PHILOSOPHY OF HUMAN - TECHNOLOGY RELATIONS
CONFERENCE 2022
AALBORG UNIVERSITY CPH

05 - 07 / JULY 2022
AALBORG UNIVERSITY COPENHAGEN
HOSTED BY THE TECHNICAL FACULTY OF IT AND DESIGN

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Book of Abstracts
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Preface

Welcome to the 3rd Philosophy of Human-Technology Relations Conference!

It is with great pleasure that we share this rich collection of abstracts for the conference dedicated to the theme of ‘Designing the Techno-Anthropocene’.

The PHTR 2022 conference challenges conceptualizations on what it means to be human in a world marked by the Anthropocene where technology finds its natural place as co-determinant and co-constituent for how this world is construed and (re)acts – namely in what we propose to term the ‘Techno-Anthropocene’.

The conference explores the notion of the ‘techno-Anthropocene’ in light of precisely human-technology relations. Ranging from the fields of ethics of technology over digital worlds to design ethics, the conference has 79 papers including both individual papers and a number of panels. Next to this we host three international keynotes engaging with the techno-Anthropocene and its challenges.

So it is with no small pride that we invite you to explore this rich book of abstracts and the many bold and innovative explorations of a urgent matter of concern.

Enjoy the reading!

Lars Botin and Ole B. Jensen

Conference Organizers
B Conference Theme

There is a quest for dealing with how we will approach and possibly solve emergent and incumbent challenges and problems of current society and world. These challenges and problems are ubiquitous and emerge in myriads of fields and domains. What is common is that technology is to be considered as both the problem and the solution, and what lies in between. The route until now in the Anthropocene is defined by ‘making’ and constructing.

Technologies and infrastructures are ‘made’, constructed and designed, and hence the habitats of our current everyday lives across the globe.

The ‘setting aside for’ dimension of technologies is about design. Spaces, systems, artefacts are designed with more or less clear intentions and awareness to their repercussions. In this PHTR conference, we want to put emphasis on the ‘making’ and designing of the contemporary in order to shed light on the conditions that govern our contemporary lives, and shapes our futures. The world needs design as both an analytical and reflective tool, and design as activism and interventionism. This 3rd Philosophy of Human-Technology Relations Conference open for both approaches, and possible hybrids in between.

Contemporary conceptualizations on what it means to be human in a world focus on the Anthropocene, and we want to open for how this is yet another sign of human hubris, where we as humanity consider ourselves as masters of both nature and technology. We are calling for a serious and hybrid approach where technology finds its natural place as co-determent and co-constituent for how this world is construed and (re)acts – namely the Techno-Anthropocene. Technology is determent and constituent part of the equation and if we blind ourselves on this unequivocal fact then we are doomed.

We must move on many paths at one and the same time, and the frame of mobility is crucial to understand and intervene. Mobility is just not to move from one place to another in physical space and time, but also to alter, transform and revolutionize mental, cognitive, and behavioral patterns, which are all technologically mediated. The world is shaped and troubled by multiple movements. Refugees, migrations, tourists, commuters – all human bodies circulating in systems and technologically mediated landscapes defined by the techno-anthropocene. However, ‘mobile matter’ and mobile materials are adding to this complexity. Regardless if we are talking goods, and vehicles or flows of
pollutants, the multiple material Mobilities are playing their part in staging the techno-anthropocene. Ecologies of moving matter, animals, and atmospheres takes contemporary techno-anthropocene Mobilities beyond simple human and non-human, material and immaterial distinctions. The ‘making’ and designing of these mobility conditions, as well as their challenge via new interventionist, critical-creative proposals is what is at stake with this conference’s focus on the techno-anthropocene.

We ask the question: How can we think the Techno-Anthropocene and at the same time indicate possible strategies and programs for moving? In other words how can we design the Techno-Anthropocene?
# Conference program

## OVERALL PROGRAMME

**Conference Venue:** AAU Copenhagen, A.C. Meyers Vænge 15, 2450 Copenhagen. Opening, keynotes and closing in room no. 1.008

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<td>Departure from water front outside AAU Copenhagen, A.C. Meyers Vænge 15, and arrival near the conference dinner venue</td>
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| 14:00-15:30 Digital Worlds in Human-Technology Relations  
Session chair: M. Diamantopoulou | 14:00-15:30 Values, Morality and Ethics of Human-Technology Relations  
Session chair: M. Nagenborg | 14:00-15:30 Design and Engineering of Human-Technology Relations  
Session chair: M. Boumeester |
| Diamantopoulou: Social media: Technologies of Voluntary Servitude or Assemblages of Power?  
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Holst Kristiansen and Børn: Smite | Boumeester: Learning by making: a recursive bond between ontology and experiment  
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Wernaart, Kamp, Nader, van Hest, Sweep and Vaznyte: The moral data city hunt: How to morally map a city by combining empirical and linguistic data analysis?  
Kousoulas: Governing Sense: Notes on Architectural Information |
| 16:00-17:30 Digital Worlds in Human-Technology Relations  
Session chair: D. Broegaard Kristensen  
Brogård Kristensen and Kuruogl: Algorithmic arrangements towards care  
Matei: The technological mediation of historical empathy and the sociotechnical politics of collective memory  
Checkets: Psychoanalyzing the Gynoid: Robot Fetishism through Freud and Laca | 16:00-17:30 Values, Morality and Ethics of Human-Technology Relations  
Session chair: C. Aydin  
Berger: Levinas, Technology and Mediation  
Aydin: Technology, Desire and Universality  
Simos: An ethics for cyborgs  
Soltanadeh and Klonowska: Agents as impactful entities: redesigning a technologically disrupted concept | 16:00-17:30 Design and Engineering of Human-Technology Relations  
Session chair: L.B. Henriksen  
Weiss: In the end, they ate the dog: on technogenesis and the Anthropocene  
Reid: Multum in parvo: On Miniatures, Technology, and Designing with Scale  
Wesugi: Design Approach for Considering Unpredictable Uses of Technologies  
Henriksen: Worlds apart, together: The case of science in engineering  
Jacobs, Frank and Hermann: The disruptive potential of the artificial womb |
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<td><strong>14:30-16:00</strong> Sustainable Human-Technology Relations: Health and Environment</td>
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<td><strong>16:30-18:00</strong> Design Ethics: An Invitation</td>
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Thursday 7 July

Room number 1.001
10:30-12:00 Values, Morality and Ethics of Human-Technology Relations
Session chair: T. Raub
Raub, van Rompay and Verbeek: Impact of robotisation on wellbeing needs in the professional cleaning industry
Radman: The Pursuit of Life by Means Other than Life: On Social Habits and Technological Habits
Zuber, Gogoll and Kacianka: Big data ethics, machine ethics or information ethics? Navigating the maze of applied ethics in IT
Haga: Challenges of value creation for (potential) users by new technologies

Room number 1.008
10:30-12:00 The Techno-Anthropocene. Different Perspectives
Session chair: C. Preston
Kour: A Debate on Rape in the Epoch of Techno-Anthropocene: A Journey from Actuality to Virtuality
Casani: Is the techno-Anthropocene compatible with basic individual human rights?
Cera: The Technocene (or technology as an integral epochal phenomenon)
Preston: Technology, Biology, and Anthropocene Ethics of Agency

Room number 2.1.042
10:30-12:00 Sustainable Human-Technology Relations: Health and Environment
Session chair: O. Thijis
Thijis: Rehabilitating locality in philosophy of technology: the case of sustainable technology
Tolonen: Digital Nudging and Virtue Ethics in the Face of Climate Change

13:00-14:30 Schools of Techno-Anthropology Panel
Colobrans and Serra: The origins of the Catalan School of Techno-Anthropology
Ruíz and Auatrán: Exploring the emergence of Techno-Anthropology in Mexico
de la Mora, Botín and Borsen: Exploration of the Development of Techno-Anthropology in Denmark

13:00-14:30 Digital Worlds in Human-Technology Relations
Session chair: J. Weijdom
Weijdom: Collaborative design processes in mixed-reality environments: a pragmatic analysis of two case studies using a post-phenomenological framework
Telakivi: Cognitive Extension with Artificial Intelligence
Marin and Voinea: Collective vices of inquiry on social media platforms. When technical scaffolding matters

13:00-14:30 The Techno-Anthropocene. Different Perspectives
Session chair: A. Kurz
Kurz: Staring at nothing
Martins Simonetti: Transhuman, All Too Human: the Limits of Transhumanism in Designing the Techno-Anthropocene
Ritter: Designing Neganthropocene with Walter Benjamin
Claassen: An Ubuntu Perspective on Designing the Techno-Anthropocene

15:00-16:30 The Catalan Collaboratory program and the dilemma between the direction and the management of it
Serra and Colobrans: The Catalan Collaboratory program and the dilemma between the direction and the management of it
Ruíz: Fab labs: technologies to design the pluriverse?
D Presentation of keynotes

D.1 ‘Living with deadly mobilities: how art practice takes care of ethics’ by Jen Southern

Bio

Jen Southern is an artist, senior lecturer in Fine Art, and Associate Director at the Centre for Mobilities Research at Lancaster University. With an ethos of shared authorship she collaborates with artists, technologists and members of the public to produce live installations that combine material and digital experience. For over 25 years her art practice research has engaged with mobilities and has been exhibited in Australia, Canada, Europe, Japan, Mexico, New Zealand and USA. She co-curated exhibitions at conferences Global Mobility Futures (2013) and Mobile Utopia: Past, Present, Futures (2018) and Im—mobile Lives in Turbulent Times (2021) and was recently involved with instigating an Art and Mobilities research network.
Abstract

This keynote paper uses an artwork by Dillon and Southern titled Para-Site-Seeing (2018-2019) to explore how art practice can tell multi-scalar narratives of multispecies mobilities that fold in rather than leave out the social, cultural, colonial and scientific aspects of a disease. The artwork uses a fictionalised parasite's eye view to draw together these multiple narratives and engage broad audiences in complex stories of life and death. By situating Para-Site-Seeing in the context of more-than-human art, we demonstrate the need for a more significant consideration of how different care contexts relate to the liveliness of ecosystems and the deadliness of a human parasite. Furthermore, we demonstrate that by using a mobilities perspective, art practice can propose alternative methods of storytelling that expand singular narratives to include more difficult histories in accessible forms.

D.2  ‘From Relations to Processes of Relations’ by Cathrine Hasse
Bio

Cathrine Hasse is Full Professor at Aarhus University in Denmark at the Department of Education. She heads the research group Future Technologies, Culture and Learning, engaging in research on educational technologies and global cultural learning processes. She was educated as an anthropologist, and has also studied physics education and physics and engineering research. She did her Ph.D. on “cultural learning processes” in a physics institution where she followed a group of young male and female physics students in their first year of study. This project developed into a longitudinal study where she followed the same group of students for more than six years. In her next projects, “The Cultural Dimensions of Science” and UPGEM, an EU project, financed by EU 6th framework program, she and her research groups studied cultural norms in the sciences. For four years (2011–2015) she was the coordinator of the research project Technucation on learning and technology. From 2016 to 2020 she has been heading the EU project on robotics, REELER. In her work she takes a special interest in the relations between technology, culture, and learning from a postphenomenological perspective. She is the author of Posthumanist Learning (Routledge 2020) and An anthropology of learning: On nested frictions in cultural ecologies, (Springer 2015), and an active participant in the 4S network of Science and Technology Studies with several workshops on postphenomenology and anthropology.

Abstract

Postphenomenology has, unlike other STS approaches, insisted on staying with the trouble of keeping a focus on humans, especially human bodies. This approach has led to case studies of Human-Technology relations that include how humans come to perceive the world with and through technologies (such as imaging technologies, telescopes, microscopes, cell phones, prosthesis, hearing aids, computer and internet-based media representations). Now, in the Techno-Anthropocene, we need to (re)consider what we mean when we refer to Anthropos as responsible for climate changes and other disasters. First, we can ask how humans become culturally diverse in a world of technology mediation? Postphenomenology has so far scrutinised multi-stability and diversity in human experiences. In this talk, I shall take these insights further by moving the focus from Human-Technology relations to processes of Human-Technology relations. By emphasising that bodily engagements with technologies involve cultural learning processes we open up for new understandings of humans. The human subject in Human-Technology relations ceases to be a self-directed, autonomous rational being and reveals itself as a collective body of ultra-social posthumanist learners. In the course of cultural learning processes we form potentials that are called forth in socio-material environment. New boundaries and diversities are formed that simultaneously and continuously changes the Human-Technology relation. Postphenomenology has a special role to play in pointing to how bodies are in technology as learning bodies. This focus on process in relations call forth new questions of co-shaping. Furthermore, cultural learning theory address the processes behind cultural
diversity in perception through and with technology. I shall give examples of these processes of relations from my work on robotics as well as draw on other colleague’s work dealing with imaging technologies, cell phones and prosthesis.

D.3 'The techno-terrestrial condition: human-technology relations and the anthropocene’ by Peter-Paul Verbeek

Bio

Distinguished professor of Philosophy of Technology and co-director of the DesignLab of the University of Twente. Honorary professor of Techno-Anthropology at Aalborg University, Denmark. Field of research: philosophy of human-technology relations, with a specific focus on ethics and design. Chair of the UNESCO World Commission on the Ethics of Scientific Knowledge and Technology (COMEST); vice chair of the board of the Rathenau Institute, chair of the Committee for the Freedom of Scientific Pursuit of the Royal Netherlands Academy of Sciences. Member of the supervisory board of TNO (Netherlands Organization for Applied Scientific Research); the Domain Board for Social Science and Humanities of the Dutch Research Council NWO; the Sector Plan Committee Social Sciences and Humanities of the Dutch Ministry of Education; the Netherlands National Commission for UNESCO; and the NWO Program Committee Responsible Innovation; chair of the ECP working group on Ethics and Digitalization. Peter-Paul Verbeek is Fellow of the Royal Netherlands Academy of Arts and Sciences, the Royal Holland Society of Sciences, and the Netherlands Academy for Technology and Innovation.
Abstract

Not only technology, but also the Earth conditions human existence. This inconvenient truth, which is embodied in the notion of the anthropocene and which shows from the deep ecological crisis that humankind is currently facing, has major implications for the philosophy of human-technology relations. First of all, insights from philosophy of technology urge us to understand the anthropocene as a ‘techno-anthropocene’: not only humans, but also technologies leave their imprint on this period in the history of the Earth. But secondly, the ecological crisis shows that we need to expand the existing frameworks of human-technology-world relations. The notion of the ‘world’ needs to be re-thought in its relations to the Earth, the planet, and the globe. How do technologies - from fossil fuels to geo-engineering projects - mediate our relation to the Earth, as a joint condition for human existence and human-world relations? How do technologies - from earth observations to space technologies - mediate our relations to the earth as a ‘planet’ that both conditions us and requires our care and moral engagement? And how can we account for the global dimension of technology, from an intercultural perspective on human-technology relations as a basis for a new understanding of our techno-terrestrial condition? On the basis of this analysis of human - technology - earth relations, human - technology - planet relations and human - technology - globe relations, I will sketch the outlines of a political hermeneutics of terrestrial technologies.
Presentation of abstracts

Ahrensfeld: 'Keeping up with uncertainty: the transfer of knowledge between things and humans in uncertain times'

