dismiss the immense positive effects of this practice in ensuring the growth of humanity it also brought about a great deal of pain, disease, and anxiety.

M: But are these not cognitive causes Cyclops? The hierarchical structure of material agrarian civilisation shaped a particular worldview, and we began to think in patterns that mediate between people and people, between people and the gods, and to dictate over the natural world.

C: Archaeology shows us that in pre-agrarian societies women were often buried with the same honours as men and their bones showed signs of a richer diet, stronger health, and far longer lives than those of their bronze age descendants. Agriculture brought ownership and property, and with those may have come physical and military power, conquest and conflict.

M: Yes cyclops, and women became perpetual mothers, confined to the space of the house. There are many histories, and the mother of my story suffered many violences in the name of care: violences of delivery, violences of servility, violences of sex, of poverty, of grief, and of hunger. Women's common denominator is violence.

C: So, does care always have to be a gendered issue?

Care as political and ethical praxis permits relation building and collaborative becoming across ontological distinctions without the erasure of difference. This, in turn, forms community and a sense of home that destabilises the heteronormative notion of family, proposing instead the making of kin. It makes porous the Euromodern division between private and public that Rita Segato (2002) and Michael Foucault (1978: 110) alike have demonstrated to be rooted in patriarchal values that have erased ethical community. Segato shows that the reduction of kin to heteronormative nuclear family units, and the removal of these units from each other through the implementation of the private sphere, erased a mutual upholding of ethics as praxis, witnessed in the community. For Segato, the individualistic critique of deontological ethics is resolved through kin making beyond ontological boundaries.

Due to its disavowal of genetic lineage as the cornerstone in a hierarchy of caring, making kin as constructing homes and community disrupts the nature-as-other epistemology common to both Classical and Romantic Euromodern worldviews. As Segato (2002: 178) demonstrates, this is *not* to suggest that indigenous

knowledges ought to be held as Utopic alternatives, but that we are in deep need of what she terms 'historical pluralism'. Hegemonic historical narratives rely on the homogenisation of history and the epistemologies included within it, resulting in an entropic decay of epistemic diversity that is the result of colonial hegemony. The inclusion of plural epistemes constitutes negentropic labour, an energy-consuming process for the re-organisation of planetary thinking.

Yves Citton also demonstrates the fallibility of utilising geopolitical boundaries as a basis for historical-epistemological categorisation; the construction of Euromodernity vs the Indigenous Other relies on homogenisations only possible if we accept hegemonic Euro-Modernity. As Citton (2022a) demonstrates in his reading of *The Manuscript Found in Zaragoza*, Euromodernity is better defined by plural potentialities that were collapsed into a singular epistemology. This paper recommends that to counter this singular narrative, we must cultivate epistemic diversity.

Epistemic diversity is thus as essential to what Gregory Bateson (1972) terms, 'an ecology of mind', as biodiversity is to ecosystems. As Citton (2022a) states, the very notion of Euromodernity as a singular homogenising force denies its historical sociocultural plurality of territories. The question that arises is how to grow our present ecologies in pluralistic manners and how to maintain the frictions within them, so that they continue to be negentropic, epistemically diverse sites.

Act II – Progress-care



Figure 10.5: Still from *Streete*
Sinéad McDonald (2013)

M: Let me tell you a story Cyclops, about a tree, a huge tree that was the age of the world. Once upon a time this tree watched a woodcutter approach. He asked the woodcutter his intentions. The woodcutter, in a haughty tone, responded that he was replying merely out of civility but that since the beginning of the flood, construction had reached a peak and the tree's body was needed immediately. The cutter was there to ensure his family staked a claim and got the best price. His wife also had many children, and they needed fuel for the hearth to burn the fire for their broth.

C: Did the tree consent to this?

M: Of course not. This is not how things were done in the tree's world. The tree gave freely of his body to all around, but with sympathetic resonance. The woodcutter did not know this; his home was the most civilised place on the planet.

C: So, what happened to the tree?

M: The man cut the tree, and both fell dead.

