Jg. 23 H. 2 2023
€ 13,-

Universität Siegen

NAVIGATIONEN

Zeitschrift für Medien- und Kulturwissenschaften

Christian Schulz / Jens Schröter / Christoph Ernst (Ed.)

TECH|IMAGINATIONS

Jg. 23, H. 2, 2023

NAVI
GATIONEN
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IMPRESSUM

HERAUSGEBER:
Prof. Dr. Jens Schröter
Lehrstuhl für Medienkulturwissenschaft
Lennéstr. 1
53113 Bonn (Hauptherausgeber)

Christoph Borbach und Max Kanderske
Team »Science, Technology and Media Studies«
Universität Siegen
Herrengarten 3
57072 Siegen

Prof. Dr. Benjamin Beil
Institut für Medienkultur und Theater
Meister-Ekkehart-Str. 11
50937 Köln

REDAKTION FÜR DIESE AUSGABE:
Christian Schulz / Jens Schröter / Christoph Ernst

UMSCHLAGGESTALTUNG UND LAYOUT:
Jasmin Kathöfer
(für diese Ausgabe)
Christoph Meibom und Susanne Pütz
(Originaldesign)

BILDER:
TITELBILD VORNE:
Boris Eldagsen, PSEUDOMNESIA III (The Clairvoyant), promptography, 2023

TITELBILD HINTEN:
Boris Eldagsen, PSEUDOMNESIA III (Evolution), promptography, 2023

DRUCK:
UniPrint, Universität Siegen

Erscheinungsweise zweimal jährlich

universi – Universitätsverlag Siegen
Am Eichenhang 50
57076 Siegen

Preis des Einzelheftes: € 13,-
Preis des Doppelheftes: € 22,-
Jahresabonnement: € 20,-
Jahresabonnement
für Studierende: € 14,-

ISSN 1619-1641

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TECH | IMAGINATIONS

The research on the futures of the internet was funded by the CAIS,
https://www.cais-research.de

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CHRISTIAN SCHULZ AND JENS SCHRÖTER

Concepts of the imaginary have received increasing attention in cultural theory and the social sciences for some time now. This can be observed in social theory and political philosophy (Anderson 1983, Taylor 2004), science and technology studies (STS) (Jasanoff and Kim 2009; Jasanoff 2015), postcolonial studies (Hartman 2006; 2019[1]), and most recently anthropology (Rohrer and Thompson 2023). An increasing preoccupation with the imaginary has also been noticeable in recent years in communication and media studies (Katzenbach and Mager 2021; Kluitenberg 2006; Litt 2012; Litt and Hargittai 2016; Natale and Balbi 2014).

What is striking about this new preoccupation with the imaginary is that the concept of "techno-imagination" (Flusser 2011), coined by Villèm Flusser in the early 1990s, is omitted nearly without exception (only Ernst and Schröter refer to Flusser; see Ernst and Schröter 2021, 50). This is particularly astonishing in the case of analyses of the imaginary within media studies. On the one hand, Flusser is a central, albeit contentious figure in the context of the founding discourses on media studies as an institutional discipline. On the other hand, there is a long history of engagement with the imaginary within media studies, drawing in particular on psychoanalysis and the work of Jacques Lacan, which had a major influence on Friedrich Kittler's *Discourse Networks* and can thus be described as "basic knowledge in media studies" (Koch et al. 2017, 112).

The reasons for the lack of attention in recent studies may well lie in the technological determinism that is often attributed to Flusser. In a sense this determinism is present in the concept of "techno-imagination" and also has parallels to the work of Kittler.[2] Nevertheless, it is probably the psychoanalytical baggage still attached to the term within media studies that makes concepts such as Jasanoff and Kim's "sociotechnical imaginaries" (Jasanoff and Kim 2009; Jasanoff 2015) appear more attractive.

In any case, this is no reason to hastily shelve the concept of "techno-imagination." Instead we should consider the specific analytical advantages of such tech-imaginations that can be conceptually grasped. Indeed, the concept of the imaginary allows us to address both the societal and individual levels, which means that the

1 Here, the imaginary functions as a method to fill archival gaps that exist as a result of colonial power relations.

2 The rather marginal role of the medium of photography in media studies certainly plays a role too, as Flusser developed his ideas within the framework of his reflections on a philosophy of photography.

concept actually addresses both the macro and micro perspectives. Both perspectives are also discussed in this volume of *Navigationen*.

THE TECHNO-IMAGINARY BETWEEN MICRO AND MACRO PERSPECTIVES

The question currently arising is how the societal and the individual level can be linked in a theoretically meaningful way without neglecting normative aspects (as it appears for instance in the individualizing of subjects into "responsible persons"). Sites where this question has emerged include the discussions around generative AI, which entered everyday life in 2022 with applications such as ChatGPT or DALL-E, and also techno-solutionist proposals for solving the climate crisis, which are often heard from techno-libertarian circles and are frequently coupled to narratives of individualization.

In the course of these popular discourses there are serious debates about whether, for example, these AI technologies might be able to make visible a collective unconscious of the whole of humanity (Ahuja 2022; Schröter 2023). Here, interestingly enough, a parallel emerges to discourses within the digital humanities, where the micro/macro problem appears to be only one of scale. Such an assumption is based on inherent Western-centric premises – after all, these AIs are predominantly trained with data representing stereotypes from the Western hemisphere of the Internet. This example nevertheless illustrates the previous lack of or rather need for theoretical conceptualizations of the imaginary, which would make it possible to critically describe such technological developments, that are too often also presented as technological solutionism (Morozov 2013).

Even the sociotechnical imaginaries explore the tension between large-scale (future) conceptions of society and "imaginations as social practice," which can already be found to some extent in Flusser[3] (see also Guldin 2007, 67). At the same time, however, this treats the imaginary as a scalable object, as does actor-network theory (ANT), to which Jasanoff explicitly refers (Jasanoff 2015, 21-28). However, this theoretical narrowing, which may well make sense for certain purposes of analysis, also pushes the subject level into the background, along with the normative aspects that are always inscribed in technologies. For this reason, it is in some ways

3 Flusser distinguishes between pre-technical images and technical images, whereby the archetype of the latter is photography, which is why he also assigns it an indexical character. For him, "techno-imagination" is the ability of the recipient to "decipher" technical images and "bring their hidden and masked 'intentions'" to light. But in another text ("A new Imagination") Flusser goes one step further: here he speaks of photographic images (i.e. technical images) as "factual information" and contrasts these images with computer-generated images, which he calls "calculations." While the photographic images symbolize an old imagination, in which the subject abstracts itself from its environment, the computer-generated images represent a new imagination, a "field of possibility." In a sense, these images take the opposite path from abstraction to the subject (Flusser 2002). This shows that Flusser explicitly thinks in terms of the different levels of the imaginary, although he conceives them media-specifically and does not grasp them as a structure-agency problem.

also significant that the concept almost always only addresses *either* large-scale conceptions of the future, often in the form of science fiction narratives, *or* micro-perspectival explorations of social practices, in which the imaginary plays the central role in constituting the heterogeneous ensemble. In our opinion, however, the techno-imaginary is the level that is not only able to address the close interweaving of (digital) media and imaginations, as a basic premise of media theory, but much more fundamentally conceives of techno-imaginations as a constitutive element of society and sociality itself, following Castoriadis (1997). Thus, the techno-imaginary is not simply thought of as scaling between micro and macro levels, like Jasanoff and Kim's sociotechnical imaginary. Castoriadis's influential theory, which precedes Anderson (1983) and Taylor (2004), as well as Jasanoff and Kim (2009, 2015), and has significantly influenced these theorists, makes it possible to think of the techno-imaginary as a hinge between micro and macro levels. This then allows us to adequately address the different levels (micro/macro) – including subjects and related normativities – in parallel and simultaneously. It is the figure of the instituted-instituting imaginary that makes this possible.

According to Castoriadis, institutions exist only in the symbolic, and they provide a certain form of stabilization, which is why sociality can emerge from them in the first place. At the same time, however, this symbolic itself is subject to constant change. Therefore, in addition to the concept of "institution," Castoriadis also introduces the concept of the "instituting." This refers to the "perpetuation of otherness" (Castoriadis 1997, 369) in the (radical) imaginary[4] and describes the moments in which the instituting society breaks into the instituted and creates itself as another (instituted) society.

In relation to the technological, the techno-imaginary in such a perspective functions as a stabilizer for higher levels (macro perspective), be it as a driver of future technology via fictional discourses, such as those in science fiction (Ernst and Schröter 2021), or as an infrastructure-stabilizing component, as in social media platforms (Schulz 2023a, Schulz 2023b). At the same time, however, the level of (everyday) practices is also addressed by the always processual, or, as Castoriadis would put it, "instituting" moment. However, these are not narrowly conceived, as in the sociotechnical imaginaries, which usually favor micro- perspectival descriptions.[5] Rather, they are always conceived in the context of already stabilized (or, to use Castoriadis's term, "instituted," i.e. historically inscribed) normativities in

4 The radical imaginary takes a central place in Castoriadis's theory, and is described as a "productive" and "creative" starting point, "manifested indissolubly in both historical doing and in the constitution, before any explicit rationality, of a universe of significations" (Castoriadis, 1997, 146). For Castoriadis, the "radical" thing about the imaginary is that it precedes the symbolic and is therefore fundamentally indeterminate. This means that it seems "radically" open and stands for permanent change.

5 Significantly, this is also the case in recent approaches from algorithm and data studies, where we can read of "algorithmic imaginaries" (Bucher 2017), "data imaginaries" (Beer 2019), or even "platform imaginaries" (van Es/Poell 2020), but the focus is primarily on the user perspective and the technical side is largely excluded.

technologies. A techno-imaginary conceived in this way thus makes it possible, in principle, to address both levels in parallel, without having to scale between them or commit oneself to one of the two levels, micro or macro, for the analyses. However, these remarks on such a techno-imaginary must necessarily remain cursory at this point and require more detailed theoretical elaboration, especially with regard to the way Castoriadis's theory relates to more recent process-ontological currents within "new materialism," such as Karen Barad's agential realism (Barad 2007). Nonetheless, this demonstrates the theoretical potential of the term coined by Flusser and, moreover, marks the central axis on which the contributions in this issue are positioned.