Viola Ahrensfeld

Keywords: speculative design; artifice; uncertainty

With the invention of God(s) we tried to turn fate into certainty by determining and following laws. In the last two hundred years we have instead sought certainty in science; by explaining the origin of matter with a cascade of astronomical and biochemical events the grace of God has been replaced by the logic of growth. Narrative constructs transform uncertainties into certainties. By explaining the ‘why’ they also provide the frame of reference to evaluate the ‘what’ and the ‘how’, ultimately enabling decision-making processes governing realities of life. Today, we live in times of certain endings and yet uncertain possibilities. It is easier to imagine the end of the world due to climate change than the measures that could avert it. Meanwhile, the artificial permeates symbolic and natural systems, revealing an infinite horizon of possibilities. Familiar reference systems by means of which we evaluate logics of action are no longer sufficient in this tension to provide guidance for averting the worst, for sifting out the less worse from the possible, and for aligning our actions accordingly. New narratives are emerging that subjectively transform uncertainties. Between right-wing populism and conspiracy theories as well as technological fantasies of omnipotence many small narratives have formed and with them their own truths. Within this stream of narratives, art and design line up and negotiate the uncertain with the means of speculation. But what good can speculation in the applied arts do if we lack a valid framework for evaluating the ‘what’—right and wrong—and classifying the ‘how’—our actions and the distribution of power and interests? Speculative Design will be illuminated to elaborate its contribution with regard to the uncertainties that we can no longer transform into certainties with known narratives in the face of endless possibilities that the artificial brings with it.
E.2 Aydin: ’Technology, Desire and Universality’

Ciano Aydin

Keywords: Technology, Desire, Universality

The influence of technology on behavior is extensively studied in all kinds of contexts, both within and outside academia. In the development of new technologies, more and more attention is being paid to how behavior is and can be changed with technology and under which (political, ethical) conditions this is justified. The debate on persuasive technology is perhaps the strongest illustration of this. However, there is little attention for the influence of technology on a less visible dimension of humans, which is nevertheless of eminent importance for the way in which technology influences them, including their behaviour, namely desire. In this paper, I examine how technology influences desire. An analysis of the structure of desire will contribute to understanding how people are formed and even shaped by technology. In the analysis of desire, inspiration will be found in the thinking of the French psychoanalyst Jacques Lacan, in particular regarding the distinction he makes between the object of desire and the cause of desire (objet petit a). This analysis will make clear why the autonomy discourse is insufficient to understand how a critical relation to technology is possible. The application power of this view is briefly illustrated by the example of Tinder. In addition, it will be explored if the structure of desire elaborated is universal and what that universality entails. If culturally determined, the question is if and how that can be observed in differences in the usage of applications like Tinder.

E.3 Baibarac-Duignan and van den Eijnden: ’Interventions in Imagination: Coproducing ‘zero’-waste urban futures through creative acts of ‘translation’

Corelia Baibarac-Duignan and Tamalone van den Eijnden

In this paper, we discuss a creative and participatory approach to engaging citizens in imagining alternative ‘zero’-waste futures. This is based on a four-month transdisciplinary project involving researchers and creative professionals, during which we prototyped the approach in a formerly industrial neighbourhood of Utrecht (het Werkspoorkwartier) [i]. Municipalities and entrepreneurs alike tend to depict polished and techno-optimistic urban sustainability visions. Yet, following Donna Haraway’s plea of ‘staying with the trouble’, [ii] we suggest developing visions that embrace urban sustainability issues, like waste, as inherently cultural aspects of our cities. This requires including multiple perspectives and acknowledging cultural diversity, local specificities, and lived experience. To articulate different perspectives, we coproduce creative and participatory methods for engagement
and imagination. We discuss the potential of our methods to intervene in how we see and imagine alternative futures by performing different acts of ‘translation’ through experiential, material, and affective modes of expression. Such translations allow us to pay more attention to others, and to identify matters of care for our urban futures. Paying attention becomes an interventionist act, or in Isabelle Stengers’s words, an art that needs to be cultivated. [iii]

References:


E.4 Bergen: ’Levinas, Technology and Mediation’

Jan Peter Bergen

Keywords: Levinas, technological mediation, postphenomenology

The past decade has seen increased interest in the philosophy of Emmanuel Levinas for scholarly reflection on technology. Unsurprisingly, philosophy of technology’s engagement with Levinas’ work has focused on the more well-known tenets of his explicitly ethical phenomenology, including Alterity, Responsibility, and the Face of the Other. Conspicuously absent from this uptake of his work, however, are Levinas’ own reflections on technology. Part of the reason for this absence likely lies in the fact that, at least since the empirical turn, his more well-known, general and anti-Heideggerian reflection on Technology can be considered somewhat out of vogue. And yet, as I claim in this paper, his other thinking on technology has value for those that are interested in more grounded reflection on human-technology relations. Strewn across his writings are references to the way that specific technological artifacts mediate our experience of Others and the world we inhabit. There, in discussions of artifacts as varied as books, clothing, money, the windows of a home, and even the atomic bomb, Levinas describes instances of what postphenomenologists might now identify as technological mediation. Not only do these descriptions by Levinas shed new light on his work’s relevance for and compatibility with today’s philosophical reflection on concrete technological artifacts, but they also add a focus on our mediated contact with Others as well as an axiological and sensory substratum to often overly pragmatic
readings of human-technology relations.

E.5  Berling Hyams: ’University education and the problem of the black box in search technology’

Inger Berling Hyams

Keywords: literature search, search technology, information literacy, postphenomenology, hermeneutic relation, black box, university education, critical thinking

Particularly in project work, university students are expected to independently find relevant literature and their literature search skills greatly impacts the quality of their projects. Without reverting to instrumentalism, one might argue that it is vitally important that students direct and target their searches better through the knowledge and application of search techniques such as Boolean operators, phrase searching and generally more complex search strings, rather than simple short natural language searches. Nonetheless, much of the research on students’ search habits seem to concur that even if students use more specialized library resources and databases, a “google style” search is endemic (Dahlen, et al. 2020; Hamlett & Georgas, 2019; Bloom and Deyrup, 2015). The google style searching habits mean that students rely heavily on the algorithmic selection and prioritization of search results. The logics of the search are hidden and might be far less benign than we immediately think as argued by Pasquale (2015). Regarding the students’ relationship with search technology as a hermeneutic relation (c.f. Ihde 1992) - that is that they come to understand ‘the world’ through the lens of the knowledge found though search technology -makes it clear how important it is that students not just acquire skills to better control and direct their searches but also understand and critically engage with the search technologies that they use. How does the search technology mediate their search?

E.6  Boumeester: ’Learning by making: a recursive bond between ontology and experiment.’

Marc Boumeester

Keywords: Affect, Pedagogy, Design.

Despite technology having a much broader definition than ‘being of the technological’, technology is firmly connected with the practice of design, both in literal terms as in metaphorical ways. In order to fully understand the implications of this impact, we have to explore its premisses in two directions: one towards its ontology, one towards the creative experiment. Emerging technologies can easily be commodified (the problem), leading the attention towards their property lead exploitability, whereby flattening both the under-
standing (ontology) and its potential (experiment) is a contributory necessity. In order to prevent this “shortcutting”, we must agree that reality as we perceive it should not be limited to what is actualised: the potential of a situation always exceeds its actuality (the solution).[i]

This paper will investigate how - under the lead banner of ‘post-anthropocentric post-humanistic practice’ - hylomorphic dominance by the designer over the created work can be overcome in the Techno-Anthropocene. [ii] This requires the acceptance of a non-hierarchical, flat ontology, based on the equality of all parties in the design practice (human and nonhuman, technological, actualised and incorporeal). Matching the speed of ‘solution thinking’ with the earnestness of the problems that burden the planet calls for a double tie: a recursive bond between theory and practice, that urgently demands the construction and conceptualisation of new types of education in this field based on learning by making, rather than on making by learning.

References


E.7 Brogård Kristensen and Kuruoglu: ’Algorithmic arrangements towards care’

Dorthe Brogård Kristensen and Alev Kuruoglu

Keywords: Self-tracking, algorithm, care

The aim of this paper is to conceptually investigate how response-able (Haraway 2008) orientations towards bodies can emerge out of the entanglements of humans and technologies. Technological solutions are increasingly pushed, by the market as well as by governmental and non-governmental institutions towards complementing or gradually automating public healthcare and managing wellness. Our findings from ongoing ethnographic fieldwork within the domains of healthcare and fitness, as well as the existing literature, indicate the vast amounts of repair, tinkering, as well as other forms of “care work” that have to go into making technological arrangements “work” towards wellness and healthcare goals, in ways that avoid overburdening or harming individuals. We see in various cases that “care” emerges in contexts of use if humans and non-humans (including digital, algorithmic technologies, but also analog technologies and other materialities) are able to work in tandem and can tinker with one another.

We would thus like to inquire further into the questions of how and when algorithmic
arrangements (or systems) bring forth capacities to care towards individual and collective bodies. We pose and try to conceptually respond to the following questions: when and how do human beings intervene in algorithmic systems to make them work in practice? How does data work bring forth and distribute, across a network of actors, the capacities to provide care? How do socialities emerge within such arrangements and what is their role in enabling care? In what kinds of situations should “expert” knowledge and capabilities intervene?

E.8 Casani: ’Is the techno-Anthropocene compatible with basic individual human rights?’

Paolo Casani

Keywords: Anthropocene, individual human rights, relationship with technology.

The idea of Anthropocene has sounded many alarm bells about the human impact on the environment. Humanity is described as a force that can modify Earth’s systems and define a geological epoch. The moral argument derived is that we as humans are destroying the environment in which we live, and in order to preserve it for future generations and other species, we need to change course. This idea is often portrayed with an alarmist tone: there is an ecological emergency that requires collective effort; unless we act now, it may be too late.

But there are dangers implicit in such a negative connotation of the Anthropocene. It’s out of doubt that the environment must be preserved. But at the same time, we don’t need to embrace fatalistic visions of humanity as a destructive species. There are risks for individual rights in the utilitarian idea of acting for the “greater good” given the magnitude of forthcoming technological advancements. With digitalization and digital identity, a possible technological society of control; with biotechnologies and transhumanism, a possible nefarious altering of human nature, which is the basis for human rights.

This talk will argue that designing the techno-Anthropocene can be a moral imperative, but it needs protective boundaries. These are the inscription of basic individual human rights as the precondition to redefining the world in which we live and our place in it. Since the relationship that we have with new technologies has become unbalanced, it needs to be readdressed using moral imagination.
E.9  Cera: ’The Technocene (or technology as an integral epochal phenomenon)’

Agostino Cera

Keywords: Technocene; Métarécit (metanarrative); Neoenvironment

Starting from the matter of fact that the Anthropocene has proved to be something more than an aspirant geological epoch, my paper aims to present it as the strongest candidate for becoming the “métarécit” [Lyotard] of our epoch: the most faithful expression of the current Zeitgeist.

In the Anthropocene as a discourse/récit can be found the entelechy of that technisches Zeitalter (age of technology) outlined by twentieth century philosophical thought, especially by the so-called “classical philosophy of technology” [Achterhuis] or the “philosophy of technology in the nominative case” [Volpi]. Insofar as the Anthropocene establishes that the anthropic factor – i.e. human agency as technological omni-power – equates to a “global geophysical force” [Steffen & Crutzen] capable of affecting the evolution and destiny of the Earth System, the coming of this brand new epoch establishes that technology is not only the current “subject of history” [Anders] but “subject of nature” as well. Or better, of a “Technature” [Schwägerl]. As Weltanschauung (subject of history) and Weltform (subject of nature), technology achieves the status of an integral epochal phenomenon: a total and potentially totalitarian entity: the “(neo)environment” [Cera] where human being has to live.

On this basis the right name for this new epoch is not Anthropo-cene, but rather Techno-cene [Hornborg, Cera]. Technocene turns out to be the age of a techno-theology.

As a result, the coming of the Anthropocene/Technocene represents at the same time the exaltation of “the question concerning technology” [Heidegger] and the dramatization of “the question concerning human being”.

E.10  Checketts: ’Psychoanalyzing the Gynoid: Robot Fetishism through Freud and Lacan’

Levi Checketts

Keywords: Artificial Intelligence, Sexbots, Psychoanalysis

Artificial Intelligence, both in its popular depictions and its real-life research, has long been the subject of sexual fantasy. Popular culture captures this through My Living Doll (1964), The Stepford Wives (1975), Weird Science (1985), and many other places. In real life, this fantasy has animated work on sexbots like RealDoll and Roxxxy, as well as chatbots
like Replika, and finds expression in the writings of tech thinkers like Ray Kurzweil and Martine Rothblatt.

A Freudian reading of this fascination suggests that the “Frankenstein Complex” articulated by Asimov has its double in a “Lolita Complex”—the threat of apocalyptic AI is intertwined with the allure of virginal AI. As our “mind children,” AI represents primordial urges of sex and violence, and its attraction as a technology plays upon Eros and Thanatos.

From a Lacanian perspective, AI sexualization is symptomatic of a deeper reality: male fantasy is fantasy of the other. The desire to be desired can never reach its completion with human partners who can fake pleasure. The virginal innocence of AI is free from guile and so represents pure fantasy.

Viewed through Freud, the future of human-AI relations is bleak—the triumph of sexual pathologies through a veritable e-lectra complex. Viewed through Lacan, desire cannot be completed, and the triumph of more realistic AI sex partners will never deliver us from the uncanny valley. The greater question, however, is whether the overall goals of AI research can or should be separated from a psychosexual reading of its underlying motivations.

E.11 Claassen: ’An Ubuntu Perspective on Designing the Techno-Anthropocene’

Kristy Claassen

Keywords: Ubuntu, Anthropoicene, Techno-Anthropocene

Humanity’s precarious position in the Anthropocene is rooted in the conviction that we are the true masters over nature and technology. African philosophers such as Achille Mbembe calls for us to “shift away from these dreams of mastery”. How then, do we move from this place at the planetary boundaries in which we ought not to have been standing? The philosophy of Ubu-Ntu provides a path for reframing the Techno-Anthropocene through an expansion of the Anthropocene to Anthropoicene. This view of the anthropoicene is characterised by non-dualism, the inclusion of the non-human other and an understanding of community that transcends merely the current generation. In this view, human agency is interconnected with the agency of a contemporary community, which pertinently includes non-human actors. An Ubuntu reframing of the Techno-Anthropocene also allows for a rethinking of how the “making” or design of the Techno-Anthropocene could be reconceptualised. A first intuition is that the values that guide design are aligned more to the radically relational notions of Ubuntu that defines what it means to be human in the Anthropoicene. This entails that the rethinking of the Techno-Anthropocene not only “moves” forward in new conceptualisations, but also glances sideways to include (intercultural) theories that deepen our understanding of our current vulnerable positioning. The central question addressed here is thus how Ubuntu can guide us in moving forward from our peculiar and
precarious position.

E.12 Colobrans and Serra: 'The origins of the Catalan School of Techno-Anthropology'

Jordi Colobrans and Artur Serra

Keywords: Catalan School of Techno-anthropology, Innovation Ecosystem Design, Social Design, Cultural Design.