The difficulty in alleviating ourselves-as-humans of the burden of control and mastery over an invented Nature resides in our maintenance of epistemological and ontological hierarchies that extend to knowledge relations between the senses. In their seminal work on queer theory, Eve Sedgwick (2003) proposes an investigation as to the limits of the human, building on Foucault and Deleuze. Sedgwick argues the need to begin by defining the self as *porous* but distinct. That is to say, the human self is a composite being constructed by a multitude of biotic, abiotic and metabiotic entities in metabolic stasis; however, it is also a distinct entity. The human body, inclusive of what we commonly term mind, can be considered as an open system. From this position, we co-form by reaching out to those 'alongside' us (Sedgwick, 2003: 6). This positioning facilitates an understanding of symbiosis that does not erase ontological distinctions between the open systems; it permits this process as performed between *porous*, co-forming beings.

The metabiotic relationality between these beings is what must be defined as ethical and political praxis, guided by a concept of care to produce communities. These communities ought to be viewed as encompassing plural beings and valuing plural sensory apparatus. As Donna Haraway states, the Anthropocene is defined in part by its ocular-centrism (1991b: 189). If to care is to become alongside each other, this relationality must also incorporate different sensory apparatus such as sound, inviting the provocation of the phono-cene. This triptych proposes the importance of a

multi-sensory, slow relationality with pluralistic open systems as a means of becoming.

Act III: Community-care



Figure 10.6: Still from *Streete*
Sinéad McDonald (2013)

M: Let me tell you a story of the corpse, cyclops. Once upon a time there was a dead man. His body was placed in a bog by his people, as an act of sacrifice, and as a punishment for the sin of wrongdoing of the land. As the bog did not have bacteria to compost his corpse, it would never turn in the cycle of death and rebirth. The dead man had been excluded from life forever.

The different figurations of compost as an articulation of how life forms complex, more-than-human entanglements and ecologies is one that is emerging in many academic fields to critique the concept of the individual.¹¹ These pluralistic discourses allow for a move toward a more integrated, embodied, post-anthropocentric understanding of our place within consortia of techno-scientific-biological assemblages. This critique is echoed in many of our sister academies: in our growing understanding of how life is created and sustained by multispecies entanglements and complex alliances for instance.

These range from simple, singled-celled eukaryotes to our own gut ecosystems, to vast mycorrhizal networks between trees and fungi. The figuration of compost moves beyond the biotic, to

complex social, economic, and political interactions. We exist in rich, symbiotic ecologies of living-with each other.

Composting requires care and attention however, and an understanding that we are always already within the pile. Our perspective is partial – a detail in a many-eyed system of different ontologies and epistemologies that are never separate from our ethical capacities. Karen Barad (2007: 185) uses the portmanteau Ethico-onto-epistemology.

Epilogue: Every Paradise Has its Snake



Figure 10.7: Still from *La Vida, La Carne y La Tierra*, Lucía Álvarez “*La Piñona*” (2014) available at <https://youtu.be/QYE16MlRo-E>

Image courtesy of the artist.

Ethico-onto-epistemology emphasises the need to consider situated approaches to issues, paying meticulous attention to the context and its political eventualities. The principal argument of a theory of care is that the way we understand agency in a relational context of entanglement has implications for how we understand ethics and responsibility/accountability. The question is in what ways can entangled agency translate into entangled responsibility?

Responsibility stems from embodied entanglements with others (in situated encounters), rather than surfacing from assumptions. Care is devoid of rules and regulations, as Puig de la Bellacasa (2012) puts it, care is a non-normative obligation. While Puig de la Bellacasa (2017) frames care as a situated and committed (skin-in-the-game) or as a ‘form of speculation that simultaneously works to sustain the world we live in and opens it up to new constituencies and political stakes’ (Samanani, 2019), Bernard Stiegler (2013) frames care within pharmacology, as a cure and a poison, taking care of the forms of attention

(ingredients) through which constructive modes of individual and collective existence may be sustained. In Stiegler’s vision of care, an economy of contribution takes centre stage, leading to a de-proletarianisation of sensibility achieved through civic engagement and contributory work, thus fostering civic care within society. He asks the question: what type of pharmacology do we want to practice?