ABOUT THE CONTRIBUTIONS

The contributions are divided into two sections. First, there are five papers that examine the "techno-imaginary" more broadly from theoretical, historical and practice-theoretical perspectives. Second, there are three papers and two dialogues that deal with "futures of the Internet" and thus focus narrowly on the "techno-imaginary" in relation to the Web. The papers from this section have their origins in a workshop at CAIS in Bochum in early 2022, organized by Jens Schröter.

SECTION I: TECHNO-IMAGINATIONS

The first article, by **Christoph Ernst**, takes up Flusser's notion of "techno-imagination" directly and addresses the relationship between imagination and media. Starting from the "schema" concept, which is identified as a connecting element between classical theories of imagination and media theory, and drawing on the theories of Kant, Peirce, and Castoriadis, the paper argues for a contemporary theory of "media imagination." This is an important step toward a media theory of imagination that is not confined to micro or macro perspectives, but rather takes an intermediate stance.

This is exactly where the second contribution, by **Martin Doll**, picks up, albeit from a different perspective. Jasanoff and Kim's concept of "sociotechnical imaginaries" – with a micro-perspectival orientation – serves here as a starting point for a methodological exploration of "memory cultures" following Aleida Assmann and Astrid Erll. Doll is thus able to show that a media archaeology of the imaginary conceptualized in this way is always tied to political implications, which he refers to as "specters of past political futures" in reference to Derrida.

In his paper, **Felix Hüttemann** problematizes implicit techno-imaginaries of current theories from the fields of software and algorithm studies. Using Benjamin Bratton's notion of the nomos of the cloud, the concepts of teleoplexy and cyber-positivity of the Cybernetic Culture Research Unit (CCRU), and Luciana Parisi's investigations into algorithmic architecture as examples, he exposes the decisionist foundations as well as the apocalyptic presuppositions that are often inscribed in

these approaches. Using the concept of techno-imaginaries, he thus helps to theorize the approaches that are currently popular in the field of software and algorithm studies.

In their contribution, **Agnieszka Jelewska** and **Michal Krawczak** use the concept of techno-imagination to address the interdependencies between nuclear and media infrastructure. Their starting point is the destruction of Ukrainian nuclear infrastructure by the Russian army since 2022, which has (among other things) led to a situation of constant danger at the Zaporizhzhia nuclear power plant. Jelewska and Krawczak show how media are used to generate visions of the future that are intended to neutralize critical discourses. They argue that one of the most important cultural effects of the intertwining of the nuclear industry and media narratives is the use of civilian energy infrastructure as a weapon. This also marks a new topological figure of time, in which present time is eclipsed in favor of past and future narratives.

In the last paper of the first section, **Christian Schulz** focuses on mental models in the field of explainable AI (XAI) research. Starting from two central texts in the history of mental models, by Kenneth Craik and Donald Norman, Schulz argues for a reconceptualization of such models, which are frequently referenced in computer science and human-computer interaction. He proposes a co-constructive approach, in which developers and everyday users are on an equal footing. He uses the concept of "algorithmic imaginaries," a variant of the techno-imaginary which foregrounds everyday users and their imaginations from a micro perspective.

SECTION II: FUTURES OF THE INTERNET

Jens Schröter opens the second section with his contribution. Starting with an episode from the early history of the Internet, the story of Licklider's "intergalactic network" and his famous paper based on it, co-authored with Robert Taylor, Schröter reconstructs which sociotechnical imaginations existed at the (D)ARPA Information Processing Institute. His paper shows how, since the beginnings of the Internet, new technological developments have always been interwoven with sociotechnical imaginaries.

In their "meandering conversation" on the future of the Internet, **Özgün Eylül İşcen** and **Shintaro Miyazaki** talk about their project Counter-N and address web-based publishing, exchange, and alternative modes of computing. The conversation reveals the significance of a spatially and temporally expansive approach for grasping the future trajectory of networked society both in its totality and in its frictions.

Cornelia Bogen examines China's national digital policy and approach to its cyber sovereignty in a longer essay. The "splinternet" created by this policy, i.e., the national shielding of the Internet, shifts the burden of social governance from state authorities to other actors, thus introducing free-market principles and at the same time incorporating socialist values into Internet regulation. None of these measures, however, has helped to cultivate a technological consciousness that can

withstand the pressures of technological modernization and global military and economic competition. Bogen highlights how China is currently attempting to reform the Internet and considers how Internet governance is being instrumentalized by technological and ideological competition with the United States.

In a follow-up to an earlier conversation on "the ends of the Internet," also published in *Navigationen* (Heidersberger and van Treeck 2021), **Benjamin Heidersberger** and **Jan Claas van Treeck** directly follow Bogen's contribution and critically examine the historical and ideological development of the Internet. In their discussion, they foreground three geopolitical spheres of influence that shape the Internet today: the United States, Europe, and China. Central to their discussion is the concept of "territorialization" and "anti-territorialization." Anticipating a contested future, Heidersberger and van Treeck assume that there will be a metaphorical arms race between control and resistance in the digital sphere.

In the last paper of the section, **Galit Wellner** starts with Nozick's thought experiment of the experience machine and examines how the negative stance towards such a machine has changed so that virtual reality (VR) technologies and the recently announced metaverse are considered as positive developments of the Internet. Three genealogical steps are identified: postmodernism through Baudrillard's notion of simulacra; posthumanism as defined by Hayles and her observations about the shift from the presence/absence dichotomy to a pattern/noise dialectic; and Ihde's postphenomenology, including later theoretical developments that assign intentionality to technologies, especially augmented reality (AR) and artificial intelligence (AI). Wellner suggests that the metaverse cannot be classified as VR or AR but instead can be framed as "reverse AR" in which real people meet in an imagined space.

EXTRA

In the supplement to this issue, **Hernán Borisonik** explores how the boundaries between art and design are increasingly blurred in the digital age. He shows how the materiality of art is changing, and how artists are increasingly involved in tasks of self-design in the service of potential buyers, patrons, and subsidiaries, and ultimately even engage in unpaid work on social media platforms. The paper contends that the exploitation of cognitive labor is linked to large-scale manipulation by the few actors who succeed in setting agendas and suggesting behaviors. Finally, Borisonik proposes the idea that there is a touch of utility in all artistic expression, reconciling the idea of art with utility.

Thanks go to Johanna Maria Toussaint and Jacqueline Klassen for proofreading and formatting; to Textworks for corrections; and to Jasmin Kathöfer for layout. Very special thanks to Boris Eldagsen for permitting us to use his wonderful and disturbing promptographies. Special thanks to the Center of Advanced Internet Studies (CAIS), which gave a fellowship to Jens Schröter in the winter of 2021/22 and allowed him to organize the workshop "The Futures of the Internet."

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I. TECH | IMAGINATIONS

ON (TECHNO)-IMAGINATION, SCHEMATA AND MEDIA

PRELIMINARY REMARKS

CHRISTOPH ERNST

I. INTRODUCTION[1]

The late 1980s and early 1990s were a crucial period for media theory. Everybody could anticipate that innovations in digital media would happen. However, the landscape of media theory was dominated by topics relating to traditional mass media (Ernst and Schröter 2021: 14-17). This provoked speculation about the connection between digital media and our ability to imagine their future.

Using the term "techno-imagination," media philosopher Vilém Flusser (1990; 2002) raised a different, much more complicated issue, which is still of interest today for media theory (Ernst and Schröter 2021, 49–57). Flusser was not interested in the question of how media helps to circulate specific imaginaries of future media, but rather to what extent our imagination – and by implication the ability to imagine future media – is reliant on or constrained by the use of media. His claim was that we need a new form of imagination (*neue Einbildungskraft*) in order to grasp the change and upheavals associated with computer-based information and communication technologies (Flusser 1990).

Flusser's question addresses the relationship between media and imagination on a basic level. For example, is language as a medium a necessary precondition for the development of cultural practices of imagination? Can there even be a full account of imagination without addressing the media by which imagination is performed and materialized? If imagination is intrinsically linked to media, what consequences result from media change for imagination?

The following remarks are preliminary and essayistic in nature. They are intended to sketch ways to further elaborate these questions and to point out their relevance for a prospective theory of "media imagination." In order to do so, one specific aspect from the broad discussion on imagination will be identified as a key element of any discussion of the relation between media and imagination: the problem of *schemata*. Why is the "schema" an essential part of any future theory of techno-imagination?

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1 Working paper based on the manuscript of a talk held at the workshop *We are on a Mission. Exploring the role of future imaginaries in the making and governing of digital technology* at the Alexander Humboldt Institute for Internet and Society Berlin, April 27, 2018. The parts on Wolfgang Iser and Vilém Flusser are published on academia.edu in a previous version of this paper.

II. IMAGINATION AND SCHEMATA

According to a famous definition stemming from the Aristotelian tradition (Johnson 1987, 141–44), imagination (*Einbildungskraft*) is considered to be the cognitive ability to synthesize sensual perception (*Anschauung*) with abstract concepts (*Begriffe*). This notion was developed in Immanuel Kant's *Critique of Pure Reason* (1998 [1781/1787]). The paragraphs on "schematism" became highly influential and are still discussed.

Kant distinguished a reproductive and a productive form of imagination, where the latter was primarily designed to account for collective shared understandings of an object (Johnson 1987, 150). Yet, in order to make this synthesis – provided by the imagination – work,[2] Kant claimed the existence of a third, mediating element to relate the complexity of sensual perception to abstract concepts, the "schema" (*Schema*) as part of a process called "schematism" (*Schematismus*). For example, he assumed certain universal categories such as time to be at work in all existing forms of cognition. In a famous passage, he writes: "Hence an application of the category to appearances becomes possible by means of the transcendental time-determination which, as the schema of the concept of understanding, mediates the subsumption of the latter under the former" (Kant 1998, 272, A 139/B 178). As part of productive imagination, the process of schematization and the transcendental schema of time enable a "mediation" (*Vermittlung*) in the sense of creating the condition for the attribution of any meaning. Seen in this light, the schema is a rule by which imagination can "create" a representation as a collectively meaningful object.