The Catalan School of Techno-anthropology started during the project Sciences of Design, New Technologies and Cultural Tradition (1990-1993) between University of Barcelona (UB) and Carnegie Mellon (CMU), funded by the Presidency of Catalan government, to study the design culture of computer scientists at that university. As part of this project, Dr. Maria Jesús Buxo by UB and A. Jordan by CMU defined techno-anthropology, from a prospective, approach as a discipline dedicated to “cultural design”. The result of this project was a couple doctoral ethnographies (done by A. Serra and A. Rojo, supervised by these professors) on CMU’s high-tech culture. Serra’s research focused on the different model of research and innovation of computer scientists, inspired by H. Simon’s “sciences of design” and its relation with the rest of the national innovation system. In a different context, Jordi Colobrans, another of M.J. Buxó’s student, wrote a thesis (supervised by Dr. Davydd Greenwood, from Cornell) on organizational cultures. His question was about how the design of symbolic realities influences the direction of organizations. The analysis of cultural and social design would establish the bases for the development of the Catalan school of Techno-anthropology. In this paper we will delve into the origins of this school, the trajectory of some of its members -Faura, Martín, Bezos- and main projects.

E.13 Serra and Colobrans: 'The Catalan Collaboratory program and the dilemma between the direction and the management of it'

Artur Serra and Jordi Colobrans

Keywords: Vision and Management, desirability and feasibility, organizational conflict

The Catalunya Collaboratory Program has the mission of developing an innovation subsystem at a local level that, on the one hand, connects the social structures and cultural narratives of creativity and innovation with citizenship and, on the other, links innovation at a local scale with regional, national and European level. This program has been
running since 2019 from the Digital Society Technologies area of the i2CAT Foundation, a digital technologies research center that specifically created this area to connect the engineering vision of the world with the social vision. In charge of this unit are the techno-anthropologists. The Program is funded by the Secretary for Digital Policies of the Government of the Generalitat de Catalunya. The vision that is inspiring this program is the country as a collaboratory, designing a first nation based in a universal innovation ecosystem. One of the challenges facing the leadership of this Program is the constant tension between vision and management. To push something new you need creativity and freedom. But, to manage a project that aims to do something new, productive rationality is needed. The vision of the Program is expansive while management as a method of efficiency limits the possibilities of leadership. Dialogue between visionaries and managers is difficult. If the balance is broken and the project is dragged by the vision, the project will require resources that are either achieved or cause an over-exploitation of existing resources. If the necessary resources are not obtained, the expectations created will end up generating frustration, disappointment and the collapse of the project. If, on the other hand, the project ends up being determined by management requirements, the numbers will add up today but, tomorrow, the project will have drowned. He will have been trapped in the bureaucracy of the system. Whether vision or vision containment is excessive, the project is in jeopardy. How do we determine the break-even point between desirability and feasibility?

E.14 Corti: ’Metaverse: a new digital re-embodiment?’

Laura Corti

Keywords: Embodiment, Digital world, Metaverse

Historically, the digital world has been ideated as a disembodied form of mediation. The development of digital space was undoubtedly guided by non-bodily ways of communication. In fact, in the digital world, physical corporeity is considered residual and has been separated by digital life. According to this paradigm, based on Cartesian approach, it is possible to support the idea of an online identity that is wholly disconnected from the body.

In contrast to Web 2.0, we are seeing increasingly comprehensive and complex forms of re-embodiment in digital. Even more directly, increasingly embodied forms of interaction are created through virtual reality (VR), as in the metaverse. For example, recently, Mark Zuckerberg presented the project metaverse, a ‘new’ reality that aims to break the barrier of the screen and bring the user into an immersive digital world through a virtual body.

These avatars are developed according to an embodied paradigm that considers the body as an essential element of the action. In this line of interpretation, we can think, for example, of the value that avatar movement and behavior assume in the digital world. My working hypothesis is that this direction could be seen as a virtually seeking bodily form
of communication that the digital medium has so far denied.

Starting from this consideration, in this presentation, I will explore the topic of digital/virtual re-embodiment as an emerging issue in the digital world in order to identify the philosophical implications of this new form of digital re-embodiment.

E.15 de Boer: ’The Experience of Health in the Anthropocene: Climate Change and Public Health’

Bas de Boer

Keywords: Public Health; Anthropocene; Phenomenology; Foucault

Current ways of producing food, as well as current patterns of food consumption, have a devastating effect on our planet. This is why dieticians are proposing that ecological sustainability should be considered to be the most crucial health goal, since “climate change is currently the biggest threat to health” (Oosterom 2021). However, the threat to health that climate change poses is most often not part of one’s embodied experience. In the absence of such an experiential connection, most individuals are notoriously slow in developing ways of living and of food consumption that are appropriate to the Anthropocene. As a result, so Latour puts it, humanity and Earth are on the verge of “mutual existential negation” (2017, 238).

In this presentation, I propose a phenomenological framework of embodiment that helps explaining why climate change is often not directly experienced as a treat to health. First, I discuss how embodiment has been analyzed in prominent phenomenological accounts of health. Second, drawing from the work of Foucault, I suggest to augment such accounts of embodiment by introducing the notion of “body as part of a population,” which intends to capture how bodies are institutionally shaped (e.g., by public health institutions). Third, I argue that this augmented understanding of embodiment shows that the embodied experience of being healthy always implies a reference to a population of which one is part. In conclusion, I suggest how this view on embodiment can be helpful in making the threat to health that climate change poses experientially available.
E.16 de la Mora, Botin and Børsen: ’Exploration of the Development of Techno-Anthropology in Denmark’

Diana De La Mora and Lars Botin and Tom Holmgaard Børsen

Keywords: Techno-Anthropology, Ethnography, Philosophy of Technology, Inscription, Value-Sensitive Design, Participatory Design

In this paper we explore how Techno-Anthropology has developed over time in Denmark. This is partly done through identifying how Techno-Anthropology has been portrayed and discussed in three books (Børsen & Botin 2013, Botin et al. 2015, Botin & Børsen 2021) and a special thematic issues of the journal Techné: Research in Philosophy and Technology (Wellner et al. 2015). The paper also analyses empirical material generated through interviews with seven members of the Research group ‘Techno-Anthropology and Participation’ (TAPAR) on how they perceive Techno-Anthropology today. In the final analysis the authors explain how Techno-Anthropology has developed over time in Denmark. The overall argument is that Techno-Anthropology has developed from being primarily an ethnographic and philosophical endeavor focusing on understanding how technologies and humans interrelate into a technical design discipline that explicitly is focused on inscription of ethical values and user perspectives into socio-technical configurations.

E.17 Diamantopoulou: ’Social media: Technologies of Voluntary Servitude or Assemblages of Power?’

Marianthi Eleni Diamantopoulou

Keywords: voluntary servitude, social media, assemblage

We live in a world of social inequalities and uneven distribution of wealth, where the public’s access to decision-making is perhaps more complex than ever.

Strangely enough, social resistance tends to be scarce, sporadic, if not spasmodic, in western societies. Radical political thought has been struggling with this contradiction for centuries (La Boétie 1576; Butler 1997; Newman 2010, 2015, 2018, 2021 et al.).

What is the role of social media in this phenomenon? What does “compliance” and “consent” mean in a space full of “Terms and Conditions” checkboxes, privacy infringements and censorship scandals (Papaevangelou & Smyrnaios 2021)?

Recently, it has been claimed that social media constitute technologies of voluntary servitude (Romele et al. 2015, 2017). Do these media keep us in a state of consensual captivity? Are we the willing content creators of our own subordination? Is Facebook just “a psychopolitical instrument” for domination and control (Han 2017), or, in Marxist terms,
the place of “inverted commodity fetishism” (Fuchs 2014, 2017, 2019)?

Black screens seem to keep us in the loop of everything, while at the same time ensure that we always stay put. It might be the case that our desires for communication, sociability, education, artistic expression, and self-recognition as members of a community are being exploited and disfigured in the contexts of digital capitalism. Nevertheless, my claim here is that there are rays of hope in the twisted ways many of us turn out to use social media.

E.18  Dorrestijn and Eggink: ’Human-technology relations down to earth’

Steven Dorrestijn and Wouter Eggink

Keywords: Earth; Human-Technology Relations; Product Impact Tool

In the context of the environmental crisis and the Anthropocene the connections of us humans and our technical culture to earth/nature must be recognized as very important. After the technological flight of modernity it is time to land again, “down to earth”, so Bruno Latour. The shared challenge of design and philosophy is to find a new balance for nature, humans and technology.

Contemporary approaches in philosophy of technology have been framing technology as a quasi-natural condition of human existence. This comes to the fore in an exemplary way in the (otherwise very interesting) work of Dutch artist-philosopher Koen van Mensvoort. Humans produce a technosphere which finally becomes natural: technology as “next nature”. Does this mean an advanced understanding of technical mediation and the natural, or rather a forgetting of nature?

Thus, the present-day call for preservation of the earth against damaging technology is paradoxically complicated by the concurrent philosophical questioning of what nature and culture are. Therefore the challenge for current approaches of technical mediation is to avert such a forgetting of nature, and remain attached down to earth.

As a contribution to this task we will reconsider the place of earth/nature in our own “Product Impact Tool” as well as in the foundational postphenomenological framework of “human-technology-world relations”. How can earth/nature be explicitly added to these frameworks? We will discuss our exploration of models to embed humans and technology in nature.
E.19 Ferreira and Lemmens: ’Peter Sloterdijk and the Re-Design of our Technological Modus Vivendi in the Anthropocene’

Matheus Ferreira and Pieter Lemmens

That the Anthropocene will inevitably be a Techno-Anthropocene seems obvious and that the re-design of our technological modus vivendi on the planet will primarily be a technoscientific affair is also very likely. As earth system scientists have claimed, it is the so-called technosphere – the global technological infrastructure that has emerged since the Industrial Revolution as a geosphere in its own right on a par and increasingly fused with the other, natural geospheres – that will crucially determine the future, and the future habitability, of the planet. The principal difference between the vanishing Holocene and the emerging Anthropocene Earth consists of the fact that what used to be called the natural environment is gradually (and possibly abruptly) changing from an inactive and relatively benign backdrop into a much more active and much less human-friendly frontstage. This fundamental change in the ultimate life support system of humanity calls for a radical transformation of our technological relation to what we once called nature and now reveals itself as a precarious biosphere, of which only the near surface part or the so-called ‘critical zone’, is able to sustain life.

In our talk we will focus on the way in which the German philosopher Peter Sloterdijk, whose spherotechno-immunological re-interpretation of the human condition has been called the first anthropocenic discipline by Bruno Latour, conceives of the complete re-orientation of the human technological endeavour that the Anthropocene calls for, and that is in terms of (1) a so-called homeotechnological turn of co-operation with the modi operandi of nature so as to replace the traditional allotechnological mode of going against nature, and (2) a change from technological extension and expansion to a kind of technological immunization that he refers to with notions such as transplantation, implantation and atmospheric design, by which he means the creation of technological interiors or envelopes in the sense of artificial life support systems allowing for intensely or even fully technologized modes of being-in-the-world on an earth that increasingly fails to supply sufficient life support functionality. We will in particular look at how these two technological ‘strategies’ relate to each other and how they might converge in what we could call techno-bio-spheric life design.
**E.20 Friedman: ’Negative Rights for Humanoid Robots’**

Cindy Friedman

**Keywords: humanoid robots, robot rights, ethics of HRI**

This presentation argues that we should grant negative rights to humanoid robots. These are rights that relate to non-interference e.g., freedom from violence, or freedom from discrimination. Doing so will prevent moral degradation in the techno-anthropocene.

The consideration of robot moral status has seen a progression towards the consideration of robot rights. This is a controversial debate, with many scholars seeing the consideration of robot rights in black and white. It is, however, valuable to take a nuanced approach.

This presentation highlights the value of taking a nuanced approach by arguing that we should consider negative rights for humanoid robots.

Where a lot of discussion about robot rights centres around the possibility of robot consciousness which would warrant robots being protected by rights for their own moral sakes, this presentation takes a human-centred approach. It argues that we should, at least, grant negative rights to robots for the sake of human beings and not necessarily only for the sake of robots. This is because, given the human-likeness of humanoid robots, there is a tendency to anthropomorphize them, and form human-like bonds with them. Should we, in the context of these bonds, treat these robots immorally, there is concern that we may damage our own moral fibre or, more collectively, society’s moral fibre. Thus, inhibiting the immoral treatment of robots, protects the moral fibre of society, thereby preventing moral degradation in the techno-anthropocene.

The presentation engages with the work of Bryson, Coeckelbergh, Danaher, Darling, Gellers, Gunkel, Mamak, Müller, Nyholm and Sparrow.

**E.21 Gammelby Kristensen: ’A democratic intervention in Blue Denmark’**

Rasmus Gammelby Kristensen

**Keywords: Ethnography, Transdisciplinarity, Critical Theory of Technology.**

As maritime businesses experience tech developers en masse and governmental agencies demanding rapid change to meet the climate crisis criteria, there will be an enhanced need for multi-disciplinary understanding between actors involved. As we look to technological advancement to be the savior of our continued existence, the purpose of technology seems forgotten. Although the term technology can seem ubiquitous, it is defined as the use of tools to help people conduct tasks more efficiently. However, if technology is replacing
any human practice, then understanding the practices is as important as the artifact itself. Critical Theory of Technology suggests technology can both emancipate people as well as oppress us. By broadening the understanding of technology to a system of human practices and considering the holistic in how technology works in the real world we can design it better and more adaptable for practitioners.

This paper will explore the ways in which technology can be developed by studying and incorporating practices and uses of current technologies through an anthropology-driven approach i.e. collecting data from practitioners through ethnographic work. More precisely, the goal is to document the author’s experiences as a mediator amongst practitioners and developers, either in the early start-up phase, implementation phase, or nursing phase.

By being exposed to the maritime cluster environment the author learned that mediators have a responsibility in making everyone a part of the green transition. Introducing a mediator can facilitate and provide an understanding of practices and norms to include in technological development.


Alessio Gerola and Paulan Korenhof and Vincent Blok

Keywords: biomimicry, nature, technology

In an effort to produce more sustainable technologies, designers have turned to nature in search for inspiration and innovation. Biomimetic design is the conscious emulation of biological models to solve the technical and ecological challenges of today’s society. At the crossroad between natural and engineering sciences, designers have elaborated numerous different approaches to the technological imitation of nature, such as biomimicry, biomimetics, and bionics. This variety comes in turn with different and often unacknowledged assumptions about the way in which concepts such as nature, technology, design, and their relationship are to be understood in biomimetic practice. We hypothesize that the ways in which these concepts are framed, far from being neutral, reflect the ability of biomimetic design to live up to its promises of sustainability. In order to understand the conditions under which biomimetic design can claim to be sustainable, this variety of assumptions must be exposed, articulated, and analyzed. To do so, we develop a typology of biomimetic approaches that highlights their conceptual and normative overlaps and disagreements. The typology is based on a critical hermeneutical approach that analyzes influential publications in various sectors of biomimetic design, in order to individuate and spell out the different ontological, epistemological, and axiological assumptions about
nature, technology, and design. The resulting categorization of biomimetic approaches enables us to understand which ones can claim to be sustainable and why, and can offer suggestions to biomimetic designers on ways to bridge differences and encourage mutual learning.