At the same time, the insights provided by previously mentioned new materialism feminist thinkers emphasise the necessity of envisioning alternative analyses and narratives that acknowledge the intertwinements from which human existence emerges. All these approaches suggest a post-anthropocentric ethics that recognises the permeability of our human bodies, fostering a sense of responsibility towards what is more-than-human that affect us and is affected by us. In this approach then, the praxis of care requires critical and creative thinking and the consciousness of accountability, to enable the generation of new values and transformative changes through the establishment of novel connections.

Theorisations of embodied modes of care and affect can inadvertently foster hierarchies of care themselves, undermining the point they are trying to make. That is why, in the framework of care, an ethics of exclusion is as important as an ethics of inclusivity, as Eva Haifa Giraud argues (2019). The recognition that no form of inclusion is innocent is not enough to account for the exclusions inherent to any form of relation. Exclusions should not be seen as negative *per se* because they can create spaces for alternative ways of doing things. The entanglement of humans with more-than-humans is not necessarily less anthropocentric; entanglement can also fall prey to instrumentalization. For example, artist Sonja Baümel, in her endeavour to get in touch with our non-human co-habitants and honouring the experience of otherness as inherent to the process of self-understanding, creates the work *Fifty Percent Human* in which she exhibits a series of membranes filled with microbes. In her own words:

The project’s installation presents a damp environment, filled thick with enlarged transparent and liquid membrane-bound microbial cells, collectively swimming, lying or floating – an intersecting multi-species landscape to explore. Is it possible that we may sense a language to encounter with non-verbal organisms through touch? To experience and thus better understand inter-organismic communication means taking care of the microcosm and thus ultimately means taking care of ourselves.

(Baümel, 2022)

The recognition of our entangled nature does not necessarily set the foundation for fairer ethics and politics. We

must assume responsibility for exclusion and acknowledge that caring for one is often at the expense of others. There are many scenarios in which care is a non-innocent practice and this complicates current claims of its ethical and epistemological value: caring for human's health can often exclude lab animals for instance, and caring for wildlife may exclude humans. So, ethically, disentanglement can be as crucial as entanglement. If the cyclops' gaze is an open act of mastery over the other, care can constitute a veiled power, keeping others in a normalised, permanent state of domination. Sight and sequestration also exist symbiotically. This critical aspect is what is missing from many current conceptions of posthumanism.

This paper has demonstrated the need for contemporary discourse to place a greater emphasis on the cultivation of epistemic diversity, as opposed to productivity. Failure to do so risks the perpetuation of the epistemicide that characterised colonialist and imperialist actions. To facilitate this increase in epistemic diversity, we must acknowledge the time that care takes, both at interpersonal levels and at institutional levels. This implies a radical shift from the way we calculate time to produce and care for knowledge. Our recommendation is that epistemic diversity must be cultivated through cared-for time at multiple scales as a form of praxis.

Finally, we need to acknowledge the possibility and benefit of 'letting be', as stated by Anat Pick (2016: 99): 'Recognising the structural ties that exist between acts of violence and acts of looking'. This allows for the possibility of the human and the more-than-human not wanting to be looked at, or that we may 'look' differently therefore, acquiring a new viewpoint. For example, recognising that unless we have been invited into more-than-human lives and worldings, a multi-species nondualism is still very much a human-centred affair. So, if the human is de-centred, then what is centred?

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Part 3 Artwork



Encoding Mood

Abbandonati for Solo Marimba

Brian Keegan

Abbandonati, the music composition for solo marimba, has its origins in a work by the Italian painter Luigi Nono. His realist depiction of a street scene, also titled *Abbandonati*, depicts a touchingly simple example of care being offered to society's most vulnerable when they are at their lowest. Nono's painting depicts a scene from early 20th century Venice where a young woman cradles a child in a doorway on a street. The two subjects of the painting are anonymous, their faces are obscured and they lie in the shadow of the faded grandeur of a building's entrance. The image expresses the persistence of vulnerability and of the human response to it.