Charles S. Peirce took up this point in the later nineteenth century. He regarded the notion of schema and schematization as an encapsulated form of semiotics.[3] Peirce commented on the "sharp discrimination of the intuitive and the discursive processes of the mind" (Peirce 1994, CP 1.35) in Kant's work. In his own philosophy, he attempted to bridge this gap by conceptualizing imagination and schematization as part of semiotic processes which play an integral role in our everyday actions. For Peirce, imagination is essential for meaning and reasoning because it allows the creation of a (semiotic) "image" of possible effects of actions (Peirce 1994, CP 2.148; Barrena 2013).

In his philosophy of perception, Peirce retained the idea of the schema as a general rule in the imaginative process of synthesizing perceived objects with meaningful concepts. For example, if the object is the perception of the notion of a stormy day, then the schema is "the vague Image or what there is in common to the different Images of a stormy day," on the level of what Pierce, in his semiotic system, called an "immediate interpretant" (Peirce 1994, CP 8.314). The schema is the central element of such a "synthesis," a rule generated out of "what there is

2 For the notion and the different types of synthesis as a "unifying activity" within imagination see Johnson 1987, 147–150.

3 For a full account of this aspect in Peirce's philosophy see Eco 1999.

in common to […] different images" (concepts) of an object. This semiotic reading of schema has close connections to Peirce's theory of diagrammatic thinking, especially when it comes to the issue of reasoning with "common" ("general") properties of an object (Stjernfelt 2000).

Peirce's reframing of the schema and schematism as being part of a semiotic process leads to a notion of imagination where the schema and schematism include perception but are otherwise rooted in social practices and their attribution of meaning through habits. However, it is important to point out that the design of Peirce's semiotics allows for the fact that the inference, through a schema, of "what there is in common" to objects in perception does not necessarily have to be conducted by a human. It can be a "perceptive actor" of any kind (e.g., machines). Peirce's philosophy thus paved the way for more complex understandings of the social, cultural, and cognitive implications of imagination and schematism, including the possibility that these processes could be described in relation to different entities.

Under the influence of structuralism, Marxism and psychoanalysis, various theories followed these ideas in the twentieth century. Jacques Lacan's notion of the "imaginary" is probably the most famous of these theories, but more interesting for the issues at hand is the work of Cornelius Castoriadis. In his 1975 book *The Imaginary Institution of Society*, Castoriadis claims that the "social-historical" foundation of society is formed by imagination (Castoriadis 2005, 165–339). More recent discussions on the societal and cultural dimension of imagination, e.g., the notion of "sociotechnical imaginaries" by Sheila Jasanoff (Jasanoff 2015) or "social imaginaries" by Charles Taylor (2004), are related undertakings. Castoriadis explains how society imagines and thus *creates* itself as an institution in an ontological sense. He follows Kant (and implicitly Peirce) by arguing that imagination establishes the link between an object and a meaningful concept. In this sense, imagination stabilizes the identity of a multitude of objects. This multiplicity of the world is ordered in sets between elements and their relations, a logic which Castoriadis (2005, 325) labels "ensemblist-identitary logic," or in short "ensidic logic" (Klooger 2014).

Castoriadis assumes that ensidic logic is at play in all forms of semiotic representation, primarily language – the *legein* – as well as other, more instrumental forms of social doing – the *teukhein* (Castoriadis 2005, 175). However, for Castoriadis the imaginative process of attributing meaning is never a process of "just" establishing the identity of an object. Imagination always implies difference and otherness as well. Accordingly, he defines imagination as the ability "to see in a thing what it is not, to see it other than it is" (Castoriadis 2005, 127). If the attribution of identity is grounded in this ability, then imagination creates identity and marks an irreducible difference within that very process. The result is the formation of a "radical imaginary" on the societal level (Castoriadis 2005, 369–73). The radical imaginary is situated in what Castoriadis calls the "magma" (Castoriadis 2005, 340–44). The "magma" is a resource for the formation of ordered

structures ("institutions") through ensidic logic. At the same the "magma" is the source for "otherness" and the change within these structures during the performances of semiotic representation and social doings.

Although Castoriadis abandons the "transcendental" tradition of thinking about imagination, cognition and society in favor of materialistic premises compatible with social theory, his philosophy still articulates a dualistic premise, namely that the "radical imaginary exists as the social-historical and as the psyche/soma. As social-historical, it is an open stream of the anonymous collective; as psyche/soma, it is representative/affective/intentional flux" (Castoriadis 2005, 369). Imagination is collective and subjective, a matter of society and culture as well as the embodied mind. The integration of both sides is provided by the practices of semiotic representation (*legein*) and social doing (*teukhein*), or to be more precise the "bundle of operative schemata" (Castoriadis 2005, 248) which are at work when semiosis and action are performed.

Castoriadis names as the most important of these operative schemata in the field of semiotic representation (*legein*) the schemata of "discretion/separation," "union," "co-belonging," and "value." He argues that the relation "x designates y" as the relation between a sign (a *representamen* in the Peircean sense) and an object (Castoriadis 2005, 250) is dependent on these schemata. For Castoriadis, these schemata are to be conceived as circular and recursive patterns, in which the process of imagination is grounded in what it produces by itself: the radical imaginary.

In order to illustrate the scope of Castoriadis's notion of "operative schemata," a passage can be cited in which he explains the relevance of the "value" schema for semiosis ("signitive relation"):

> The signitive relation circularly implies the operative schema of value, or of *being worth*, as it serves two different functions: *standing for* . . . in the sense of being valued as …, having the same value as …, *wie*; and *serving for* … in the sense of serving a given end, *um… zu*. These two functions can subsequently be distinguished and specified as "exchange value" and "use value" in different areas. The signitive relation implies, on the one hand, the schema of *standing for* …, being valued as … as a schema of equivalence in a number of different forms. The generic character of the figure or image (of the sign or the object) becomes here primary universality and the creation of classes (of ensembles). Occurrences of the "same sign" are equivalent regardless of their "concrete" differences (graphics, pronunciation or position); instances of the "same object" are equivalent to the extent that they correspond to the "same sign." (Castoriadis 2005, 252–53)

For Castoriadis, in contrast to Peirce, the said operative schemata are the basis of the signitive relation and thus of semiosis *as such*. An operative schema such as "value" structures all practices belonging to *legein*, because all sign-systems are inherently organized by attributing different forms of value. Thus, for Castoriadis, operative schemata are basic principles for creating ordered structures within the processes of ensidic logic (identity and set logic). In this quotation, Castoriadis emphasizes, for example, that the principle of equivalence derived from the operative schema "value" means that signs within the structure can preserve identity independent of their material (medial) embodiment. Because they make the signitive relation as the underlying relation of all semiosis possible in the first place, the operative schemata are, for Castoriadis, a creative achievement of the imagination. As such, operative schemata systematically precede all forms of ensembles and identities created and ordered by ensidic logic.

While the semiotic reformulation of the concept of schema in Peirce's work moves away from a subject-centered, transcendental concept of imagination, Castoriadis surpasses this argument. His notion of operative schemata describes genuine, creative performances of imagination, which are foundational for all semiosis. Thus, they are principles of the production of meaning, in which performances of subjective cognition play just as much a role as collective processes of conventionalization. Castoriadis does not fully clarify, however, how change and transformation are expressed in society through such schemata. Although answers (might) emerge in Castoriadis's elaboration of *teukhein* and technology in relation to practices of *legein* (Ernst and Schröter 2022), at this point I want to follow a different trajectory of the argument and highlight the importance of these ideas for media theory.

III. CULTURAL TECHNIQUES AND TECHNO-IMAGINATION

A classic definition of media is that they are techniques and technologies for transmitting, storing and processing information (Kittler 1993, 8). Included in this perspective is the necessity, emphasized in German media theory by Hartmut Winkler (2008b), to think of signs and media together. Other approaches, especially in the context of theories of digital media, support this perspective. Transferring, storing and processing are basic media operations related to the externalization of cognitive processes as well as the materialization and formalization of signs (Gramelsberger 2023). In media, signs become available and "operatively" manipulable through practices (habits) enacted in societal and cultural contexts.

What this means for a discussion of imagination is linked to approaches from literary theory. Wolfgang Iser argued in the 1980s and in the early 1990s that reading works of fiction is a practice that couples the subjective faculty of imagination with social forms of the imaginary (Iser 1993). During the reception of fictional literature, according to Iser, the imagination actualizes the specific imaginary of the given sociocultural context in an "act of reading" (Iser 1994). Thus, when

talking about imagination, one has to focus on the practices of "imagining" enacted in reading fictional literature. Iser did not produce his own media theory, but was aware of the fact that his ideas were related to media theory (Iser 1993, 400). As a "cultural technique" (Winthrop-Young 2014), reading is a very important way of "doing imagination" while using the semiotic medium of writing and the materiality of its interfaces (books, displays etc.). However, it is obviously not the only cultural technique relevant for a discussion of imagination – other relevant techniques include visualizations such as diagrams or infographics (Drucker 2014).

To speak of an "act of reading" implies a material practice of interacting with a medium, which is, in turn, a complex relation between systems of signs (text), material entities (book, display, etc.) and cultural techniques (reading). For media theory, the question of imagination and specific acts of imagining refers to historically variable and contingent practices of using media. About the same time as Wolfgang Iser developed his theory, another similar idea was brought into play, namely that the practices of imagining are susceptible to media change, or in other words, that practices of imagination, are dependent on media. The most prominent example is Vilém Flusser's notion of "techno-imagination" (*Technoimagination*, Flusser 1998: 209–22, 262–69; see 2002 for selected writings in English).

Coming, at least loosely, from a Kantian perspective, Flusser considers imagination as an ability to form reflexive judgments. For him, imagination is the ability to create "distance" from the world (Flusser 2002, 110–16). For Flusser, this ability is connected to media on a basic practical level, because different media always define certain epistemic ways of using them in order to represent information and gain knowledge. Flusser calls this practical implication the "gesture" of a medium (Flusser 2002, 110–16; 1997). Building on this idea, he develops a historical argument, in which he claims that imagination changes in relation to the media it uses.