E.23 Gertz: 'Zooming through a Crisis: On What it Means to Use Technologies to Maintain Order in a Time of Global Disorder'

Nolen Gertz

Keywords: Technological Resiliency; COVID-19 pandemic; Postphenomenology; Critical Theory of Technology; Hannah Arendt

The coronavirus pandemic has led the world, not to shut down, but to move from the physical to the virtual. Various technologies have been used to maintain a sense of normalcy during the pandemic, as we can now work online, shop online, and socialize online. The perceived success of this technological resiliency in the face of a global health crisis has given rise to questions about whether the move from the physical to the virtual should be maintained even after the pandemic. Given the possibility that this “new normal” could soon become simply what is considered as “normal,” this paper will investigate what it means that we have indeed been able to use technologies to maintain order in a time of global disorder. To answer this question, this paper will focus on the technology that has become most synonymous with the pandemic—Zoom—and use postphenomenology, critical theory of technology, and Arendt’s political philosophy in order to investigate its use during the pandemic. This investigation will show how technologies like Zoom can help us to stay healthy by keeping us at home, but at the risk of perpetuating the dangerous idea that staying at home is a healthy way to live.

E.24 Goldberg and Jacquemard: 'Ethics of Mediating Movement through Digital and Physical Borders'

Zachary J. Goldberg and Tim Jacquemard

Keywords: Digital borders, Border security, H2020 innovation

The Anthropocene is characterized by the design of borders. Even the physical borders that keep humans from trespassing into an “unsullied nature” have been established by humans. Borders can be physical or virtual, yet in each manifestation they mediate human movement. The emergence of digital borders can both protect as well as challenge existing
physical borders. Physical borders can be protected by innovative digital security technology that control movements of people, goods and services. However, digital technology can also challenge existing physical borders. A person can cross digital borders applying few physical, spatial, and temporal resources compared to crossing physical borders. Even more so than physical borders, digital restrictions of movement are therefore products of political, legal, and economic considerations. In this presentation, the authors will present findings from two separate H2020 projects that are similar only insofar as they establish borders which mediate human movement. The D4FLY project uses innovative technology to establish physical barriers to movement by managing border security through digital means at EU border crossings. The TRUSTaWARE project uses cybersecurity measures to mediate cyber movement of individuals on the internet. We will describe the technologies involved in the prevention and promotion of these different kinds of movement—biometric identity verification, document fraud identification, VPN services, advertisement trackers and privacy monitors —and describe the ethical challenges and opportunities that these physical and cyber borders create, thereby presenting obstacles and occasions for human movement in sociotechnical environment.

**E.25 Grüensch: ’Circularity as Ecomimicry: Designs and Philosophy from Ecology’**

Paul Jonny Grüensch

**Keywords:** Circular Economy, Biomimicry, Environmental Philosophy

The transition from a linear to a circular economy (CE) is envisioned as a socio-technical solution to major anthropogenic problems of unsustainability including climate change or biodiversity loss. Key actors, like the Ellen MacArthur Foundation (2013) and European Commission (2020), define the CE as a ‘system that is restorative and regenerative by intention and design’. However, how and why the CE will be sustainable, and what intentions and design approaches will make it regenerative or restorative has not been sufficiently conceptualized yet (Korhonen, Honkasalo, and Seppälä 2018; Geissdoerfer et al. 2017). Following Dicks’ (2016, 2017) philosophy of biomimicry and his concept of biomimetic ethics, I propose a new way of interpreting the CE’s underlying approach: circularity is best understood as an ecomimetic ethic; I argue the CE could and should implement principles of ecological systems (e.g. holism and limitedness) in socio-technological systems, in order to consistently contribute to sustainability. I defend this strong kind of biomimicry against objections by philosophers of technology such as Blok and Gremmen (2016), and discuss theoretical and practical implications of circularity as an ecomimetic ethic: it challenges how the relation between people and nature is conceived of under the paradigm of Anthropocene, as well as the distinction between technology, design principles, and philosophy. Practically, ecomimetic principles such as holism and limitedness
entail reconsidering the CE’s current focus on isolated products as well as its pursuit of economic growth. This conceptual intervention reopens the space for collaboration between CE practitioners, heterodox economists, and environmental activists.

E.26 Haga: ’Challenges of value creation for (potential) users by new technologies’

Kazue Haga

Keywords: value creation, co-creation, blindspot

Taking into account the complexity of societies and individuals, holistic and practical benefits for societies from new technologies are expected to help to solve problems. For example, technologies can provide older people who need support in their daily life more opportunities of their daily activities and improve the quality of life. The useful application of new knowledge for practical needs of users has potential to enlarge their opportunities in the daily life evolutionally.

The question is however who can determine the direction of the development of the technologies and who can evaluate the value created by the technologies appropriately. Each individual constructs the world subjectively depending on his or her experiences and backgrounds. There is the problem of “second order observation” according to Heinz von Foerster and Niklas Luhmann.

To invite potential users and other stakeholders into the development process of technologies, e.g. co-creation approach, is expected as one approach to include (potential) users’ wishes in the development process. The process of co-creation approach may be a part of the changing process of users by using technologies. This paper discusses about to what extent the co-creation approach compensates insufficient view and understanding of a single person and helps to create useful technologies for individuals and societies. As Tuckman pointed out in the 1970s, diversity in a team causes often confusion in perspectives, roles and aim-setting. The function of “catalyst” is recognized as a useful function to combine project or team members to develop an innovation process productively.
E.27  Henriksen: 'Worlds apart, together: The case of science in engineering'

Lars Bo Henriksen

Keywords: case study, cross appropriation, science/engineering debate, supercritical fluid extraction

This paper contributes to the ongoing debate on the relationship between the sciences and engineering. A brief review of three dominant viewpoints is presented in which the relationship is discussed from sociological and philosophical points of view. Are science and engineering one process of translation, are they different modes of knowledge production, or are they similar activities but with different aims, purposes and epistemologies? These three viewpoints set the stage for presenting an illustrative case study vignette of some engineers working on a project on supercritical fluid extraction as they frequently form questions seeking scientific answers. This allows for a more hermeneutic interpretation of the sciences/engineering relationship based on the aforementioned debates and illustrated by the case vignette. Scientists and engineers have no problem with the relationship even if it is sometimes cumbersome and laden with conflict, and sometimes very successful. The paper concludes that science and engineering are not unified entities and can, therefore, be both together, and worlds apart and that these complexities in our research into engineering and science need to be made central to educating/training future engineers and scientists.

E.28  Holst Kristiansen and Børsen: 'SmitteStop & the Technological Mediation of Civic Consciousness'

Kristian Holst Kristiansen and Tom Børsen

Keywords: SmitteStop & the Technological Mediation of Civic Consciousness

Science and technology co-shapes interpretations of, and practices pertaining to, moral values and normative frameworks. Building on the tradition of “technological mediation,” we explore the mediating role of the Danish digital contact tracing technology “Smitte—Stop’s” role in shaping the value of civic consciousness. We empirically investigate through interviews with (non-)users how the meaning of the Danish notion of samfundssind, a compound word of samfund (society) and sind (spirit/mind/soul) - what we in this paper refer to as civic consciousness - takes on contextual meanings in relation to the technological practice of Smitte—Stop. We conceptualize two ways that Smitte—Stop does this: by mediating intersubjective responsibility, and by mediating between individual and state. Thus, Smitte—Stop mediates the meaning of civic consciousness by putting
at stake what the “civic” is, and thus how one is “conscious” for this particular civic. We argue that Smitte—Stop mediates civic consciousness along two major lines: by mediating intersubjective responsibility, where the civic can be thought of as other people of flesh and blood, one’s community; and mediating a relationship between citizen and state, where the civic is the state and its authorities.

E.29 Isaksson: ’We move. We live. – A journey into the possible fusion between the human ‘I’ and the technological ‘It’

Marita Isaksson

Keywords: Movement, Decay, Life

Movement as a quest for life, as a life philosophy, as a necessity, as a question of life or death... To move is a mundane part of human life just as much as an essential part of human survival. As we breaths and when our heart beats – contraction, expansion and flow take place as our vital parts makes sure the correct balance, interconnected rhythm and stretching takes place. All these micro movements taking place, a lot of the time, without us noticing.

Body parts, smaller and larger, can be supported and replaced by artificial ones, just as we can travel with technological aid instead of the utterly slow two feet most of us where fitted with. To be human in the 21st Century is to be a mix match of the biological body of flesh and blood and the artificial extensions of the human ‘I’ by the technological ‘It’ that makes it possible both for us both, the ‘I’ and the ‘It’, to live and survive. An interdependency where we all are obliged to move because standstill, sooner or later, leads to decay and dissolvement.

E.30 Jacobs, Frank and Hermann: ’The disruptive potential of the artificial womb’

Naomi Jacobs and Frank and Julia Hermann

Keywords: Artificial womb, moral change, disruption

The emerging technology of the artificial womb has the potential to cause societal and ethical disruptions. In this paper we anticipate possible disruptions of the meaning and phenomenology of pregnancy, birth, gendered parental roles, and the moral status of the neonate. To this end we create techno-moral scenarios that are in part informed by a comparison between the artificial womb and impacts of predecessor reproductive technologies.
such as the ultrasound, in vitro fertilization, and oocyte cryopreservation (egg-freezing). Our anticipation of the changes is inspired by ongoing collaboration with a speculative designer through a series of co-design activities, including stakeholder workshops in which prototypes were co-created. Our inquiry into the potential disruptions takes into consideration two roles which technologies can play in processes of moral change (see Hopster et al. forthcoming): (i) destabilization of entrenched norms around parental gender roles, responsibility for behaviour during pregnancy, and rights of and duties towards the fetus/neonate; (ii) operating as instruments of empowerment or repression. Depending on concrete design features and features of the socio-technical system that the technology will be employed in, it could function as an instrument for liberating women from the risks and burdens of pregnancy or as an instrument for oppression by a patriarchal medical system. We aim to reach a better understanding of these potential disruptions that can inform a public discussion and normative evaluation of them.

E.31 Jensen: 'Re-designing World-making and Mobilities in the Tecno- Anthropocene'

Ole B. Jensen

Keywords: Planetary Materiality, Mobilities, Re-design

The challenges facing global ecologies and lifeforms (human and non-human) are cascading at present. There are various intersecting forms of crisis, from biodiversity over climate change to massive refugee patterns, inequities, and pandemics. Even though there is only ‘one world’ in the sense of one globe with ‘no outside’, living species have probably never found themselves in more segregated ecologies within the Earth’s ‘critical zone’ before. From new ‘geo-social classes’ over stranded migrant populations to voluntary isolation by the super-rich, planetary co-existence seem in peril. And yet, it is all intertwined, albeit in complex and multi-scalar ways. In this paper the mobilities of matter, humans, goods, and information will be understood on the background of the techno-Anthropocene. This is then seen as the designed, mediatized, technologically framed artificial ontologies of planetary existence. The contemporary global condition is thus defined by the ‘made’, designed, artificial, and technological to an extent that may qualify the diagnosis of the Anthropocene with the prefix ‘techno’. Acts of ‘world making’ and mobilities design renders new lines of demarcation between those who move and those who do not, as well as between those who move on a voluntary basis versus those living lives of forced mobility. The paper addresses the ways in which we might re-think and re-design such troubled materialities of world-making and mobilities seeing ‘mobility justice’ and planetary co-existence as key goals. This means to engage in a critical-creative reimagining of scales, territories, mobilities, and inviting to techno-utopian and democratized visions of different futures.
E.32  Karadechev, Kanstrup, Davidsen and Brereton : ’Co-Creating Hybrid Contact Zones for Digital Production: A Participatory Case Study with a Young Person Living with Autism Spectrum Disorder’

Petko Karadechev, Anne Marie Kanstrup, Jacob Gorm Davidsen, Margot Brereton

Young people living with autism spectrum disorders (ASD) often struggle with social interactions, yet that does not eliminate their needs for social relations. As these increasingly take place in online environments and are augmented by digital technologies, more research is needed on digital approaches that can support this target group’s desire to be more social. We present a participatory case study with a young person living with ASD spanning eight sessions focused on digital production (face-to-face production of video tutorials and online digital prototyping). The proposed and piloted approach is based on the concept of hybrid contact zones (HCZ) as a basis for staging digital social interventions for the target group. We define HCZ as socio-technical spaces that incentivize the interplay of social conventions and technological practices between disparate collaborators, and act as translation zones where difficult to verbalize needs and ambitions can be explored via digital technologies. We propose that co-construction of HCZ via digital production practices provides theoretical and methodological contributions to the field of Human-Computer Interaction.

E.33  Otrel-Cass: ’Critical complexity theory to understand the place for digital technology in education’

Kathrin Otrel-Cass

Keywords: Technology in education, collectives, emergence complexity theory

In this presentation I will focus on the urgent case in education to deal with the need for critical media literacy, to identify and deal with understanding late modern information aggregation. The argument is that the technology influx that permeates every part of our lives has allowed for the self-organisation or emergence of new forms of human and non-human assemblages or collectives. When teachers previously (and currently) tried to track an individual’s process of meaning making (learning) in a linear progression in education (perhaps from teacher to student, student to student or book to student), the processes of production that include now online resources are far more dynamic and mobile and characterised by rapid changes. Ethnographic data is presented from two studies, “Beyond technology” and “One day in my Onlife”, both collected through videography in Denmark with young people aged between 13 and 18 years (see also Otrel-Cass & Fasching 2021).
The focus of this presentation will be to detail the processes and implications of such collectives. For this I will use complexity theory and start by first recognizing complexity to then characterise instances of complexity in order to acknowledge limitations. I will present two examples: First, decentralised - bottom up collectives, where new collectives emerge through the opening up of information sources through the internet (Beyond Technology project), an example for a process of decentralisation of control (Davis & Sumara, 2006). Next, I present an example of synergistic network collectives, that form around a shared need (One day in my Onlife project). Finally, I will examine those examples in the light of Cilliers’ (2010) call for reflexivity when different ideas and tools are employed to highlight possibilities and limitations. This process on the emergence of collectives is signified by being reflective and mindful of the tools we employ, to identify the place for “values”, “ethics”, “normativity” or ‘power”; what Cillier refers to as “critical complexity”.

References


E.34 Kour: ’A Debate on Rape in the Epoch of Techno-Anthropocene: A Journey from Actuality to Virtuality’

Rasleen Kour

Keywords: Techno-Anthropocene, Mediation, Virtual Rape

The term Techno-Anthropocene refers to the mediating relationship between the Anthropocene (signifies humans as the driving force) and the Technopocene (represents technology as the autonomous force), in which both co-constitute each other (Ihde 1990, Verbeek 2005). Various factors influence the Techno-Anthropocene relationship, with gender inequality being one of the most important (UN 2016). The paper shall focus on the debate on Gender and Techno-Anthropocene, with particular attention on the concept of rape, which refers to physically and mentally abusing someone. Whereas women have progressed from hoop frocks to smart frocks, the perpetrator has moved from real to the virtual perpetrator (hard to recognize the real face behind).
On the one hand, technology such as rape deterents attempts to safeguard women’s bodies from being harassed, abused, or assaulted (Wilson Barnao, Bevan and Lincoln 2021). On the other side, we are working on Metaverse technology, which allows users to engage and experience everything from the comfort of their own homes (Shen 2022). There is a recent gang rape incident in Metaverse, a 43-year-old woman, Avatar, was verbally and sexually harassed by 3-4 male Avatars who used their voices, clicked photos, and wrote inappropriate comments (Shen 2022). Despite the fact there was no physical contact, it is still a surreal nightmare for her (statement by the victim herself). Encapsulating the debate with a question, if both humans and technology have a mediating relationship (as postphenomenology suggests), who is to blame for such incidents: man or technology?