Figure 11.1: Luigi Nono, *Abbandonati*, 1903

In *Abbandonati* for marimba, a corresponding mood of persistence is created through the use of a musical drone. Typically, a drone is harmonically rich and is the characteristic quality of instruments such as the didgeridoo and the uilleann pipes. The composition makes use of the drone sound that is to be found in the dark-sounding, lowest bars of the five-octave marimba which ranges from the note C2 to the note C7. When struck, these wooden bars sound for only a brief time. However, to prevent the normal sound decay of the instrument, in *Abbandonati*, a tremolo or mandolin mallet technique is used. As a result, the short-lived, natural resonances of the bars are reinforced through rapid repetitive striking and a droning din becomes the predominant feature of the piece. In percussion music, these tremolo or mandolin rolls on the marimba or xylophone are typically associated with festive, communal music. In *Abbandonati*, the mandolin effect is used ironically in response to a poignant scene that is certainly not festive.

The music moves through the subtle voices of chords and their inversions, tiptoeing around the figures in the painting, capturing the emotional mood of the intimate, almost claustrophobic setting. The two subjects of the painting are mirrored in the composition, through the use of left and right hand mallet rolls, so that at any one time, there are two musical entities combining to create a single texture, a droning musical veil.

Abbandonati creates a sound world that carries an emotional depth initially captured and transmitted in Nono's painting. The music composition is therefore a re-encoding of the mood in the painting and a re-transmission of it via the medium of music.

An audio recording of the piece can be accessed here: <https://www.evolvingsounds.com/>.

Oil, Soup and the Work of Art in the Anthropocene

Tatiana Votkal
Sergei Shevchenko

Tatiana Votkal, independent artist
Sergei Shevchenko, guest researcher
Institute for Philosophy and Social Theory, Belgrade, Serbia

Living in the Anthropocene means experiencing ongoing loss. The work of art can preserve and reproduce what is lost, but art can work more. Oil prices fuel the growth of the art market, while carbon emissions inflame the rate of loss. There are more and more things to remember, and works of art, as monuments to loss, must be produced at an increasingly rapid pace. It is a vicious circle where nature, art, and the artist become more fragile and are increasingly deprived of agency.

While the price determines the authenticity of a work of art and establishes the museum practices of its reception, the object of art is deprived of agency, even agency inherited from its creator. But if this work of art is involved in a situation that expresses human and other-than-human fragility and loss, it turns back to its agency. This agency involves restoring an aura to the work of art, but an aura without a metaphysical reliance on authenticity, such as the aura of tomato soup.

Endemic forests located in the steppes take care of Pleistocene lakes, providing shelter for migrating birds. However this chain of other-than-human care appears to be fragile in the face of climate change. In September 2022, a fire destroyed 43,000 hectares of the relict Amankaragai pine forest in northern Kazakhstan. Since the forest stands like an island in the middle of the steppes, its recovery is highly uncertain. The forests burn before they have time to protect the next generation of birds and before they can become the birthplace of a new works of art.

The artist does not manage to depict the forest before it is destroyed by climate change, interests of capital, and geopolitical constraints. However, when painted from memory, these forests

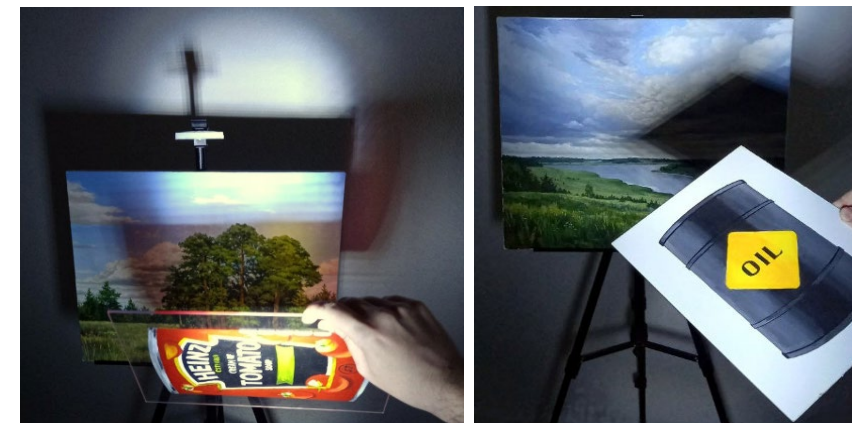
have a chance to continue being agents, bearing witness to the fragility of life, rivers, lakes, trees, migratory birds, and humans.