The starting point is the connection of imagination to the medium of pictures. The gesture of picture-making includes the reflexive component of taking a distanced approach to the world. Pictures provide a semiotic image of the world. They stimulate the ability to build imaginative models of the world by stepping between humankind and the world (Flusser 1990, 115–19; 2002, 111). Then the alphabet evolves. From Flusser's perspective, the alphabet was invented to gain more complex forms of imagination. While Flusser regards pictures as, in a sense, holistic and "analog" media, the alphabet is a discrete system because only one single character can be selected and aligned at a time. The alphabet is a new way of distancing oneself from the world, and can also be used to analyze the (older) medium of pictures.

At this point the old idea of the schema becomes relevant (Krtilova 2010: 10–11), though Flusser himself almost never uses the term. The media change from pictures to writing is profound because it leads to a change in how the world is interpreted (Flusser 2002: 35–41; 110–16). Writing divides the complexity of the picture into linear sequences (Flusser 2002, 112). For Flusser, pictures are not

characterized by a clear sequence (e.g., of actions), as Hartmut Winkler (2008a, 78) explains. Against this backdrop, the "gesture of writing" (Flusser 1997, 32–40) brings in a new schema for ordering the world, in this case "linearity," which is analytical in nature. In addition, the spatiality of the line in written language establishes a schema that corresponds to time. Hence, writing is a projection of the sequence of time onto the line (and thus onto an axis of space) (Winkler 2008a, 78).

Katerina Krtilova points out that Flusser associates the evolution of these schemata with the notion of "method" in the sense of an operative schema: "The historical method decomposes things into phases; it is diachronical. The structural method joins phases into forms; it is synchronical. For this method, whether processes are facts or not depends on one's perspective" (Flusser 2002, 33; Krtilova 2010, 10–11). The final stage of media evolution is, unsurprisingly, the computer. For Flusser, computers and their algorithms still belong to the world of the linear/one-dimensional. He considers programs and algorithms to be a form of writing. The architecture of today's computers demands the execution of programs in linear sequences (Winkler 2008a, 78). However, Flusser calls numbers and algorithms "zero-dimensional" (Flusser 2002, 114). On the level of computer operations, programs are still organized linearly, but on the level of the uses of the computer for real-world tasks, the imagination associated with them no longer follows this logic. It is no longer the old form of imagination which was created within the culture of writing and the schema of linearity. Representations in digital media are not temporal representations of the world but projections of various realities, connecting imagination in digital media with computational practices of simulation, design, and synthesis, thus challenging traditional forms of thinking with a linear schema such as historical thinking (Flusser 1990, 121–25; 2002, 113)

Flusser's main argument, that practices of imagining are affected by the "gestures" of a medium, can be grasped here. Within the culture of writing, condensed codes are created on the level of the individual ability to imagine things. For example, the schema "linearity" leads to the imaginations of teleological time and history. Consequently, media not only allow certain aspects of the social imaginary to become real while suppressing others. On the level of their uses, they even affect the very nature of imagination: in Flusser's eyes, there can be no "act of imagination" without a medium in which imaginative processes are practically and materially realized.[4] According to Flusser, imagination is realized as a practice that is shaped by media. Imagination *is* a form of media practice. Thus, different types of media have to be regarded as constraints for our practices of imagination and media change affects these constraints.

4 This leads to the self-referential problem for Flusser as a *writer*. As Simone Natale (2014) has argued, it makes a crucial difference whether we talk about media in their conceptual stage, their realized state or their vanishing state. Thus, when it comes to the newly evolving digital media and their cultural implications in 1980s and 1990s, the main problem for Flusser was finding a way to describe a new form of imagination while using writing, which is an old way of imagining.

IV. CONCLUSION – REIMAGINING TECHNO-IMAGINATION

If the process of schematization as well as the formation of schemata are, as Kant showed, a central product of the imagination, then the overarching question of the relationship between media and imagination can be focused on the relationship between media and schemata. Moreover, if schematism is, as Peirce argues, a semiotic process, then the starting point for an analysis of the relationship between media and imagination is found by questioning the relationship between signs and media (Winkler 2008b).[5] This assessment is supported by Flusser's argument that certain types of (semiotic) media such as images and writing are associated with the formation of "schematizing" ways of organizing the interpretation of the world.

However, the meaning of media change for such a theory of imagination remains an unclear issue, especially the ability of computers to process these semiotic media.[6] What Flusser thought of rather vaguely as "techno-imagination" has become reality through AI-based transformer models, insofar as the ability to schematize objects and combine them into meaningful articulations can be fulfilled by machines. Schematization, or even better schema formation, plays a crucial role here at various levels through the formal ability to process large quantities of material inscriptions of signs. Machines are not only able to "read" the basic semiotic media of human meaning production, such as images and writing (text). They also increasingly "synthesize" these basic forms of media into usable communication in a context-sensitive and addressee-specific way, taking into account even the socially established pragmatic rules of their use.

It is no longer possible to deny the role of machine actors in the imaginaries of today's society, given their interconnectedness with social communication and thus with social processes and practices (Esposito 2022). Entanglements between the real world and "computational space" such as augmented reality or virtual reality are obvious examples.[7] They sounded naive in the 1990s but have gained a new quality in times of "ubiquitous computing" (Weiser 1991). Of course, we must also consider the broad field of simulation and, crucial for imagination, the developments in the field of predictive technologies (Hansen 2015).

All of these phenomena are relevant transformations, which address the relation between imagination and current media technologies. But they leave untouched the fundamental problem of how far the relationship between media and

5 With regard to the role of media in schematization and the connection between media and sign, Hartmut Winkler (2021) has offered important considerations that can be linked to such a theory of imagination.

6 Flusser's concept of techno-imagination can be formulated in a philosophically more complex way if we consider that, for example, composite photography was already cited by Peirce as an example of schema formation (Ernst and Schröter 2015; Hoel 2012; Winkler 2021, 142–44).

7 For augmented and virtual reality see also the contribution by Galit Wellner in this issue.

imagination extends and whether techno-imagination is a test case or even breaking point for this relationship. For Castoriadis, all these technologies would be products of *legein* and *teukhein* and thus of ensidic logic. He would probably have considered them "sociotechnologies" in the strict sense. His question might have been this: Society has – for economic (capitalist) reasons – produced technologies that make signs and their contexts "readable," but are we therefore currently witnessing the emergence of *techno-imagination in a radical sense*, a machine imagination that is more than "just" the participation of machines in the constitution of various forms and formations of the social imaginary?

This claim would resonate with Flusser's description of media upheavals. Although the vocabulary of Flusser's essayistic philosophy is by any standard insufficient to draw profound conclusions from it, it at least names the problem precisely: media change is accompanied by upheavals on the level of the fundamental ordering schemata with which the world is "imagined" (interpreted, analyzed, etc.). How then, in Castoriadis's words, are the "operative schemata" created with which the relation between sign and object is first formed?

Castoriadis might have dismissed the speculation about a radical concept of techno-imagination by pointing out that "computer language" is capable of composing an almost incomprehensible set of signs *as* objects. But what eludes computer language (as a processing of digital code) is the differential production of the *signitive relation between sign and object itself* (Castoriadis 2005, 249). Nevertheless, this raises the question of how media relate to the formation of (operative) schemata, and thus ultimately to the constitution of a "logical" structure (in the sense of ensidic logic) of society itself. Clarifying this question will be a crucial condition for formulating a substantial and far-reaching concept of techno-imagination, relevant under the conditions of twenty-first-century media (Mark Hansen).

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THE SPECTERS OF (SOCIOTECHNICAL) IMAGINARIES.

OPPRESSED FUTURES OF THE PAST

MARTIN DOLL

1. INTRODUCTION: (SOCIOTECHNICAL) IMAGINARIES AND THE SOCIAL NO. 1

A specter is haunting both science and technology studies (STS) and media studies – the specter of (sociotechnical) imaginaries. I do not use the term *specter* to downplay the power of (sociotechnical) imaginaries, but rather to stress its magnitude. Before I get to that, however, I would like to discuss the blind spots of this concept and to offer a slightly different focus, an approach that is not so much interested in a sociological, Durkheimian, large-scale view, but that emphasizes the virtues of cultural theory and history: thinking in tense relationships, in heterogeneities and ambivalences. Nevertheless, my goal is not to devalue the existing, sociologically informed concept but to translate it into a more humanities-specific one.

In their book *Future Media*, Christoph Ernst and Jens Schröter define the "'imaginary' of a given era" as an "'amalgamation' of hopes, fears, visions, and fantasies that form around new technology" (Ernst and Schröter 2021, 3). And they go on to characterize it as "a form of specific ideas […] that are common in *a* culture and in *a* society" and that form "a framework for *our* concepts of the technological future" (Ernst and Schröter 2021, 3; my emphases). By using the words "imaginary," "a culture" and "a society" in the singular, the authors are obviously aiming at a concept on a large scale. Declaring this "imaginary" to be valid for a whole "given era" suggests that this approach encompasses not only a large number of people (taken as a preconstituted whole) but also a long time frame.

The authors tend to follow Bruno Latour's notion of a "science of the social": "society" – comprehended as a "social no. 1"[1] – acts as a determinant for individual actions. This modus operandi was criticized by Latour with regard to Émile Durkheim because society on a macro level is understood as a social force, taking "social aggregates as the given that could shed some light" (Latour 2007, 5) on specific aspects of the micro level – in this case, certain developments in media technology.

Sheila Jasanoff, a leading representative of science and technology studies, who is also mentioned by Ernst and Schröter, is another example of thinking on rather larger scales. Whereas in an earlier text Jasanoff and Sang-Hyun Kim explicitly linked

1 Unlike the German translation (Latour 2010, 17), the English original does not speak about a "no." (Latour 2007, 5; for an earlier elaboration of the concept see Strum and Latour 1987).

their concept of "sociotechnical imaginaries" to "nation-specific scientific and/or technological projects" (Jasanoff and Kim 2009, 120; cf. 123), in Jasanoff's more recent introductory text to *Dreamscapes of Modernity* this is explicitly redacted as "not limited to nation states." Thus, the frame of reference is potentially narrower and may, for example, include "communities" (Jasanoff 2015a, 4, 11). In keeping with this, she defines sociotechnical imaginaries as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures" (Jasanoff 2015a, 4).