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E.35 Kousoulas: ’Governing Sense: Notes on Architectural Information’

Stavros Kousoulas

Keywords: Architecture, Information, Cybernetics

In this paper, I will approach cybernetics as the study of information and will consider processes of cybernetisation as a generalised ecology that deals with the production, exchange, and consumption of meaning. Therefore, cybernetisation can set the foundations for a relational account that examines how signs are communicated and how meaning is produced and experienced within systems. As such, contemporary third-order cybernetics becomes onto-epistemological, addressing not just how we know a system but, crucially, how a system is ecologically produced. This proliferation of the ecological denaturalises
ecology, putting forward a technoeccological condition. Following thinkers like Gilbert Simonon, Bernard Stiegler and Erich Hörl, we can shift focus from the Anthropocene and rather acknowledge the foundational power of our technicities in a Technocene that coincides with the invention of humanity through its technological means.

Consequently, third-order cybernetics extends beyond the original scope of living organisms and their environments in order to include ecologies of ideas, power, institutions, media, etc. On that account, cybernetisation is radically environmental, positing the primacy of relations over binary oppositions and linear logics, making it high time for architectural and urban studies to take into consideration its ground-breaking potentials. I will claim that if we follow the original cybernetic problem — how to govern directionality, or according to the French etymology, sense — then architectural thinking and practices can enunciate the great conceptual challenge of the Technocene: to provide an account of the genesis of the technoeccological culture of sense, of the directionality of our intentions.

E.36 Kurz: ’Staring at Nothing: Towards the Existence of Nothingness in Postphenomenology’

Annie Kurz

Keywords: Existentialism, Nothingness, Postphenomenology

It is useful to link Jean-Paul Sarte’s existential concept of Being-for-itself [1] to the making of the technological self. To better conceptualize the Techno-Anthropocene I am suggesting a stare at nothing. For Sartre this is the origin of becoming. Nothingness is always nothingness of something - a void but not a void that is not. He describes this absence as the potentiality of the human project towards the authentic self. Don Ihde [2] has linked the human project of self-making and self-understanding to omnipresent technological mediations. Ihde scholars usually set their attention onto technologies in use - the smallest unit of analysis is mostly discussed as user-interaction with technologies. Like a Möbius-Strip the technologically mediated self-world (lifeworld) relates back to itself forming non-neutral relationships. Non-neutrality however is already to be found within technological imaginaries. Current postphenomenological research is overlooking that Don Ihde, in his early work pays close attention to the imaginary as well as the void that Sartre calls nothingness. Sartre’s human existence precedes essence, which can be read with Ihde’s rejection of the search for the essence of TECHNOLOGY. While Sartre emphasizes plurality of being as the project of becoming, Ihde lobbies for the plurality of technologies and defines them as multi-stable. Existential Angst for Sartre lies within the unknown that is surrounded by the potent void of nothingness. Ihde’s multi-stable technological functionalities cannot be fully anticipated within the design process of technological artifacts. Thus, I argue that this lack of full anticipation of multi-stabilities points to Ihde’s nothingness.
In recent years, much has been written about the deleterious political and social effects of new urban technologies: the monistic, neoliberal ethic that these technologies instantiate sits uneasily with the rich value pluralism that undergirds the public square. Even the best-intentioned piece of new urban technology has the potential to seriously compromise the social and phenomenological integrity of urban space. Despite the implicit values in the processes of design and implementation, there is nothing about these technologies that must align with neoliberal economic and political values. Our paper bridges contemporary ideas in philosophy of technology, political philosophy, philosophy of the city, and urban aesthetics in order to shed light on how the technological mediation of experiencing the city can be used also for cultural heritage and architectural reconstruction purposes in ways that foster value pluralism and diversity. We focus on selected recent light installation and augmented reality cases as examples of new urban technologies that can be used for making alternative histories visible in the contemporary public space. The use of technology in supporting historic preservation is no longer a new phenomenon. We argue for further development of new urban technologies that work to preserve and cultivate the aesthetic and ethical character of cities and neighbourhoods rather than bringing them into alignment with the profit-and-power-oriented logic of late stage capitalism. This further adds to the preservation of the pluralistic ethos of public space creating a space for alternative futures to emerge from a richer understanding of the past.
E.38 Levin: ‘Postphenomenology of Digital Transformations in Education’

Ilya Levin

Keywords: digital transformations, post-phenomenology, relational thinking, science education

We live in an intensely changing technological world, which is widely referred to as the digital world. The digital turn is associated with fundamental transformations in the human perception of reality (Floridi, 2014). The article was initiated by the peculiarities of one of these transformations, namely: the shift from the primacy of stand-alone things to the primacy of interactions and processes. This transformation reflects changes in human thinking in the digital age when thinking moves from traditional substantial thinking to an alternative relational one. The new, relational thinking considers things in certain practices rather than the abstract ‘to be’ resulting from substantial thinking. This shift is well explainable by a postphenomenology (Ihde, 1979).

The article develops a postphenomenological, relational approach to studying digital transformations in education. The approach considers that the relationship between things results in the characteristics that we perceive rather than objects in isolation.

Changes in the character of thinking affect education in general and science education in particular. It was science education, formed in the scientific revolution in the 17th century, representing traditional substantial thinking. Today, the basic principles of science education require rethinking. Particularly, there is a shift from an equation-based description of systems to a relational description in the form of automata and neural networks; difference equations become preferable to traditional time-dependent functions. With the advent of machine learning, computational thinking becomes more relational, shifting from rule-driven to data-driven thinking. On these examples, the article demonstrates the promising potential of postphenomenology in study of the education in digital age.

E.39 Lusi and Verbeek: ‘Conceptualizing Values in Human-Technology Relations: the case of compassionate technologies’

Benedetta Lusi, Peter Paul Verbeek

Keywords: #compassion; #values; #mediated therapy.

How to account for values as an element of human-technology relations? So far, within the postphenomenological approach and in the ethics of technology at large, values are
conceptualized as resulting from human-technology relations (via ‘technomoral change’ and ‘value dynamism’ [1]) or as a basis to design human-technology relations (via ‘value-sensitive design, for instance [2]). This paper will investigate if and how values could be seen as an intrinsic element of the relations between humans and technologies [3]. To do so, we will employ a framework to analyze the value dimension, based on a research project on ‘Designing Compassionate Technology’ that is currently being conducted at the University of Twente. This project investigates how to design technologies that facilitate, stimulate, and mediate forms of compassion in mental health care [4].

This paper will focus on how to conceptualize the value of compassion as an element of the relations between humans, technologies, and world. We will give an overview of the interaction dynamics in examples of compassionate technology for mental healthcare, based on a literature scoping review research. Through this overview, we will first observe the effect of compassion on human-technology relations: how different technologies can embody the value of compassion and what role the value has in different types of interaction. Then, we will discuss how technology affects the compassionate character of the relation between client and therapist, in a therapeutic scenario. We will use the lens of mediation theory [3] to further analyze how technologies help to shape the dimension of compassion in client-therapist relations. To do so, we will compare technology-mediated therapy with a more traditional therapy scenario [5]. We will distinguish 3 dimensions of this mediated relation: the relation between therapist and client as it takes shape via the technology; the relation that technologies have with the client (e.g. by providing tools to cope with anxiety); and the relations clients develop with the technology.

References


In the literature, there is pointed out that there is something like the (techno)responsibility gap (cf. Matthias 2004; Gunkel 2020; Hanson 2009; Rahwan 2018; Nyholm 2018; see also Tigard 2020). It seems that it is uncontroversial, at least in some cases, there will be no possibility to ascribe responsibility to human agents for harms in which autonomous agents or machines are involved. However, there are similar gaps that we have been living with for a long. In my paper, I will defend the thesis of why the metaphor of nature could be a useful tool for dealings with the outcomes of working of autonomous agents. First of all, it could help us deal conceptually with the problem of the responsibility gap with the use of an existing framework. It is not that no one is responsible for all harms caused by the force of nature. For example, there are situations in which some people could be responsible for nature-related deaths. For example, there is a need for snow removal from the roofs to prevent its collapse or keep the levees in good condition to prevent damages caused by floods or to keep dangerous animals at a safe distance from other people. Some human agents could be held responsible for not doing that. Secondly, the distinction between nature and technology seems not to be that obvious, and persuasive philosophical views support this view. In that perspective, the nature metaphor that includes technology could be additionally justified.

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Philosophy of Human-Technology Relations 2022


E.41 Mamlok: 'The Algorithm Never Lies: Knowledge, education and media in post-truth era'

Dan Mamlok

In the past few years there is a growing concern regarding the infringement of facts, and the construction of public knowledge based on opinions, political emotions, and personal beliefs. This trend, which is also known as post-truth, restructures the nature of knowledge, and is influenced, inter-alia, by how reality is mediated in a digital world. The arrangement of information in digital platforms (e.g. social-media, search-engines) is based on algorithms that filter and personalize information in congruence with individuals’ preferences, predispositions, and beliefs. The creation of what is known as echo-chambers reshapes how people experience reality, and confers ethical consequences, epistemological meanings (regarding what is knowledge/truth/facts), and ontological implications on how [digital] technology constitutes and frames human existence (Botin, 2019). Michael Peters (2017) points out that the futility of facts in post-truth era “affects not only politics and science but becomes a burning issue for education at all levels. Education has now undergone the digital turn and to a large extent been captured by big data systems in administration as well as teaching and research” (Peters, 2017, p. 565). In this presentation I aim to explore the organization of knowledge in the digital age, and its ramifications on public knowledge. A particular emphasis will be laid on how algorithmic education (Means, 2018) shapes both epistemological and ontological structures, and how educators can support a transformative approach for teaching and learning in a post-truth era.

E.42 Marin and Voinea: 'Collective vices of inquiry on social media platforms. When technical scaffolding matters’

Lavinia Marin and Cristina Voinea

Keywords: social media, intellectual vices, technological scaffolding

Recent advances in social epistemology have highlighted the role of epistemic cultures in fostering collective intellectual virtues (Candiotto, 2022). Following this insight, it is not
sufficient for an epistemic agent to have the disposition to behave virtuously, one also needs to be embedded in a culture that favours virtuous behaviours by having an infrastructure of institutions that enforce social norms related to knowledge and inquiry. The reverse could be said about collective epistemic vices: when a culture fails to promote social epistemic norms, the members immersed in that culture will display what is usually called epistemic vices. In our presentation, we will highlight an overlooked aspect in the interaction between individuals and culture: the technical scaffolding of institutions. Scaffolding refers to a stable process in which members of a community use various tools to enhance and support their knowledge practices. When a society has been perfecting its knowledge practices for generations, social institutions usually develop to facilitate this technical scaffolding. Our argument is that, whenever we are confronted with collective intellectual vices in an epistemic environment, there has been a failure in one of these two aspects: either there are institutions in place for epistemic norms but no sufficient technical scaffolding to support them, or there is technical scaffolding for supporting various epistemic norms, but no social institutions to help agents decide which norms are salient. We will use the case of social networking platforms to show how collective vices of inquiry emerge online in both scenarios.

E.43 Martins Simoneti: ’Transhuman, All Too Human: the Limits of Transhumanism in Designing the Techno-Anthropocene’

Caio Augusto Martins Simoneti

Keywords: transhumanism; subjectivity; anthropocentrism

This paper will address the question of whether the movement known as transhumanism presents a viable direction for designing the techno-anthropocene. It will argue that even though transhumanism engages with the blurred lines between humans and nonhumans, which characterise what Rosi Braidotti calls the “post-anthropocentric” character of our time, its embrace of humanist ideas keeps it from approaching the agency of the nonhuman and possibilities of co-production between human and nonhuman actors. Instead, transhumanism seeks to rehabilitate the centrality of the human through technological enhancement. Therefore, it lacks the capacity to adequately address the post-anthropocentric challenges of the present, marked by the growing power of nonhuman beings to impact what is commonly understood as the exclusively human realm of politics.

I will first delineate some of the characteristics that shape the post-anthropocentric condition, marked by the notion of a displacement of the centrality of humanity in the world. In the following section, I will engage with transhumanist ideas and ambitions, as well as its intellectual connection to classical humanism, with a view to critically assess its answers
to contemporary issues. This analysis will demonstrate how transhumanism’s attachment
to a humanist conception of subjectivity appears as an obstacle towards understanding
the entangled dynamics between human and nonhumans. In the final section, I will con-
trast transhumanist ideas with alternative perspectives that break away from humanist
notions of the subject, which allows them to engage human/nonhuman relations and the
challenges of the Anthropocene in a more attentive and responsible way.

E.44  Matei: ’The technological mediation of historical em-
pathy and the sociotechnical politics of collective mem-
ory’

Stefania Matei

Keywords: technological mediation; historical awareness; politics of memory;

The paper discusses how video games stimulate an emic engagement with the past not
only through narrative and discursive components but also, especially, through algorithms,
procedural rhetoric, and gameplay. Historical video games are interactive media products
that are able to produce certain emotions in relation to the past by promoting participa-
tive learning processes and a climate of opinion in the understanding of history. There-
fore, video games are prone to mediating historical empathy as a cognitive and emotional
comprehension of history in the form of a human lived experience instead of a detached
appropriation of chronological facts and figures. Thus, video games based on history put
people in a different relationship with the past, changing the nature of the relationship
and making the past ontologically present as part of leisure routines. How do video games
shape a sense of historical understanding? How is historical empathy technologically me-
diated? How is the politics of memory developing in today’s interactive and algorithmic
culture? The analysis proposes an understanding of historical empathy as a sociotechnical
staging in which various game design elements are used to generate an affective process
of collective remembering. Referring to the development of historical empathy, which is a
key feature in the processes of mnemonic socialization, this paper discusses video games as
instruments that perform the politics of memory by technologically mediating emotional
engagement with the past. Historical empathy plays a very important role in shaping a
sense of identity through a continuous negotiation of self and otherness; therefore, video
games operate on alternative knowledge regimes that inevitably legitimate forms of polit-
ic power.
E.45 Meishar-Tal: ’Learning and teaching in the digital era: A socio-spatial perspective’

Hagit Meishar-Tal

Keywords: socio-spatial change, education, digital technologies

In this talk, I will discuss the changes that occurred in contemporary learning and teaching practices from a socio-spatial perspective. I will analyse the relationships between education and digital technologies in light of three key spatial processes: globalization, networking, and virtualization. These changes stem from the transformation of digital technologies into a basic infrastructure of contemporary society. I will argue that the distributed structure of the technology and its global and virtual nature redesign all social practices in their shape, including learning and teaching practices.

These general ideas will be demonstrated by describing the changes in higher education in the past twenty years. I will describe the move from local to global teaching and learning, from hierarchical structures to distributed and opened structures in academia, and from physical to virtual learning environments. I will refer to changes in time and place of learning and teaching, the curriculum, pedagogy, lecturer-student relationships, and learning and teaching skills.