Placed in the aura of oil, the forests and their images are obscured by abstractions of price, damage appraisal, or experience economy. Through the aura of the soup, we discern the experience of the artist as well as a caring agency of depicted nature (Just Stop Oil, 2022).

The work of art again has an aura (Benjamin, 1935), an aura of tomato soup. This flavour reveals the Anthropocene as a time of mutual fragility: the fragility of our aesthetic experience as an experience of relationship with human and non-human others.

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Slow Down (You Move Too Fast) Utilising Interactive, Body-sensing Technologies to Create Performances that Enact Practices of Ecological Care

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Project Description

“Slow Down (You Move Too Fast)” is a walking performance performed by a single participant, as they listen to an mp3 track. It explores the question of how we can “sculpt” “neganthropoc knowledge” (Steigler, 2018) – experiential knowledge that resists the pull of the anthropocene by introducing new modes of thought and practice. In “Slow Down (You Move Too Fast)”, the artist focuses on how this neganthropic knowledge can be “sculpted” within the body of the participant through the physical actions that they undertake, which open them up to a sense of their interconnection with the natural world around them.

In the piece, the audience listens to an mp3 track as they walk for approximately 60 minutes. Through the track they are invited to slow their walking pace down in gradual stages, starting from an average walking speed and slowing down to a “slow motion” movement. At each stage they “tap into” a temporal rhythm in nature that corresponds to the pace at which they are walking. This natural temporal rhythm is evoked by a soundscape

that they hear as they move. For example, as the audience member slows down to the slowest pace, where they are moving their limbs practically in slow motion, they hear a soundscape that evokes the rhythm of stones as they slowly crack, shift, and disintegrate over centuries.

The artist draws on the work of ecopsychologist Laura Sewall, who argues that humans need to develop an “ecological self” that fosters wonder and empathy with the human and non-human world, and “translates into a radical awareness of interdependence – a recognition that to tread heavily on the Earth is to tread heavily upon one’s self” (Sewall, 1995, p. 203). To allow people to develop their “ecological self”, Sewall suggests that we need to practice “skills of ecological perception” that allow us to perceive the world, and our relationship with it, in new ways. In “Slow Down (You Move Too Fast)” the artist links the emphasis that Sewall puts on practising these skills with the focus in game design on the mechanics of a game (or what the game asks the player to do). Thus, the mechanics of “Slow Down (You Move Too Fast)” ask the participant to walk slower and slower, and this allows the participant to practice the skill of paying attention to their own body, to the environment around them, and to the temporal natural rhythm that they are a part of.

The mp3 track of “Slow Down (You Move Too Fast)” can be accessed at the link below, and readers are invited to use the track to enact the performance for themselves. <https://drive.google.com/file/d/1dEw-7ab-koWlXaLXPgrF0xWDyfevOGuZ/view?usp=sharing>

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Artist Bio

Máiréad Ní Chróinín is an artist and researcher, based in Galway. In her digital performance practice Máiréad works with mobile and sensory technologies to create immersive and interactive works that place the audience member at the centre of the experience. Most recently, she created a sound-walk commissioned by The Lighthouse Project and Cúirt International Festival of Literature, and co-created “Mona”, a work-in-progress sound-walk, with James Riordan, commissioned by Galway Theatre Festival.

She is currently focused on exploring the ways in which digital technologies can be used to open participants up to new ecological perceptions and practices.

Máiréad is Druid Lecturer at the Drama and Theatre Studies Department of University of Galway, where she lectures on ensemble theatre, producing, arts management and digital performance.



The ECT Lab+ brings together researchers who are interested in the impacts of technology on society, these impacts can be both positive and negative; this we can term a pharmacology. Following on from the recent material turn in philosophy of technology, the ECT Lab+ conceives of technology as part and parcel of the process and practices of becoming human in the world. Hence the title of the ECT Lab+ reflects the positioning of technology within a culture, acknowledging that technology is not built in a vacuum but in and for society. The second aspect of the cultural environment of technology stems from the philosophical positioning of technics, technē and technology within their cultural locality or milieu.