Nevertheless, these imaginaries are still mainly related to larger units ("population-wide or nationwide levels") and are even extendable up to "the planet" (Jasanoff 2015a, 11). She explicitly writes: "Scales matter on this account" (Jasanoff 2015a, 28). And if you read closely, you mostly find an implicit trajectory of imaginaries from a smaller to a larger scale, as if the latter were the endpoint and main point of interest, e.g., "from single 'inspired' individuals or small collectives to communities and their leaders to nation-states and supranational global agencies" (Jasanoff 2015a, 28). In line with this, most of the titles by the authors of the edited volume speak about large-scale units: South Africa, Cold War America, Rwanda, Austria, etc. Thus, the smaller parts only seem of interest as necessary intermediate steps to the whole. Furthermore, the volume focuses on continuity and successful developments – "the stability, durability, and coherence of social arrangements" (Jasanoff 2015a, 29). In other words, the question is which "vanguard vision" has fulfilled "its potential to grow quite robust" (Hilgartner 2015, 38). So, when Jasanoff, referring to Hilgartner, stresses that only when one "'vanguard vision' […] comes to be communally adopted […] does it rise to the status of an imaginary" (Jasanoff 2015a, 4), it sounds like a sort of survival of the fittest for individual visions. Hence, even though Jasanoff also seems interested in how visions become imaginaries within "small collectives," and even though she presupposes that a multiplicity of imaginaries can coexist "in tension," her emphasis is on more influential imaginaries and grander "institutions of power" such as legislation, jurisdiction or "the media," which she sees as able to "elevate some imagined futures above others" (Jasanoff 2015a, 4). It is thus no coincidence that Jasanoff explicitly sets her analyses of sociotechnical imaginaries against the "flatness of networks" in actor network theory (ANT) (Jasanoff 2015a, 11; cf. 5, 18–19, 22–24, 28–29; 2015b, 322, 327).

However, I do not want to argue along the lines of "Latour beats Jasanoff" because I estimate his arguments as being uncontested by default. I am interested, rather, in bringing the two concepts closer together than Jasanoff would want to admit. To ask in her words: How can we acknowledge to a greater extent the "distributive, […] promiscuous" aspects of imaginaries, in short, their multiplicity, their complexity, and sometimes their historical marginality, without having to pay the ANT price of "depoliticiz[ing] power by making its actions opaque or invisible" (Jasanoff 2015a, 16–17; Doll 2016). So, I would like to argue for a stronger emphasis on weaker visions, on the plurality of imaginaries on the level of small collectives and communities, i.e., for the somewhat neglected intermediate steps. In actual fact, if we accord less importance to the large-scale level (national, supranational, *a*

society, *a* culture), these steps lose their intermediate character and it becomes obvious that they have a quality of their own. Accordingly, my proposal is not so much a counter-project to Ernst, Schröter, or Jasanoff but rather a shift in focus. From this perspective, first, imaginaries on the meso level become more important, and, second, historical imaginaries that did not survive and were not elevated to a higher level come more to the fore.

Or to put it in a negative form, with this modus operandi I would like to circumnavigate certain problematic political effects of approaches that concentrate on large-scale views. The first reason for this is that a large-scale scope that explores only the "broad imaginaries" might suffer from the same methodological issues as overly large-scale older anthropological concepts of "culture" in the singular, meant to encompass an entire population, if not more (cf. Hess 2015). The second is that, in a temporal or historical sense, the large-scale focus on the successfully elevated imaginaries tends to sympathize with the victor — to allude to Benjamin's "On the Concept of History" (Benjamin 2003, 391). So, in the same way that an overly distributed ANT approach could easily lead to a massive depoliticization, an excessively large-scale approach loses sight of the dispersed human and non-human devices through which power is exerted or, to put it more bluntly, the political battles that are and have been fought and lost.

2. A MEDIA ARCHAEOLOGY OF MARGINAL SOCIOTECHNICAL IMAGINARIES

To a certain extent, Erhard Schüttpelz also pleads for this perspective in relation to media historiography. Interestingly enough, he does so not against but with reference to actor network theory. According to Schüttpelz, actor network theory learned from Bloor's principle of symmetry (Bloor 1991, 7) that "successful inventions, projects, techniques, organizational changes and knowledge claims must be described and explained with the same categories as failed and unsuccessful ones" (Schüttpelz 2011, 25; transl. by M.D.), thus putting a stop to an oversimplified continuation of historical-teleological thinking in favor of unplanned and emergent developments. This historical-teleological thinking is not uncommon in traditional media historiography; it occurs whenever historical media and the ideas associated with them in "media imaginations" are viewed solely in terms of their lasting – if sometimes indirect – influence on the course of media development (for a critical view of this see Kluitenberg 2006, 9, cf. 17; see also Ernst and Schröter 2021, 11). Of course, this means that other media developments and associated countermovements that have historically disappeared are often lost from view, even though they are inherently no less important. I therefore agree with Eric Kluitenberg, who, with reference to Bruce Sterling, stresses the importance of "possible media histories that might have happened," because "every dead medium suggests an imaginary space of possibility that, as yet, has not been actualized" (Kluitenberg 2006, 15). And I would like to expand this view on historical technical developments

(dead media) to historical sociotechnical imaginaries (dead imaginaries). This kind of media archaeology, to borrow Siegfried Zielinski's term, would investigate "the rich variety of variants offered by bygone eras" (Zielinski 2006, 54). Thus, I would like to complement a way of thinking focused on not-yet-realized future media (which refers to the imagined technical futures seen from the present) with a rather Blochian "not-yet," referring to past (sometimes radical political) sociotechnical imaginaries, which failed in their time but might regain their political influence on the course of media development when unearthed from the "pile of debris" of history (Benjamin 2003, 392).

This kind of media archaeology would focus not on the successfully elevated imaginaries but rather, to borrow a notion from David Hess, the "contested imaginaries," "based on the idea that mobilized publics not only contest the assumptions of official imaginaries but also create their own imaginaries" (Hess 2015, 77).[2] Again, if one shifts the focus away from privileging victorious imaginaries (by following a sort of evolutionary model, in which certain imaginaries succeed as a result of natural selection), then "counter-imaginaries" (Hess 2015, 71), the programs and counterprograms (to use Latour's terms) of social movements, become more prominent in the analysis. Conversely, in order to avoid an overly small-scale approach that would have to consider even the most obscure individual pipe dream, the bar would be set where a certain idea of a media future circulates at least within a small collective (cf. Jasanoff 2015a, 4). But, in contrast to Jasanoff, this would be less about communally adopting or elevating a preexisting individual idea, and more about the translation and mediation of ideas and practices in the processes of their communal circulation – beyond a focus on an individual originator (cf. Latour 1994).[3]

2.1. HISTORICAL SOCIOTECHNICAL IMAGINARIES AS PART OF COLLECTIVE MEMORY

In order to differentiate this approach even further, I would like to take up a hint in *Future Media* that is neither explored nor explicitly discussed by the authors, the reference to "collective memory" (Ernst and Schröter 2021, 10) – a notion that was prominently developed by Maurice Halbwachs (*mémoire collective*) and further advanced by Jan and Aleida Assmann, as well as Astrid Erll. Whereas Ernst and Schröter stress that the knowledge constituted by imagining future media "*sometimes* mobilizes ideas that are stored deeply in the collective memory of a culture"

2 These are also considered by Jasanoff in terms of "resistance." Here again, however, the focus is on the successful imaginaries, i.e., those that prevail against other imaginaries (Jasanoff 2015b, 323, 329–331).

3 This concept bears a strong resemblance to the concept of guiding image or cultural model (*Leitbild*) by Katharina Giesel, if one places the emphasis on variability and dynamics as well as on the fact that they can be valid "for a small society [*Sozietät*], such as a subculture within an organization" (Giesel 2007, 252; transl. by M.D.).

(Ernst and Schröter 2021, 10; my emphasis), I would like to argue that this knowledge does not mobilize some ideas stored in a kind of external collective memory but that all the elements of this knowledge have to be understood as integral parts of collective memory or rather of collective memories in the plural. As a consequence, sociotechnical imaginaries can be further distinguished by reference to the idea of memory cultures, again understood in their plural form: "The plural form indicates that we are never, even in the most homogeneous cultures, dealing with a single memory community. On the contrary, every society bears a multiplicity of coexisting, often competing collective memories" (Erll 2008, 176; transl. by M.D.; cf. Erll 2011, 49). And I would argue that, consequently, this multiplicity also applies to the contested sociotechnical imaginaries. They are not bound to a monolithic imaginary of *a* society, or *a* culture (all in the singular) but differ radically in diverging social realms, political communities, etc.

2.2. SOCIOTECHNICAL IMAGINARIES IN RELATION TO FUNCTIONAL MEMORIES AND STORAGE MEMORY

With reference to Aleida Assmann, I would like to introduce the distinction between *storage memory* and *functional memory* – understood as "complementary and not contradictory" (Assmann 2011, 123) – into the examination of sociotechnical imaginaries:

> On the cultural level, storage memory contains what is unusable, obsolete, or dated; it has no vital ties to the present and no bearing on identity formation. […] Functional memory, on the other hand, consists of vital recollections that emerge from a process of selection, connection, and meaningful configuration. (Assmann 2011, 127)

Unlike Assmann, who tends to speak about memory in the singular, I would like to follow Erll's approach and refer to functional memories in the plural. Whereas storage memory, understood as an "amorphous reserve," already comprises a multiplicity of heterogeneous, abstract, and disconnected elements, functional memories consist of "compositions of meaning," and are "group related [and] selective" (Assmann 2011, 123, 126–127). And if, on a small scale, there is not just one group, but a multitude of different small collectives, this necessarily involves a multiplicity of functional memories. The storage memory consists of scattered elements that might be outsourced to storage media such as archives, books, paintings, photographs, etc., and forms a kind of background, "an important reservoir for future functional memories" (Assmann 2011, 130). The storage memory is a potentiality from which the lived memories (Assmann speaks of "embodied"), i.e., the functional memories, can be continuously actualized when the unconnected elements are connected and endowed with meaning. If not, the elements simply stay in the storage memory, unconnected or 'dead.' Thus the storage memory is a sort of condition of possibility, "a fundamental resource for all cultural renewal and

change" (Assmann 2011, 130). In this respect, the storage memory is an indispensable corrective to currently actualized functional memories, which would otherwise be ossified and absolute. Storage memory thus holds in store "a reservoir of unused possibilities, alternatives, contradictions, criticisms, and unremembered incidents" (Assmann 2011, 130).