E.46 Michelfelder and Kennedy: ’Envisioning Online Learning Spaces as Spaces of Radical Openness’

Diane P. Michelfelder and Jolie Kennedy

Keywords: Online learning spaces, postphenomenology, assemblage theory, feminist technoscience

A persistent challenge involved in educational technology relates to the design of online learning spaces. How might these spaces be constructed so that, rather than reinforcing already entrenched societal norms and favoring some learners to the detriment of others, they could better serve the interests of all students and disrupt the status quo in the interests of social change? This paper aims to contribute to addressing this challenge by exploring how a trio of theoretical approaches—postphenomenology, assemblage theory, and feminist technoscience—can serve as the pedagogical scaffolding for such construction, working in combination to humanize the student learning experience. Postphenomenology contributes to seeing how learning spaces can be spaces of radical openness by bringing out how platforms such as Zoom create embodied vulnerability that allows both students and instructors alike to see one another as persons and to be in-humanity-with one another. Assemblage theory calls attention to the materiality involved in online
learning environments and how these are socially situated, shaped and run through with power relations, opening up students to see how these forces are in play and to question how distortive ones might be overcome. Layered onto these approaches, feminist techno-science takes them a step further by opening a way for students to see themselves as change agents in the larger social context outside the classroom. The overall hope of this paper is to inspire researchers and practitioners alike, a hope made particularly pressing by the possibility of online education moving into the Metaverse.

E.47  Nagenborg: 'The ethics and politics of digital mapping'

Michael Nagenborg

Digital maps have become such mundane everyday objects, that users tend to forget that they only became widely available at the beginning of the 21st century. My paper is rooted in very concrete and specific research projects about the use of geo-information systems. However, here, I would like to offer a more general reflection on (1) the specific qualities of maps (in contrast to other media) and (2) the differences between traditional and digital maps. I will take A. Borgmann's seminal account on maps in "Holding on to reality" (1999) as a starting point. Yet, while Borgmann considers maps as "information about reality," I suggest to understand maps as "information about and for reality." Hence, I will consider maps as means to identify potentials for actions and, at times, represent objects of diverse epistemological status. For example, a map may present at once, what is and what might be. I do agree with Borgmann, however, about the differences between traditional and digital maps. While the former took a lot of effort to be produced, the latter act as omnipresent containers to be filled with all kind of available data (regardless of its epistemological status). The uncertain status of what is represented on a map, however, doesn’t mean that maps are less real: The usage of maps yields very concrete and, at times, threatening consequences.

E.48  Nagenborg, Lehtinen and Wittingslow: 'Design Ethics: An Invitation'

Michael Nagenborg and Sanna Lehtinen and Ryan Wittingslow

Our panel is a follow up to and an extension of the first conversation of the Special Interest Group Design Ethics at the recent conference of the Design Research Society in Bilbao. While the conversation in Bilbao was aimed – foremost – at design researchers, we want to invite other disciplines to join our discussion through our panel.
Our preliminary position is that engaging with ethics and ethical critique has historically been pushed to the realm of the ethics and critical theory of technology, whereas design has come to be mainly associated with creative problem solving.

We argue that design can benefit from an explicit discussion on the ethics of its methods and practices that arises from within the discipline. At the same time, philosophers and ethicists can benefit from a better understanding of contemporary design practices. Therefore, the main aim of this session is to explore and unpack the dimensions along which design and ethics may be related.

To guide our discussion, we pose two research questions:

1. What are the main approaches that bridge design and ethics (e.g. value sensitive design, participatory design, critical theory, virtue ethics)? What are the opportunities and challenges of implementing these approaches in transdisciplinary collaboration?

2. Based on #1, what are the interdisciplinary tensions between designerly and critical-ethical approaches and how can they be constructively managed?

The discussion will be based on the first outcomes of the meeting in Bilbao.

E.49 Palazuelos Rojo and Serrano Arenas: 'Education as a social device: techno-anthropological analysis of educational videos in Mexican childhood'

Isaac Palazuelos Rojo and Denys Serrano Arenas

Keywords: educational videos, distance learning, innovation based on users, education technology

Distance learning is explored through study-at-home programs via free television and streaming platforms such as YouTube from 2020 to 2021 in Mexico. First phase of research undertakes a descriptive and interpretative study sample of 153 educational videos at "secundaria" level (grades 7-9) with the goal of detecting didactic strategies outlined in the technological appropriation. In the second, an ethnographic exploration centered on users is conducted to comprehend experiences and perceptions of 191 students in relation to the technological implementation of the learning processes. Findings show replication of in-person results in the teaching process, as well replication of old media narratives in production of educational videos. As an innovative proposal, three key adjustments are posited: modifying the design of technological resources in short-duration formats; focusing content on necessities of users, principally in problem-resolution; and utilizing common languages in preparation of videos. It is concluded that, in spite of the period of validity of the program, necessary adaptations taking into account users’ experiences have
not occurred. This is evidenced by persistence of an adult-centric vision and omission of consumption practices of audiovisual materials by students.

E.50 Pareto Boada: 'Social Assistive Robots: An ethical approach through the concept of freedom'

Júlia Pareto Boada

Keywords: ethics, freedom, social assistive robotics

As a technoscientific activity developing tools for specific fields of professional human activity, social robotics is a principal actor in the practical and conceptual (re)configuration of our life. It modifies the margins of human action in an unprecedented way, by allowing us to “outsource” part of our agency to robots in human practices of a relational kind, such as care. Robots’ capacity to interact with humans “interpersonally” places social robotics –especially social assistive robotics (SAR)– as a promising technological contribution to European institutional care practices, mainly regarding healthcare. The corresponding ongoing ethical reflection is predominantly led from an individual-centered perspective, which focuses on the implications that robots may have for the well-being of humans with whom they interact. Much limited to the sphere of human-robot interaction (dyadically comprehended), this ethical approach comes along with less attention to social robotics’ implications from both the perspective of the specific (care) practice in which AI systems are introduced and the sociopolitical perspective of justice. This tendency overlooks the constitutive interrelation between individual Well-being, Care and Justice as main spheres of human activity with ethical import regarding SAR. To contribute to overcoming this deficit, I suggest delving into the meaning of certain core ethical concepts that enable a transversal gaze to SAR implications at the micro, meso and macro level of human life, but which are narrowly understood in the current landscape of ethical debate. In this regard, I unfold the philosophical concept of freedom and some related notions such as autonomy, and I ethically (re)examine social assistive robotics in the light of these. By bringing to the fore the political-structural dimension of human-technology relations, this analysis accounts for a richer normative-oriented reflection on social robotics for the design of the Techno-Anthropocene.
E.51  Peschl, Bozic Yams and Kamnikar: ’Beyond-time embodied practices as foundation for co-shaping the techno-anthropocene’

Markus F. Peschl, and Nina Bozic Yams and Gregor Kamnikar

Keywords: Embodied practices, future skills, potentials, giving up epistemic control

We focus on an embodied form of futures literacy (Miller, 2018) as a means to purposefully innovate the future of the techno-anthropocene. Due to the complexity and unpredictability of our socio-technological world, we have to acknowledge that we cannot plan/predict the future.

We need to apply a strategy of anticipation for emergence in which another perception of time and the future is needed—we have to move beyond time by letting go of our attitude of control in order to enter a space of openness and receptivity for emerging potentials (Krishnamurti & Bohm, 2014; Peschl, 2020).

Embodied practices can help us break free from the cage of epistemic control by exploring emergent human-technology relations with our full body. Practices like Body-Mind Centering (Harthley, 1989), choreographic improvisation, speculative embodiments, etc. enable us to slow down and get fully immersed in the present moment; embodied practices invite us to start paying attention to sensing what wants to emerge.

This kind of engagement with future potentials is bridging the past with the present and the future into one sense of time: instead of experiencing time as quantifying our life and as a measure of productivity, we create a digital breathing landscape inviting us to critically reflect on our perception and to let go of epistemic control.

This strategy helps us to move from a planning and reactive mode to becoming able to sense novel potentials in an unfolding reality for co-shaping technology with more purpose and transforming our technologically mediated cognitive patterns. Through this new strategy for shaping the techno-anthropocene, epistemic attitudes can unfold by engaging in an embodied approach where the future is literally created in our bodies.
Jedidiah Purdy describes the Anthropocene as “marked by increasing human dominance and decreasing human control” (Purdy 2015). Technologies of the coming “synthetic age” (Preston 2018) redesign fundamental processes involving genes and the climate. It is no surprise interventions into hyper-complex objects like genomes and climate systems are a double-edged sword. They promise entirely new benefits but bring previously unexplored risks.

While this bivalent risk profile is not unexpected, what is a surprise is how these technologies reveal new possibilities for ethical relationships with the surrounding world. One might expect the arrival of the Anthropocene to encourage more aggressive attitudes of mastery and control. But far from the Anthropocene being inevitably anthropocentric, it can also suggest more benign ethical frameworks. Zooming in, gene-editing points to relationships based on respect for the agency of targeted organisms (Preston and Antonsen 2021). Both scientist and cell co-determine the changes that occur. Zooming out, the role of wildlife in the carbon cycle encourages ethics of partnership with non-human organisms in the techno-challenge of climate change.

The Anthropocene epoch, I will argue, has some ethical surprises up its sleeve.

References


E.53  Radman: 'The Pursuit of Life by Means Other than Life: On Social Habits and Technological Habitats'

Andrej Radman

Keywords: Architecture, Exosomatisation, Anthropogenesis

It is symptomatic that architecture has often been described as the first art. Not a mere epiphenomenon of culture, but the collective equipment of terraforming, on the Earth. The paper will make a case for the ontogenetic role of architecture in relation to noetic processes. One does not simply decide to think differently. It is not a matter of volition. To think differently, one has to feel differently. As a matter of fact, ‘thinking differently’ is a tautology given that thinking occurs only on the condition that it does not conform to some pre-established structure. To think is to be disposed not for re-cognition, but for a genuine encounter with that which forces us to think. From this point of view, the purpose of design is to ‘rewire our brains’ and architecture qualifies as a psychotropic practice. The aim of the paper is to reclaim the importance of architecture for the process of anthropogenesis. Given that the animate has always been utterly dependent on the inanimate, architecture assumes a significant role in what Bernard Stiegler calls epiphylogenesis, or evolution by means other than life. The built environment is recast as an exteriorised artificial organ and the line ‘we build our cities and in return they build us’ takes a literal meaning. Ask not what technology is; ask rather what it can do. The paper will rethink the entanglement of habits and habitats through the process of exo-somatisation. Such an approach is, arguably, a viable antidote to the prevailing ‘carbon chauvinism’.

E.54  Raub, van Rompay and Verbeek: 'Impact of robotisation on wellbeing needs in the professional cleaning industry'

Thomas Raub and Thomas J.L. van Rompay and Peter-Paul C.C. Verbeek

Keywords: Responsible robotics; Professional cleaning work; Self-determination theory

The professional cleaning industry is currently undergoing a shift towards the partial robotisation of human labour tasks. Current cleaning robots design emphasises taking over stressful and repetitive tasks from humans. However, as robots get more sophisticated and come to function as colleagues rather than as ‘tools’ for cleaning purposes, alignment with worker values becomes increasingly important. This development urges us to investigate what social and ethical values are at stake, and how robotisation interacts with basic human needs for wellbeing. This paper describes an empirical study on the vision of industry
professionals on the future of cleaning work, and the values involved in robotisation. The results are interpreted within the framework of self-determination theory (SDT), which emphasises autonomy, competence and relatedness as three core values which are particularly relevant in the context of work. In a workshop session, participants were tasked with formulating how robots could address both the positive and negative aspects of contemporary cleaning work. They were moreover tasked to indicate what social and ethical values they deem most relevant within cleaning work, and how robotisation might affect the meaning and realisation of those values. Participants expressed that cleaning robots should act as colleagues rather than competitors to human workers, and that they should contribute to job satisfaction by making cleaning work more varied, pleasant, and fun in the future. From this discussion a theoretical framework is derived that supports the design and implementation of future cleaning robots to positively contribute to making cleaning work better for human workers.

E.55 Reid: ’Multum in parvo: On Miniatures, Technology, and Designing with Scale’

Colbey Emmerson Reid

Keywords: Design, Mediation, Mind

In her seminal essay on miniatures in On Longing (1997), Susan Stewart argues that miniatures are the scale of the interior and interiority. “The interior of the enclosed world,” she writes, “tends to reify the interiority of the viewer.” Miniatures contrast the gigantic, which is the scale of public life and the scale of prominent forms of technology and technological problem-solving that investigate the amelioration of human meta-concerns such as health, education, government, etc. Miniatures, on the other hand, invite and facilitate forms of experience neglected in more monumental realms: daydreaming, looking-without-touching, solitude, secrecy, depth. They are the antithesis of the natural world (“there are no miniatures in nature,” says Stewart), entities of profound mediation. Yet miniature technologies are not often recognized as technology at all: they are dolls, toys, and poems or windows, porches, containers, and envelopes. This presentation explores the miniature as a neglected mediating unit for creating a core component of the human, our interiority, that is often associated with pre-technological, and certainly pre-digital, humans. It also offers a different mode of dialogue for conversations about technology attempting to critically evaluate the impact of technology on facets of human interiority. Rather than investigating technology versus mediation, or digital versus analog, one can evaluate design attributes such as miniature versus gigantic—thus moving the discourse from one that fetishizes means and modalities toward one that considers the role of scale is supporting or diminishing certain attributes of attention and mind.
E.56  Ritter: ’Designing Neganthropocene with Walter Benjamin’

Martin Ritter

Keywords: Benjamin; Neganthropocene; Stiegler

At a first sight, it is only with the rise of digital technologies that we have become living in a world fully permeated with technology. In fact, these technologies have just made us acutely aware of our essentially technological condition: humans are unthinkable without some kind of technology. Nevertheless, what one surely can claim is that it is only in the age of the Anthropocene that technology, in its indispensability for humans, has begun functioning as a geological factor destructing both nature and humans, or the natural and the human. Accordingly, Bernard Stiegler speaks of the toxicity of our current (technological) condition, and my presentation intends to demonstrate that his analyses can be fruitfully connected with Walter Benjamin’s reflections on the technology of his time. First, I will connect Stiegler’s “general organology” with Benjamin’s concept of technology as an “organ of humankind”. Second, I will link Benjamin’s concept of innervating technology with Stiegler’s concept of bifurcation. The technologically driven process of bifurcation disorganizes or dislocates human relation to the world, but it does so creatively, thus making possible new connections. The innervation then realizes the task of, to put it a bit paradoxically, really connecting these connections, or of taking care of them as new possibilities of living. Hence, to be able to (re)design a really human movement in the Anthropocene, or to caringly open the future in the Stieglerian sense, we need to innervate technology as Benjamin suggests.

E.57  Rosenberger: ’Canopy Equity and the Philosophy of Technology’

Robert Rosenberger

I want to use the opportunity of a presentation at PHTR 2022 to make some connections between work in the philosophy of technology and a burgeoning research topic called “canopy equity.” This refers to issues of fairness in the distribution of urban tree cover, i.e., how many trees we see in different parts of the city. Empirical research reveals that lack of urban tree coverage maps in general to poverty (and has had historical but today mixed and changing mappings to race). I offer some first thoughts on theoretical connections that can be made to this work since it could be seen as a paradigmatic example of an issue related to the Anthropocene and philosophy of the city. However, my main exploration will be into a different and so-far unexplored connection: canopy equity and issues of “hostile design.” Hostile design (or hostile architecture, among its other names)
refers to the construction of the objects of public-spaces in a way that further discriminates against vulnerable populations (e.g., benches designed to deter homeless sleepers). I consider these potential connections through the lens of the postphenomenological and social theoretical account of hostile design that I have been developing. Lack of the typical or expected presence of trees as itself a contemporary form of hostile design is an issue of a different sort than those typically identified by the empirical researchers, who tend to investigate larger-scale patterns of urban tree coverage.