Following on from this, I would like to argue that historical sociotechnical imaginaries are related to both types of memory. On the one hand, they are preserved in the form of fragmentary, dispersed, and insignificant elements; they exist as a "pile of debris" of history, and can lie dead in the archives of the storage memory because they are barely remembered or even actively forgotten (e.g. in the case of colonial aphasia: Stoler 2011). On the other hand, they can be brought to life in the functional memories when the elements are put together and reconstructed, and vital ties to the present are (re)established. Thus, the media archaeology of sociotechnical imaginaries is also connected to both the storage memory and the functional memories. On the one hand, it is linked to the storage memory, because, as Assmann points out, storage memory does not arise out of itself, "it needs to be supported by institutions that preserve, conserve, organize, open up, and circulate cultural knowledge" (Assmann 2011, 130). In short, archival records, journals, documents, images, and photographs have to be saved and preserved – be it in official central archives, libraries, and museums or in seemingly marginal private collections and recollections. On the other hand, the media archaeology of sociotechnical imaginaries is linked to functional memories because the work of gathering the elements and piecing them together does not happen automatically, it has to be done with care. One has to reconstruct specific past sociotechnical imaginaries; they are not just out there. Both tasks (those concerning the storage memory and those concerning the functional memories) can be completed either in institutional contexts such as universities or research institutes or by non-governmental organizations, smaller communities, or activists. So, a specific archaeological investigation at a specific time might feed into a specific functional memory of a specific smaller or larger collective. And in that respect, it might have specific political effects because it involves "resisting the automatic expulsion of the past from everyday memory" and "its deliberate exclusion from the functional memory" (Assmann 2011, 130). Assmann emphasizes: "Functional memory cut off from the historical archive degenerates into fantasy, whereas the archive cut off from practical use and interest remains a mass of meaningless information" (Assmann 2011, 132).

2.3 METHODOLOGICAL DIMENSIONS OF A MEDIA ARCHAEOLOGY OF SOCIOTECHNICAL IMAGINARIES

One might ask how to analyze historical sociotechnical imaginaries. While it is not possible to outline an entire methodology here, I would like to sketch out at least some aspects. Following Erll's elaborations on cultural memories with reference to cultural semiotics (Erll 2008, 177; 2011, 103), I would like to adopt her three

dimensions – material, social and mental – and the respective analytical procedures for an analysis of sociotechnical imaginaries. Based on the complementarity of storage memory and functional memories, I would say that all three dimensions relate to both areas of cultural memories, because in each case they concern storage and meaningful retrieval practices.

1. The material dimension is constituted by a plethora of different media and cultural productions such as texts, monuments, rites, pictures, photographs, and films, to which cultural memories are outsourced (see, unfortunately with a strong emphasis on writing, Erll 2011, 33). They preserve certain aspects of the past across spatiotemporal boundaries. In relation to sociotechnical imaginaries, this extends the media archaeologist's task beyond reading archival factual documents and texts to considering fictional texts and illustrations, and interpreting artefacts such as historical paintings, sketches, diagrams in patent registrations, or even architectural sketches. This approach also makes it possible to deduce historical media practices – which are one aspect of sociotechnical imaginaries – from all these different sources.[4]
2. The social dimension comprises the people and societal institutions which are part of the storage and retrieval of knowledge relevant to smaller or larger collectives. The archaeologist's task is therefore to check carefully which individuals and institutional contexts to include (or rather, not to forget the seemingly marginal ones beyond the official representatives and institutions, such as national libraries and official archives).
3. The mental dimension is related to conceptions and ideas, or to certain values and norms. Concerning the past, this might be one of the media archaeologist's most difficult tasks, if the aim is to grasp not only official narratives of the time but also the multiplicity of conceptions and ideas that are less overt. For contemporary history, this is the entry point for an oral history methodology.

4 As these theoretical and methodological considerations are part of a larger book project on alternative sociopolitical concepts linked to media technologies and practices in the nineteenth century, I want to give an example. In order to analyze the planned interplay of architecture, communication technologies and social renewal in Charles Fourier's ideal communities, one has to collate not only his copious writings but also his drawings, as well as architectural sketches, paintings, and programmatic manuscripts by his followers (such as Victor Considérant). In keeping with my focus here, Fourier's project was a disaster. It was never realized on the scale he had envisaged; experimental communities following his ideas, e.g., by Fourierists in France and the USA, were all doomed to failure (cf. Doll 2022). Nevertheless, Fourier was not an individual crank, but the founder of a whole political (media) movement with its own imaginations of a specific media future – though not one that was particularly elevated by "legislatures, courts, the media," to allude to Jasanoff (2015a, 4). My book will be published in 2024, most likely under the title *Mediale Gegenwelten*, with the German publisher transcript.

3. CONCLUSION: A POLITICS OF RETRIEVING SOCIOTECHNICAL IMAGINARIES, OR, THE SPECTERS OF POLITICAL IMAGINARIES

As already implied, the work of a media archaeology of sociotechnical imaginaries is not just a task of mustering "a mass of data" (cf. Walter Benjamin's criticism of nineteenth-century historicism: Benjamin 2003, 396). It is unquestionably also a political task: As soon as unused possibilities, alternatives, and contradictions, in short, missed political opportunities are actively remembered, i.e., actualized in the functional memories, they can also serve as a delegitimization of existing power relations. It can help people realize that these power relations are an effect of a historical becoming, an effect of past political decisions (and perhaps of suppressing other ones), and that, therefore, there were and are alternatives. In this respect, the media archaeology of sociotechnical imaginaries is part of a "history of the present" as described by Michel Foucault (1995, 31), and connected to his famous concept of critique, linked to the question of "how not to be governed like that, by that, in the name of those principles, with such and such an objective in mind and by means of such procedures" (Foucault 1997, 44).

While Benjamin had lamented that history was written by the victors, historian Peter Burke amended this to "history is [more or less actively, M.D.] forgotten by the victors […] whereas the losers are unable to accept what happened" (Burke 1997, 54). With reference to this, Assmann emphasizes:

> The motif underlying counter-memory, whose bearers are the conquered and the oppressed, is the delegitimization of power that is experienced as tyrannical. It is as political as the official memory, because in both instances it is linked with a claim to power. The counter-memory serves as a foundation not of the present but of the future, anticipating the time that will follow the fall of those currently in power. (Assmann 2011, 129)

The same goes for past sociotechnical imaginaries: As marginal as they might seem at one historical point (particularly when viewed in all their incompleteness and incoherence in the storage memory), once they are actualized, they can form a sort of counter-memory that might, "in the fight for the oppressed past" (Benjamin 2003, 396), lead into another future.

Nevertheless, particularly in the context of sociotechnical imaginaries, it is crucial not to misunderstand the storage memory and above all the functional memories as firmly delimited homogeneous fields. Instead, again with reference to Erll, I want to stress "the dynamic, creative, and processual nature, and, above all, the plurality of cultural memory" (Erll 2011, 49, cf. 62) and thus also the corresponding status of sociotechnical imaginaries in relation to it. Whereas for Ernst and Schröter,

following Cornelius Castoriadis,[5] "the imaginary offers an inventory of culturally specific forms of what one can imagine" (Ernst and Schröter 2021, 10), I would like to shift the focus to analyzing the imaginaries more in their multiplicity and disparity (or their scatteredness, if we think about their status in storage memory). This approach makes it easier to take into consideration imaginaries that are less coherent, exist on a smaller scale, i.e., circulate in smaller communities, and do not belong to a whole society or culture. Assmann's approach also allows a clearer view of the non-actualized elements, which may still be waiting for actualization.

To conclude with Derrida, past sociotechnical imaginaries or oppressed past futures can build a sort of political inheritance of missed political alternatives distributed "in the two directions of absence" (Derrida 1994, 25): the past and the future. This political inheritance is radically anachronistic,[6] because it can be interpreted as a specter that reminds us "of what is no longer and what is not yet" (Derrida 1994, 25): "At bottom, the specter is the future, it is always to come, it presents itself only as that which could come or come back" (Derrida 1994, 39). And to avoid the trap of longing for a certain dead political past to be reinvigorated in its totality, Derrida reminds us that "inheritance must be reaffirmed by transforming it as radically as will be necessary. […] Inheritance is never a given, it is always a task. […] [T]he thinking of the specter […] is a thinking of the past, a legacy that can come only from that which has not yet arrived" (Derrida 1994, 54, 196). One of the tasks of a political media archaeology of sociotechnical imaginaries is therefore to show the downsides of certain political movements in history, in order to prevent history from simply repeating itself.

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5 A more precise comparison of my processual approach on sociotechnical imaginaries (based on Erll) with Castoriadis's thoughts on the dynamic dimension of Magma seems promising but is beyond the scope of this article. However, the clearest difference between my approach and that of Castoriadis is that I am less interested in "society as a whole" (Ernst and Schröter 2021, 31) and in totalities such as "a universe of significations" (Castoriadis, quoted in Ernst and Schröter 2021, 32). The storage memory, though not totally unstructured, is not meaningful to the same degree. It is more a "pile of debris" that has to be recomposed and thus endowed with rudimentary meaning.

6 It is as anachronistic as quoting Derrida at a time when the end of theory has been strongly in vogue in the (digital) humanities for quite some time (Anderson 2008).

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TECHNO-NOMOS, ONTOLOGY, AND THE IMAGINARY.

FROM CCRU TO LUCIANA PARISI

FELIX HÜTTEMANN

1.1 SHORT PRELIMINARY REMARKS

This article deals with a perspective of software- and algorithm-theory that implies a techimaginary, which is characterized by disputes about technological sovereignty, and is focused on a *nomos* of technology. The problems are, firstly, the origins of this theory from decisionist topoi and secondly, its inherent apocalypticism and cultural critique. In this context, an engagement with technology in terms of a pessimistic futurity is imagined and applied to a posthuman autonomy of technology. I would like to refer to this in the following discussion as techno-*nomos*. First, a brief classification of the term will be used in order to try to approach the further topoi in the following sections, in Benjamin Bratton's *nomos of the cloud*, in the *teleoplexy* and *cyberpositivity* of the *Cybernetic Culture Research Unit* (CCRU), and in Luciana Parisi's examinations of *algorithmic architecture* and instrumentality. It should be noted at this point that my aim in this text is to make a start and therefore rather try to show argumentational affinities and references and less, which would be just as appropriate but will have to follow elsewhere, to provide an ideology-critical analysis of these theories.