E.58 Ruiz: ‘Fab labs: technologies to design the multiverse?’

Maximino Matus Ruiz

Keywords: Living labs, fab labs, singular systems of Innovation, cultural design

The paper aims to explore the establishment of fab labs by indigenous population or that operate in Indian territories in Canada, México and Peru. It is argued that at regional level fab labs can help to impulse “Singular Systems of Innovation” in order to prompt the emergence of pluriverses (Escobar, 2018). Fab labs have the potential to democratize Simon’s (1969) design theory of the artificial; If they are used by indigenous population to design and manufacture the material elements, they need in accordance with their cosmo-technics (Hui, 2017), they would have the ability to co-design the pluriverse. However, the evidence shows that indigenous population do not always appropriate these workshops, at best they limit themselves to reproducing western objects based on a bricoleur logic instead of creating from the conceptual thinking of the bricoler type.

E.59 Ruiz and Autrán: ’Exploring the emergence of Techno-Anthropology in Mexico’

Maximino Matus Ruiz and Rodrigo R. Autrán

The paper aims to explore the emergence of Techno-Anthropology in Mexico, which development has been in close contact with the Catalan school of Techno-anthropology. In 2012 Matus and Ramirez established the Techno-Anthropology Office at INFOTEC, a public research center in Mexico City. The main goal of the Office was to develop evidence-base public policy and strategies to close the digital in the country. Main projects focused on how indigenous, people from rural areas and urban citizens living in slums were accessing, using and appropriating ICTs. However, different projects for the private sector were also developed; i.e., to design a smart city from the scratch, to make research and develop strategies to avoid piracy in ICT products, etc. In this presentation we will discusses some
of the main projects we developed, the methodologies we used, results and the problems faced in the implementation.

**E.60  Smith, van der Zwan, Verbeek, Hummels and Botin: Design and Engineering of Human-Technology Relations Panel**

Maarten Smith, Sander van der Zwan, Peter-Paul Verbeek, Caroline Hummels and Lars Botin

In talking about the challenges societies currently face, the organisers of this conference write: “The world needs design as both an analytical and reflective tool, and design as activism and interventionism”. But what might such design be? Does any design help us here? Surely not. Often things are designed to do precisely the opposite: to be natural, intuitive and transparent in use. The design of a typical doorknob has to mesh so perfectly with current ways of living that it doesn’t ask questions or make people reflect, and neither does it do activism or intervene.

In preparation for a discussion on this question, we hold interviews with several prominent design researchers in which we discuss exemplary design cases that show how design might help us act and think in alternative ways. During the conference, we present several highlights from these interviews and invite a panel of philosophers to correspond with the reflections and ‘read them forward’. Reflecting on several specific examples, we discuss what notions of philosophy allow design to matter to them, and what notion of design is vulnerable to philosophy. More broadly, how might design and philosophical practices correspond?

**E.61  Serra: ’The designing of the techno-Anthropocene: What role for techno-anthropologists?’**

Artur Serra

Keywords: Design sciences, mission-oriented research and innovation, cultural and social design, responsible research and innovation, heterotelia

The Techno-Anthropology group at i2cat has worked intensively about the nature of the advanced technologies developed after WW2, particularly the digital technology, in order to understand the nature of this new kind of research and innovations system. We benefited from the pioneer techno-anthropology research that took place just at the end of the Cold War at the beginning of the 90s in one of the strategic centers of such technology,
deeply supported by DARPA and its mission-driven research and innovation model. The fieldwork of a team of techno-anthropologists from CMU showed that this digital technology and its new model of research and innovation is based in a new theory of “sciences of design” (H. Simon). Computer Science started as a science of design, merging science and technology in a particular way. In fact, a full generation of scientists become engineers (Turing, von Neumann, H. Simon) and vice versa (C. Shannon), generating a new kind of research model, a kind of “blue ocean research and innovation model”, completely different from the V. Bush’s classic one. The ethnographic study of this new theory of design allowed a deep understanding of the core knowledge behind digital technology and by extension maybe of the other high-tech like biotechnology, or nanotechnology, now renamed as “synthetic sciences”. Effectively, design seems the basic paradigm put in place by the so-called high-tech culture. The question now is how techno-anthropology could re-elaborate this paradigm to explore how to use it to co-create not only new generations of digital machines and systems, but new cultural values and new social structures of the techno-Anthropocene. In this presentation we will discuss the following questions: is possible a techno-anthropological design of a techno-Anthropocene? What kind of responsibilities are we taking as co-designers of the new techno-Anthropocene value system and culture? How we can avoid not to repeat the same ethnocentric approach that was central in the previous cultural approaches? How could we prevent the heterotelic consequences of our deeds?

E.62 Simos: ’An ethics for cyborgs’

Manolis Simos

**Keywords:** Peter Sloterdijk, inevitabilism, ethics

Peter Sloterdijk’s philosophy of technology can be understood in terms of a naturalized reinterpretation of Heidegger’s history of Being. In light of this reinterpretation, Sloterdijk depicts the future in transhumanist terms. Specifically, in his imagery of ‘cybernetic modernity’, the constitutively efficient machine is the—always needed—extension of the constitutively imperfect human body. According to this imagery, the history of modernity is conceived as a history of successive narcissistic traumas, of displacements of man’s privileged position in nature, that continue until today and will carry on in the future. Sloterdijk argues that these traumas—from the first three well-known ones of Copernican heliocentrism, Darwinian evolution, and Freudian unconscious, to the forthcoming one of ‘neurobiological wounding’, that is, the outcome of ‘the alliance of genetics, bionics, and robotics’—presuppose the conceptualization of the human in terms of machine. Finally, this historical development is inevitable and, as such, underpinned by a specific mechanism, namely, the disposition of the mechanical engineer to demystify nature, traumatizing, thus, the non-engineers she enlightens.
This paper provides a critical discussion of Sloterdijk's schema in relation to ethics. Namely, Sloterdijk's diagnosis maps an aporia; on the one hand, an ethical stance appears to be urgently needed, while, on the other, such a naturalization seems to preclude the possibility of normativity. Thus, we attempt to show two things; first, to what extent and in which way we can retain the strengths of Sloterdijk's diagnosis without compromising the possibility of an ethical stance, and, second, how this ethical stance, if possible, would look like.

**E.63 Soltanzadeh and Klonowska: ‘Agents as impactful entities: redesigning a technologically disrupted concept’**

Klaudia Klonowska and Sadjad Soltanzadeh

**Keywords: agency, conceptual disruption, impact**

Traditionally, the line between agents and non-agents has been drawn based on intrinsic capacities assumed to be possessed by agents only. This capacity-based approach results in a binary and universal identification of agents and often limits the domain of agents to humans. It prevails in fundamental ethical and legal theories, and influences design and regulatory requirements with ideas such as ‘meaningful human control’ over artificial intelligence (AI). While acknowledging the merits of the capacity-based approach, we argue that modern technologies disrupt this humanistic notion of agency for two reasons.

First, the capacities of AI systems far exceed the cognitive abilities of humans. This has led to a continuously deflated set of capacities possessed exclusively by humans. Second, with the growing sophistication of technologies, their impact on human decision making and action, and consequently, on human agency has markedly increased. This is seen in phenomena such as automation bias and deskilling. The capacity-based approach is inadequate to conceptualise the dynamics and trade-offs of agency in the context of human/non-human hybrids.

We propose an alternative, relational approach towards agency. In this approach, agency is redefined based on the notion of ‘impact’: agents are impactful entities. After clarifying the notion of ‘impact’, we discuss the advantages of our notion of agency and how it can be attributed to non-humans as well as humans. In particular, we show that the relational approach allows us to conceptualise agency at different levels and to different degrees. These aspects of agency should be considered in the desirable design and regulation of technologies.
E.64  Telakivi: 'Cognitive Extension with Artificial Intelligence’

Pii Telakivi

Keywords: Extended Mind, AI-Extenders, Cognitive Tools, Memory Disorders

According to the hypothesis of Extended Mind, the constitutive basis of certain cognitive processes is not restricted inside the bodily boundaries, but can extend to include devices and tools (Clark & Chalmers 1998). Instead of two separate systems, in certain cases, we should consider the user and the tool as a hybrid, coupled system. So far, research has mainly focused on “traditional” tools, such as outsourcing one's memories into a notebook or sketching with pen and paper.

However, a completely new area of research questions arises, when instead of “basic extenders”, we focus on externalisations based on AI technology. Following Hernández-Orallo & Vold (2019), I call them AI-extenders: cognitive extenders (e.g. apps and wearables) that use AI technology and that are coupled with the human agent so that a hybrid system is created. In this paper, I analyse ethical questions related to AI-extenders, especially related to people who suffer from memory disorders. For example, how should they be used in the diagnosis and treatment?

When one adopts the “extended” view, the integrated technologies count as part of the package of their users cognitive and affective capacities. This entails that the AI-extenders a person is reliant on should be given a stronger ethical and legal status, and the patient should be allowed to have access to it e.g. while she/he is being diagnosed. I suggest that especially for ethical reasons, we should treat certain “cognitive technologies” as part of their users' cognition and mind.

E.65  Thijs: ’Rehabilitating locality in philosophy of technology: the case of sustainable technology’

Ole Thijs and Vincent Blok

Keywords: locality, ontology of technology, vertical farming

Philosophers of technology such as Stiegler argue that in the current ‘globalized’ age, where modern technology constitutes a technosphere, there is no room for locality, ethnic groups or ecosystems as determining factors of technology anymore. One example of anti-local technology is vertical farming, which prides itself in its ability to be deployed anywhere in the world, regardless of local weather, soil and wildlife. It is supposed to decrease agricultural land usage by up to 99% via advanced climate control and AI-driven
machinery (Plenty 2021). Because of this ‘forgetting’ of locality, many supposedly sus-
tainable technologies are in fact not regenerative by design, i.e., not actively ecologically
and socially beneficial. In order to become regenerative, technologies must consider their
‘place’ within the ecosystem (Hayes, Desha, and Baumeister 2020, 8). This raises the
question how locality can be rehabilitated in the current globalized technosphere.

In order to answer this question, we 1) explore the debate on locality and non-locality in
Stiegler’s interpretation of Leroi-Gourhan’s theory of milieus; 2) develop a philosophical
understanding of ‘place’ through a reading of Heidegger’s notion of Ort; 3) develop this
into a concept of locality beyond the non-locality of the technosphere. Our assumption
is that whereas the non-locality of the technosphere presents a world of possibilities that
are not necessarily beneficent to the earth, the concept of locality can inform regenerative
design by ‘reconnecting’ technology to the earth as its material substrate (Blok 2016).
Finally, we demonstrate the potential of the locality of technology in an ‘emancipatory’
reconstruction of the vertical farming case.

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E.66 Tollon: ’Digital Nudging and Virtue Ethics in the Face
of Climate Change’

Fabio Tollon

Keywords: Digital nudging, Climate change, Virtue Ethics

It is well known that we are not perfectly rational and that our irrationality (or, more
precisely, our stupidity) results in us making disastrously short-sighted decisions. This,
at least in the case of the climate crisis, has led us to where we are now: on the edge of
global catastrophe unless we do something rather urgently. What if one of the ways to mit-
igate this crisis was to have an authoritarian state, monitoring and controlling our every
decision, to ensure that our actions align with global climate objectives? With the use of
(big) data analytics, we could perhaps engineer the perfect political environment in which
people would be structurally disabled from doing things that were bad for the biosphere.
What about our leaders? Human leadership is also notoriously dreadful, especially during
times of crisis. Perhaps we ought to rely on AI systems to make decisions instead of hu-
mans? Such systems are not driven by human greed and hubris and could thus provide a
further AI-based solution to climate change. To reap all these benefits, all we have to do is
give up our freedom.

The question I will therefore concern myself with in this talk is whether it is possible for us
to chart a path through the Anthropocene without giving up the ideals of liberal democracy.
I argue that many aspects of the discourse surrounding digital nudging operate with either
consequentialist or deontological assumptions, which are problematic. In place of these I
argue that virtue ethics, by placing the focus on the character of those who make use of
technology, offers a better means of assessing the (im)permissibility of nudges.

E.67  Tordera Nuño: ’Permaculture as a model to redesign
our relationship to disabilities.’

Eva Tordera Nuño

Keywords: chronic pain, artistic research, disability studies

Technology has populated the relationship we have with our health. We can now monitor
it and alter it via technological interventions, and through our phones. Medicine, AI, and
robotics merge in elaborate ways to improve our quality of life. But this cannot be done till
there is nothing more than our brain left, as we are embodied brains and embrained bodies
in a fluid relation with our environment. Bearing in mind the developments occurred in
health sciences due its partnership with technology, we can assume that in a near future
we will all be assemblages of biological matter, electronics, robotics, and metal.

Chronic pain is a disability, and as such it is not a given condition but one that depends on
how much society is built on the concept of ableness. It places its bearer in a liminal place
by dismissing their agentivity and displacing them to a state of unrecognition. As shown
by inspecting chronic pain, it is apparent that excluding our vulnerability from the rest of
the society, the world, and the matter, results in a complete degradation. The elimination
of differences is a way to bring societies towards monoculture, where diversity of is seen
as unproductive and as a threat to the integrity of the system. Monocultural plantations
are not sustainable. Therefore, we need to rethink our relationship to technology when it
comes to assisting us. The permaculture ethics of Earth care, people care and fair share
can assist us in this task.
E.68  Voordijk: ’Digital Twin based inspection of civil engineering assets and technological mediation’

Hans Voordijk

Keywords: inspection model; maintenance; mediation relationships

With the emergence of Digital Twins (DT), inspection and maintenance routines of all kinds of civil engineering assets (bridges, road and utilities) are improving. A DT is a comprehensive digital representation of a physical asset that includes properties, condition and behaviour of such an asset in terms of models and data. Virtual Reality-based DT models can support inspectors of civil engineering assets during their inspection routines. Current DT-based inspection models of these assets are improved by integrating continuous sensory data from multiple sensors with a virtual model, the use of Virtual Reality (VR) and navigation through teleportation.

By moving to these interactable inspection models, relationships between their users, DT technology and civil engineering assets to be inspected change. These relationships are central to the concept of technological mediation (Ihde, 2009; Verbeek, 2015). The central idea is that technologies mediate and shape the relationship between humans and the world they experience. This study’s objective is to explore forms of technological mediation that generation and use of VR-based DT inspection models provide between their users and assets to be inspected.

The development of a framework for generating an innovative VR-based DT inspection model, focusing on the specific asset of sewage pumping stations, was chosen as a case study. By focusing on the development phases of this framework, one is able to scrutinize the underlying elements that shape the changing mediation relationships between inspectors, the VR-based DT environment, and the real world.