1.2 NÓMOS OR NOMÓS?

Approaching this historically significant word can quickly lead us astray and already indicates that, depending on the perspective, this term was used in different ways. The ancient Greek word *nomos* is given a different meaning depending on the accentuation. Νομός, *Nomós* with the stress on the second syllable, is used in the spatial sense of district and accordingly refers to a topological indication. With Νόμος, *Nómos*, stress on the first syllable, it is understood in the legal sense as a term for the law. These meanings of the term equally apply to words related to the root *nemein* "to restrict" and *nemesis* "allotment." The derivation from this Greek word root with this specific focus on separations and demarcations is the one that continues to be used here from different perspectives, for example, by Benjamin Bratton. This became known and cultivated primarily through the 1950 book *Der Nomos der Erde* (*The Nomos of The Earth*) by the notorious constitutional lawyer and friend-enemy-theorist Carl Schmitt. "For Schmitt, the physical incision of the line into the earth precedes the empty abstractions of mathematized grids and naval liquidity and is essential to any proper sovereign form" (Bratton 2015, 19). The physical incision into the material, into the earth, characterizes

lawmaking. The basis of every legal norm, for Schmitt, is thus topological. He calls this "the structure-determining convergence of order and orientation"[1] (Schmitt 2006, 78). He refers to the act founding order and orientation as land appropriation (*Landnahme*).

Schmitt's concept of land appropriation refers here to the constitution of the *nomos*, which is formed between solid land and the open sea or between land powers and sea powers. Land, as a symbol of the space to be ordered and delimited, must be taken possession of. Spatial order must be established by demarcation in order to have a legal basis. Schmitt distinguishes, as just indicated, between two different types of space: the land, the telluric, and the sea, the maritime, although he also outlines the third spatial order, that of the airspace:

> Thus, every seizure of land is not a *nomos*, although conversely, *nomos*, understood in our sense of the term, always includes a land-based order and orientation. If we add the domain of the sea, then the relation between land and sea determines the spatial order of international law. If the domination of airspace is added as a third dimension, then still other new spatial orders arise. (Schmitt 2006, 80)

In Schmitt's terms, land, sea, and air denote different legal norms or different *nomoi*. Geopolitical spatial orders, how they change through territorial appropriations and losses, and how this affects questions of political sovereignty are central points of interest for Schmitt's theory. Also of importance for the further discussion is Schmitt's decisionist definition of sovereignty: "Sovereign is he who decides on the exception" (Schmitt 1985, 5). From the one who has the power to decide what does not conform to the rule or a pattern, everything else proceeds. Thus, the categorization of the political is genuinely about decision-making. This can also be stated in connection with algorithms.

Is this to be categorized as an algorithmic rationality or merely a political definition of an authority-oriented focus on power? Can this axiom be categorized as merely political and not inherent to technology? Strictly speaking, and this will also be one of the quintessences of this text, these two categories of the political and the technical, especially if one includes the economic as well, cannot be separated. If, for example, one follows Wendy Chun's thesis that homophily and correlation not only cause and strengthen discriminatory factors of data analysis and evaluation, but are also genuinely political, then allusions to Carl Schmitt's political analyses of authoritarianism are certainly recognizable. Chun writes: "Correlation is complicated. It is not simply a linear one-to-one relation. It condenses, displaces, multiplies. Proxies both poison and cure. […] Homophilic spaces are often agitated spaces of comforting rage. To move beyond this, we need to acknowledge discomfort as a way to create new forms of connection and co-habitation" (Chun

1 "[D]as struktur-bestimmende Zusammentreffen von Ordnung und Ortung" (Schmitt, 1950: 48).

2021, 244). Schmitt's notorious dictum on sovereignty places primacy on the decision as such rather than on the process of decision-making, which can be found in some areas of algorithm theory.[2] As indicated, it is about demarcation, not only between friend and enemy, i.e., associations and dissociations, but also about interrelations. For Schmitt, however, these take place on a level prior to all further categorizations. Before any ethics or aesthetics, it is about the basically ontological realm of the political, in which the most radical distinction is to be made.

> The distinction of friend and enemy denotes the utmost degree of intensity of a union or separation, of an association or dissociation. It can exist theoretically and practically, without having simultaneously to draw upon all those moral, aesthetic, economic, or other distinctions. […] But he is, nevertheless, the other, the stranger; and it is sufficient for his nature that he is, in a specially intense way, existentially something different and alien, so that in the extreme case conflicts with him are possible. (Schmitt 2007, 26f.)

Be it between friend and enemy, land and sea or cloud, platforms and social media behavior. Is there such a data-decisionism as contrasted here from a Schmittian perspective? For example, is this the case when decision trees or personalized recommender systems drive the decision itself in such a way and the conditions and embeddings under which an algorithm makes decisions or performs calculations are not included? If less attention is paid to which marginalizations, which resentments, for example, are perpetuated in the algorithm?[3] If the decision of the algorithm is about reaching associations and dissociations via pattern recognition? If digital neighborhoods and similarities in the data layers create exclusions, as Wendy Chun has put it, then the reference to Carl Schmitt or rather the structural similarity of ideology is striking. Wendy Chun also sees this and likewise draws the comparison to Schmitt (Chun 2021, 236.) Does the decision about the exception endow a techno-*nomos*, such as through the decision-making algorithm? The techimaginary can further be understood as a political geography or topography in Carl Schmitt's sense. It is a space of possibilities for political imagination that shifts into the technological realm and, by imagining technical futures, formulates political consequences in reverse. As, following Schmitt, Benjamin Bratton has explained it in *The Stack,* the megastructure The Stack, which can basically be understood as a technological structure, consists of "smart grids, cloud computing, mobile and urban scale software, universal addressing systems, ubiquitous computing, and robotics" (Bratton 2015, xviii). At this point in Bratton's work, no mere territorial logic is perpetuated, as is the case in Schmitt's; ultimately, as I would argue, the discussion of the question of sovereignty and algorithmic decision-

2 See Bogost (2015); Fuller and Goffey (2012); Goffey (2008); Manovich (2013); Paquale (2015); Zarsky (2016).

3 See Eubanks (2018) and Noble (2018).

making is about an imaginary or even speculative economy, and not so much about a fundamental question of jurisdiction and legislation of the *nomos.* It is therefore much more a matter of dealing with economically effective decision-making that is intended to anticipate and influence the future. Accordingly, what can be summarized as techno-*nomos* based on Bratton?

2 BRATTON: SOVEREIGNTY IN THE CLOUDS

As a first approach, this complex can be understood as a political, theoretical assumption which is applied to technological conclusions in order to become political again as the Imaginary. It is questionable whether, in the argumentation with regard to technology, it ever ceases to be political. Bratton follows up on the division of land and sea by interpreting them as orders of physical and virtual and relating them to *The Stack* and its institutional logic of platforms (see Bratton 2015, 19). For Bratton, sovereignty works through software and forms differently situated sovereignties. The point of reference besides Schmitt's theory, as he himself points out, is Giorgio Agamben's *nomos* of modernity as introduced in his text *Homo Sacer*[4]. For conceptual reasons, further remarks on Agamben must be left out at this point. The essential point from Agamben's theory is his extension of the analysis of sovereignty as an exceptional decision to orders that do not only refer to nation-states. These orders, which constitute *nomoi*, can arise at other turning points and incisive places, as well. For Agamben, it is famously the camp as the *nomos* of modernity that unites order and orientation. Can technology or the Internet, the cloud, the platform also represent such a synthesis of order and orientation and thus establish their own *nomos*? Why does a certain argumentational position on algorithms assume a new *nomos* through technology? To what extent is a rupture being stated here through technology, which requires a different understanding of technology through a *nomos* of whatever kind? To deal with the question of the *nomos* on the level of software studies means first and foremost to postulate turning points and watersheds.

> Today the continuing (if still incipient) emergence of planetary-scale computation may represent a similar break and a similar challenge to the political geographic order. It does so not only because the Cloud is a new continent to be colonized, but because, as a kind of space, it trespasses the Schmittian metaphysical distinction between solid ground and liquid sea as the essential poles of geopolitical space and theory. (Bratton 2015, 26)

Bratton's notion of cloud should be seen in a broader sense than merely in terms of data storage or a computer network. It stands paradigmatically for the world wide web as a third space, as well as for a planetary computer network in the ma-

4 See Agamben (1998).

terial sense, and for digital space as such. It is worth noting both the metaphorical level of cloud and airspace, which is invoked here in reference to Schmitt, and a subtle online/offline dichotomy, which of course plays a role in every division of space in the digital and analogue spheres as well. It may well also relate to the somewhat out of fashion term of cyberspace. This third, or actually, besides land, sea, and air, fourth space, elaborates its own *nomos*, which is established by Schmitt's analysis: In the conglomerate of political philosophy, architectural theory, and software studies, Bratton sees a planetary computational scale as new geopolitical reality taking place. Bratton states the following about this *nomos* of the cloud:

> Planetary-scale computation may need to be understood as a successor to these other modes of geographic governance – land, sea, air – each with its own logics of partition. But unlike the US Department of Defense, which also recognizes cyber as the fourth spatial domain of war but describes it as necessarily subordinate to existing forms of state jurisdiction, I suggest that other shifts are at work, perhaps even a break, that will prove more difficult to accommodate and contain. (Bratton 2015, 27)

Abbreviated, this gesture of theory in technology seeks to state an actuality of sovereignty theory in the context of software that relates to space of digital global networks (Bratton 2015, 31). To put it more pointedly, Carl Schmitt's *nomos* of the earth appears in Bratton's theory like a workaround for algorithm studies (Bratton 2015, 25). *Nomos* of the cloud characterizes a form of infrastructure that, on the one hand, considers the *nomos* of the earth with its implications in technical space as superseded. On the other hand Bratton does not entirely assign an independent agency to this new *nomos* to technology in this form, but rather still characterizes the *nomos* as a regressive, decisionist moment of political theology. Bratton writes "The modern *nomos* is fragmenting and perforating, it is distorted and deformed by both planetary computation, which produces new territories in its image, and by resurgent political theology which reconvenes premodern geo-jurisdictional domains" (Bratton 2015, 380). *Nomos* of the cloud as a subversion of Schmitt's *nomoi*, equally turns out to be a consistent continuation. In view of underwater cables and precious metals dug out of the earth for the production of such cables, a collapse or synthesis of the old *nomoi* could certainly be stated for this new *nomos* from the perspective of a *geology of media* (see Parikka 2015). On the level of hardware, one could certainly argue further along Schmitt's theoretical lines. Thus the techno-*nomos*, also another word for technical apriori, can be understood as a materialistic apriori. The announced posthuman perspective and the thesis of the autonomy of technology as techno-*nomos* remain open questions. Or put differently: Is there a *nomos* of software?