E.69  Walker and Hastings: ’Raise Your (Digital) Hand: Surveillance Capitalism and the Mediating Role of Zoom in Classrooms’

John Walker and Matthew Hastings

Keywords: Surveillance Capitalism; Educational Practices; Mediation; ATE; Classrooms

While navigating new territories of video chats, virtual conferences and eLearning, the technologies we communicate are shaping new relationships between ourselves and our communities. The relationship between student and teacher, teacher and administrator
have changed through the use of video conferencing. This paper first explores what the new affordances and constraints digital communication technologies bring to classroom spaces. Through the many relations found in postphenomenology, this paper looks at the mediating role of Zoom in the classroom as it enables a certain kind of relationship between teachers, students and educational professionals. A later section will narrow the scope of the mediating relations to the background relations and the work found in active technological environment theory. Even amidst all this change, entrenched social injustices have remained. Our technologies often give an impression of rapid progress, yet at the same time leave much the same. It is important to analyze the disruptions that are happening within a broader context of persistent challenges. Here we focus on the role of capitalism in framing these technological relationships. In the end, new relations are found within the structures of surveillance capitalism; where a need arises for recognizing both the equities and disparities of these new mediated connections.

E.70  **Walker and Stellinga: ’Manmade MacroPlastic Mediation: Human-City Relations through Plastic Pollution in the Canals of Leiden’**

John Walker and Luuk Stellinga

**Keywords:** Macroplastics, Technological Mediation, Citizen Science, Plastic Spotter, Activism, Pollution, Urban Technologies

Understanding life in the Anthropocene requires an appreciation of the dynamic relationship between humans and cities, both with regard to how cities affect humans as well as the inverse. The existence of (macro)plastics in urban waters provides an interesting case to study this relationship. Particularly in the Dutch city of Leiden, plastic pollution has been identified as negatively impacting the lives of aquatic animals and threatening the livelihoods of the city’s inhabitants. Recently, the Leiden Citizen Science Lab has created the project Plastic, which uses the app CrowdWaterto record how much plastic there is in the canals of Leiden and engages citizens to participate in this project by contributing data and joining cleaning expeditions. This project effectively shapes how participants experience their urban environment, by drawing their attention towards the prominence of plastics, and aims at altering this environment by reducing the amount of pollution. In our research, we study the macroplastic pollution in the canals of Leiden, as well as the aforementioned project, to explore the technologically mediated character of human-city relations. To do this, we draw upon postphenomenological literature as well as qualitative data from first-person accounts of experts and citizens involved with the project. We argue that projects such as Plasticdemonstrate the technologically mediated character of human-city relations, whereby human beings experience-and interact with their urban
environments in particular ways due to the presence of specific technological artifacts.

**E.71 Weijdom: ’Collaborative design processes in mixed-reality environments: a pragmatic analysis of two case studies using a postphenomenological framework.’**

**Joris Weijdom**

**Keywords:** performative prototyping, embodied design techniques, collaborative mixed-reality environments

Today the Metaverse concept has returned to the mainstream, rekindling interest to ‘spatialize’ the Internet (Parisi, 2021) and efforts to design new Techno-Anthropocenic environments. In addition, recent Social VR platforms have successfully integrated real-time 3D virtual worlds with Virtual Reality (VR) technologies, enabling online immersive multi-user experiences. However, current research also shows that the body responds to mediated sensory input in immersive VR as being real, even when we cognitively know it is not (Kilteni et al., 2012; Slater, 2018). This suggests that the physical body and environment should be incorporated in designing experiences that combine the physical and virtual as Mixed-Reality (MR), especially when expanding into new forms of eXtended Realities (XR). The Performative prototyping method offers such an embodied design approach (Weijdom, 2022), but what does its praxis mean for understanding human-technology-world relations?

In this presentation, I introduce two case studies, GobSquad’s 1984: Back to no future and Hatsumi’s SoulPaint, which use this embodied design method in VR for their artistic explorations. By comparing the first case study, utilizing a mixed-reality environment, with the second case study, employing an online virtual environment, I explore the impact of XR technology on the collaborative design process and its outcomes using the postphenomenological framework for studying user experience in VR by Vindenes and Wasson (2021). This framework proposes a so-called mediator in-between human-world relationships, consisting of a technologically mediated user and (virtual) environment. Finally, this pragmatic approach offers new insights into the practical application of this framework for future research.
E.72  **Weiss: ’In the end, they ate the dog: on technogenesis and the Anthropocene’**

**Dennis Weiss**

Paolo Bacigalupi’s short story “The People of Sand and Slag” is an affecting narrative in which a trio of human cyborgs encounter for the first time a living animal, a dog. Initially a mystery to them, they wonder how an unmodified, organic creature could ever have survived. Taken by the animal’s vulnerability, they initially care for it, before deciding that it is too much trouble and eat it. The central character, though, occasionally has regrets: “I remember when the dog licked my face and hauled its shaggy bulk onto my bed, and I remember its warm breathing beside me, and sometimes, I miss it.” This presentation uses Bacigalupi’s story as a lens to examine two competing boundary implosions central to discussions of the Anthropocene and posthumanism: human-animal and organism-machine. Much contemporary philosophy of technology focuses on the breakdown of the organism-machine boundary, telling a story of technogenesis and the origin of the human being, while largely ignoring questions about the human-animal boundary. I argue that these contemporary accounts of homo faber are ill-suited to addressing the challenges of the Anthropocene and that a feminist posthumanism informed by Cynthia Willett’s biosocial eros ethics, with its emphasis on eros, home, and play, offers a better starting point. Such a framework points to the limitations of approaching the Anthropocene through the lens of design and technology, suggesting instead that we begin with our ineluctable involvement with nonhuman nature, including that dog.

E.73  **Wellner: ’AI in education – In need for a new Framework’**

**Galit Wellner**

**Keywords: postphenomenology, education, AI**

Recently AI gains increased attention and the hype around can explain the urge to integrate AI in education (AIED). In 2020 the hype leads UNESCO to publish a report on AI in education in which AI was presented as a panacea that enables learning ”anytime anywhere” and even ensures that ”course content is relevant and up-to-date”. Leaving the hype aside, the report is significant for its reference to various stakeholders: learners, educators, subject teachers, school leaders and parents, to name a few. I wish to examine the effect of AI on these stakeholders by asking whether we can understand their relations to AIED via the postphenomenological formula of ”I-tech-world”? Does it make sense to analyze each of them separately as an isolated ”I”? Such concerns were already expressed at the
theoretical level (Michelfelder 2015, Rao et al 2015), but the actual developments of the formula need to be done. AI provides us with a good opportunity to do that, especially its integration in a complex system like the educational one.

An example for such a practical challenge is the learner’s perspective. As long as one focuses on personalized learning, the formula remains intact. But the need to develop social and emotional learning skills requires a modification since the "I" is no longer a single student. Moreover, the analysis of the roles and perspectives of various stakeholders cannot be effectively done in isolation. The formula must refer to multiple subjects with various usage modes in order to fully analyze AIED.

E.74 Wernaart, Kamp, Nader, van Hest, Sweep and Vaznytē: ’The moral data city hunt: How to morally map a city by combining empirical and linguistic data analysis?’

Bart Wernaart, Jo-An Kamp, Brishna Nader, Iris van Hest, Anne-Marie Sweep and Roberta Vaznytē

Keywords: moral design, public values, augmented utilitarianism

We propose a research approach that helps citizens to better understand moral challenges of new technology, and involves these citizens in the design process to make sure public values are at the core of the design of technological innovation. In a smart society, intense technology interaction becomes a standard aspect of life. With each innovation, new moral challenges present themselves. Due to growing technological complexity, these moral challenges are not always timely recognized by those who are affected by it. Due to the late awareness regarding moral issues that come with innovation, technology can amplify a growing trust-gap between citizens and institutions that create or use technology to interact with citizens. Using mobile moral lab applications (chat bot), and real-time interviews, we collected empirical and linguistic data regarding a public (city mobility app) and a business (responsible delivery drones) techno-moral design issue. In both cases, technological innovation leads to dilemmas concerning public values, and its design- according to the potential users of the technology- requires societal input. The empirical data was used in an augmented utilitarian solution pattern and offers insights in socially desirable moral programming solutions. The linguistic data was translated to values as proposed in the Personal Values Dictionary, and offers the contextual explanation to the empirical data output. This way, Eindhoven (the Netherlands) was morally mapped by 140 interviewers, offering practical design solutions for complex techno-moral challenges.
E.75  Wesugi: ’Design Approach for Considering Unpredictable Uses of Technologies’

Shigeru Wesugi

Keywords: design, unpredictable use, archetype

In using technologies, not only the intended uses but also unpredicted uses and issues can occur. In automotive technology, for example, technologies for making vehicles safer can generate dilemma such as increased speeding.

It is common to take an after-the-fact approach, where the technology is developed for addressing issues according to each context. In the case of AI and robotics technologies, which are likely to have significant impact on user behaviour and society, it will be necessary to design for considering issues that are not currently occurring.

One effective approach is to involve not only designers, but also assumed users and other stakeholders in the design process. A complementary idea is to analyse the human-technology relations that the technology being designed can generate, based on archetypes of human-technology relations.

The archetype is a conceptual technology that generates a certain relation between human and technology, which is extracted by analysing the variety of human-technology relations that have existed. A technology can be composed of several archetypes.

By comparing the technology to be designed with the archetypes, it will be possible to anticipate what characteristics it may have and what similarities it may have with other technologies, thus facilitating that designers have a bright prospect of the technology.

For example, there are archetypes from the experimental, philosophical, historical, narrative, ecological, and systems perspectives. Some of the archetypes based on each perspective can be similar to each other. The systematized framework of these archetypes will contribute to a deliberate design of human-technology relations.

E.76  Wieczorek: ’Self-tracking technologies and production of intelligent habits: a pragmatic perspective’

Michał Wieczorek

Keywords: self-tracking, habits, pragmatism

In this presentation I discuss how self-tracking technologies influence users’ habits and assess whether they contribute to users’ flourishing. Devices such as Fitbit and Apple Watch devices, or apps like MyFitnessPal allow individuals to quantify their everyday activity, and
promise to empower them with greater control over their behavior. I investigate this claim by relying on the philosophy of John Dewey. I first describe Dewey’s notion of intelligent habits which in his philosophy are fundamental for the development of character and the pursuit of good life. I argue that especially desirable (i.e., intelligent) habits can be characterized by reflectivity and flexibility. Reflective habits arise from inquiry into available courses of action, and evaluation of goods achieved with their help. Flexible habits are adaptable to change and allow individuals to adjust their behavior to adequately respond to shifting circumstances.

I argue that common features of self-tracking technologies inhibit the creation of intelligent habits. The design of popular self-tracking tools fails to anticipate the diversity of self-trackers and does not recognize their individual circumstances, which is likely to produce unreflective habits. Moreover, the opacity and framing of self-tracking tools inhibits users from actively reflecting upon habits mediated through their self-tracking practices. I also demonstrate that the rigid design of popular tools for self-quantification and users’ dependence on them is problematic from the standpoint of flexibility. I conclude by recommending how self-tracking technologies should be used and developed in the future to maximize reflectivity and flexibility of habits they produce.

E.77 Zuber, Gogoll and Kacianka: ’Big data ethics, machine ethics or information ethics? Navigating the maze of applied ethics in IT’

Jan Gogoll and Niina Zuber and Severin Kacianka

Keywords: #applied ethics of IST #moral software #developer’s guide

Digitalization efforts are rapidly spreading across societies, challenging new and important ethical issues that arise from technological development. Software developers, designers and managerial decision-makers are ever more expected to consider ethical values and normative evaluations when building digital products. Yet, when a member of a development team looks for guidance in the academic literature, he or she will find a plethora of branches of applied ethics. Depending on the context of the system that is to be developed, interesting subfields like big data ethics, machine ethics, information ethics, AI ethics or computer ethics (to only name a few) may present themselves. The sheer number of different branches of applied ethics within the broader field of computer science might cause some bewilderment as to where to look for guidance regarding the context of a specific product and might, ultimately, lead to a feeling of overwhelmingness. Additionally, interested developers might consult introductory books about ethics in which they will mostly find discussion of normative ethics usually in four forms: Deontology, consequentialism, virtue ethics or contractualist principles. While these four forms of normative ethics are
connected and are actively influencing the branches of applied ethics. It is by no means obvious how this is the case. The literature effectively leaves the interested developer stranded. In this talk we want to offer assistance to any member of a development team by giving a clear and brief introduction into two fields of ethical endeavor, describing how they are related to each other and, most importantly, providing an ordering of the different branches of applied ethics which have gained traction over the last years. We will demonstrate our process by discussing facial recognition technology and illustrate how our ordering may be helpful to developers by providing a concrete example in the medical domain.

E.78 Zwier and Blok: ‘Planetary Maintenance beyond Hylomorphism’

Jochem Zwier and Vincent Blok

Keywords: Hylomorphism, Maintenance, Ecology

Our paper analyzes the conceptualization of maintenance in contemporary discourses of sustainable technology, in order to propose a consideration of maintenance associated with innovation rather than renovation. We first delineate how sustainable technology discourses reiterate a hylomorphic paradigm, resulting in an understanding of maintenance as the artificial conservation of form (morphe) that opposes material (hylic) generation and corruption. Although this motive also structures ideas concerning sustainable technology qua planetary maintenance, we argue that the present-day planetary ecological crisis undermines the hylomorphic paradigm.

We then evaluate how Gilbert Simondon’s work reconsiders maintenance beyond hylomorphism. He emphasizes the process of individuation over resulting and stable individuals, thereby preferencing the generative technics of invention over a conservative technics of maintenance. However, whereas Simondon collapses hylomorphism in considering both the natural and artificial in terms of generation, his account overlooks the other movement previously associated with hyle, namely corruption.

Given how today’s ecological situation foregrounds corruption, we develop a concept of maintenance that accounts for corruption without regressing to hylomorphic forms. Rather than pertaining to things, artefacts, or other stable forms, maintenance here concerns the ontological conditions for generation and innovation. Whereas Simondon’s theory of the pre-individual takes such conditions for granted as constitutive of both technical evolution and the therefrom resulting inhabitable milieux, we propose a reversed account of milieu as condition for innovation. This attends to how milieux themselves demand maintenance, not qua ecological restoration, but as maintaining a relation to the possibility of the new.

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For years, educational research has been a decidedly anthropocentric project. Albeit helpful, it has focused squarely on students, teachers, and their mutual interactions. “Educational research is wholeheartedly humanist. It studies human practice”, as Estrid Sørensen has put it. COVID-19 and the ensuing pivot to online education, however, have forced researchers to broaden their scope and pay attention to the materiality of education.

Supplementing a traditional concern for human interaction (‘pedagogical relations’) with a posthumanist sensitivity to technological mediation (‘pedagogical assemblages’), the purpose of this talk is to discuss what happens when classroom interactions are moved online. While major organizations like UNESCO and WHO have welcomed this development toward more hybrid forms of education, teachers have been more skeptical. Not just due to obvious and predictable reasons like technical problems, but also because of other, more interesting phenomena.

More specifically, based on qualitative survey data from Danish university teachers, I discuss two challenges to the hybrid future of education: The problem of presence and the webcam-related tension between surveillance and care. Combined, these phenomena demonstrate that, while virtual and traditional teaching may be equally ‘real’ in a metaphysical sense, they also involve vastly different sociomaterial dynamics that we need to take into consideration before uncritically celebrating the hybrid future of education.

By deliberately focusing on such downsides of the virtual classroom, I not only seek to challenge overly grandiose imaginaries about the ‘making’ and designing of future education, but also hope to foster concern for fragile aspects of existing educational practice.