> The geometries at work don't simply reflect governance; they perform it: from line into frame into topos into something else situated where we might once have put *nomos.* Whether deliberately or accidentally designed, a geopolitical architecture is cast. Information is transformed into shape, drawing an arc of algorithmic governance along braided topoi built of asymmetrical super impositions; less modus vivendi than the mutual invisibility of overlapping sovereignties. (Bratton 2015, 38)

These questions lead toward a form of techimaginary as a topology or even an architecture of algorithms, as we find it in Luciana Parisi's work following the CCRU and its theories of futurity, as will be shown further below. Bratton explains The Stack as follows:

> I propose that we view the various types of planetary-scale computation(e.g., smart grids, cloud computing, mobile and urban-scale software, universal addressing systems, ubiquitous computing, and robotics, and so on) not as isolated, unrelated types of computation but as forming a larger, coherent whole. They form an accidental megastructure called The Stack that is not only a kind of planetary-scale computing system; it is also a new architecture for how we divide up the world into sovereign spaces (Bratton 2015, xviii).

Exactly this question of an algorithmic architecture as well as how problems of decision and distinction can be represented there will be indicated in the next section.

3.1 FROM CCRU TO PARISI: INSTRUMENTALITY AND TECHNOLOGICAL SINGULARITY

In a 2016 interview, media theorist Luciana Parisi retrospectively reflects on her time at the University of Warwick and specifically within the official/unofficial research group of the *Cybernetic Culture Research Unit* as follows: "It was very much about understanding the form of the medium, its structure and cold constitution. It was very much about entering the instrument" (Panayotov 2016). The entry into the instrument and the fascination for *cold* computations and what exactly this looks like is the perspective from which Parisi's remarks are further discussed. In the following, it is to be clarified what the algorithms and the question of anticipation of the future and acceleration have to do with the techno-*nomos* explained above. For this, some background of the origin of Parisi's theory will be reflected upon here by relating her perspective to key concepts of the CCRU, such as *cyberpositive*, *teleoplexy,* and *hyperstition*. First, the CCRU will be briefly introduced, and then I will try to connect the previous remarks to the question of futurity, thus connecting to the algorithms in Luciana Parisi's theory.

3.2 WHO OR WHAT WAS THE CCRU

The CCRU was a quasi-institutional grouping grounded in counter-culture at the end of the 1990s and beginning of the first decade of the twenty-first century, which can be attributed to its founding figures Nick Land and Sadie Plant, who sought a connection to (continental) academic discourses. Their primary goal was to investigate and also affirm the effects, impacts, and potentials of cybernetics on (pop) culture and media theory. The fascination for continental philosophy from Kant, Schopenhauer, and Nietzsche to French philosophy of the post-sixties of Lyotard, Deleuze and Guattari, or Baudrillard, as it characterizes the CCRU texts, is complemented by a subcultural charging of their discourses by cyberculture, gothic horror, afrofuturism, and science fiction literature by J. G. Ballard or William Gibson, but esotericism, numerology, occultism, and demonology are also thematic influences.

The term *cyberpositive* derives from the Cybernetic Culture Research Unit's engagement with these topics, especially with cybernetics (control and regulation science as the name suggests), as coined by Norbert Wiener. Central here is his concept of negative feedback. The actual state is in a sense deficient and is adjusted to the target state. One could also interpret this as a perspective of the future. A more positive future is applied to the deficient status quo and in order to achieve it, the future state is anticipated and the better future is brought forth. Against this negative feedback of the future as a self-stabilizing system, the CCRU sets the positive feedback as an indipendent, continuously processualizing, destabilizing system. This is described as a "self reinforcing cybernetic intensification" (Land 2014, 514). What is outlined here, in terms of theoretical history, is a form of Deleuzian intensification and thus, in a radicalized form, an intensity of technology that is driven by a machinic desire. This desire, which is characterized by a libidonous relationship to alienation as well as to capitalism, also refers to Jean-Francois Lyotard's *Libidinal Economy*, or his evil book, as he himself called it. Lyotard summarizes this libidinal-economic desire as pleasurable alienation:

> How can we continue to speak of alienation when it is clear that for everybody, in the experiences he has (and that more often than not he cannot properly have, since these experiences are allegedly shameful, and especially since instead of having them, he is these experiences) of even the most stupid capitalist laborer, that he can find *jouissance* and a strange, perverse intensity, what do we know about it? (Lyotard, 1993, 112)

One must note for further consideration: for CCRU's accelerationism, stabilization through negative feedback, cybernetization, or even automation as a stabilizing factor (of capitalism, of technology) is the (Schmittian) enemy. It is rather about an unleashing of already inherent acceleration and destabilization tendencies of such systems or structures. This imaginary assigned to technology craves

catastrophe, destabilization, derealization, and deregulation. Benjamin Noys summed it up aptly: "Reading this full-blown accerlerationism alongside discussions of the New Right and their aim to 'dissolve' the state led me, at the time, to coin the term 'Deleuzian Thatcherism'" (Noys 2013, xi). From this perspective, for example, there should be no market regulation. To regulate capitalism despite its singularizing tendency is what Nick Land calls a *teleoplexy*. *Teleoplexy* describes two, or more, opposing teleologies or nomoi, that are intended to accelerate and reinforce each other and, of course, to achieve an overall destabilization of the future. Or in Land's own words:

> Positive feedback processes are self-amplifying and more or less ubiquitous to all domains where there is directed development. In all those domains, they are however most likely to be "perceived" – or at least reacted to – as dangerous and countered by compensatory movements containing the explosive activity. In the socioeconomic domain, these compensatory movements come from social norms and political decisions, and not from the mechanism of capital itself, which would move explosively forward if unconstrained. The twisted complex of conflicting teleologies – natural self-amplification vs corrective compensation – is what the author calls teleoplexy. (Land 2018)

Teleoplexy can be characterized with Deleuze and Guattari as an *abstract machine*, as a disruptive ontological machine, that can be understood as a *nomos* gone wild. A catastrophic order and orientation for a longed-for apocalyptic future.

This *teleoplexy* refers quite concretely, to make it less abstract, on the one hand to destabilizing consolidation or stabilization mechanisms through, for example, price formation. Above all, however, it also refers to regulation, for example, data protection regulations, and thus the usage rights of private data. Somewhat cynically speaking, it is about the broadest vision of open access, which from the accelerationist standpoint is about being able to use data in a deregulated and deregulating way: "What can the earth do? There is only self-quantification of teleoplexy or cybernetic intensity, which is what computerized financial markets (in the end) are for" (Land 2014, 516). To take the extreme example of what this can be about even further, if one pushes the autonomy of technology, of capitalism and technological singularity, it is about nothing less than a posthumanist end-time fantasy. "The 'dominion of capital' is an accomplished teleological catastrophe, robot rebellion, or shoggotic insurgency, through which intensely escalating instrumentality has inverted all natural purposes into a monstrous reign of the tool" (Land 2014, 513f.). Technology and economy in this context means an affirmation of, for example, technological singularity and the autonomy of technology, but also an absorption in the technical *nomos*. To combine it with Benjamin Bratton's perspective, it is about becoming a part of *The Stack,* to participate in the *nomos*

of the clouds. It is the perverse longing, as Parisi suggested, to become an instrument of the market itself. Do we need to think of alienation as economic happiness?

3.3 ALGORITHMIC ARCHITECTURE AND SPECULATION

The observations made above are related below to what Parisi calls the *automated architecture*, or speculative reason in the age of algorithms. She calls the decision of algorithms speculative reason because, coming from Whitehead, it makes the question of the unpredictability of the futurity the basis of decision-making. In doing so, she repeatedly circles around questions such as those also articulated above by Bratton, for example, with regard to the techno-*nomos*. For Parisi, the future is seen as anticipatable or imaginable, but in a fundamental sense, she describes futurity as only speculable, probabilizable, and ultimately assumes, implicitly following results from CCRU, that the acceleration of algorithms ultimately forms the driving force of order and orientation. The point of this assumption is to relate calculability and unpredictability, as well as futurity and algorithm. Parisi writes:

> With the acceleration of automation, the explosive advent of algorithmic randomness within computational processing has become inevitable. This means that instead of deriving dynamic patterns of information from matter, patternless data are instead generated within computation itself, and have thus become intrinsic to automated reason. (Parisi, 2014, 417)

For Parisi, the problem lies in the definition of algorithms themselves. An algorithm is an unambiguous instruction for the solution of one or more problems, consisting of finite, defined single steps. The description of the algorithm has a finite length and thus has only a determinable number of characters. Where the algorithm begins in the computation and where it ends, thus giving the result, is axiomatically fixed. But, here she refers to Kurt Gödel's incompleteness problem which states that there can be no axiomatic method by which the world can be read as true or false. There is no unambiguousness, but, one could conclude, only the decision about just such an unambiguousness. All problems which are axiomatically determined are computable problems, as was shown by Turing and his machine. Everything that cannot be decided with it is therefore incalculable and falls, in Carl Schmitt's terms, either into the area of the enemy or into the prepolitical area. What does this mean for the question of techno-*nomos* and futurity? It boils down to existentialism or decisionism: What counts is the distinction as such.

> The problem of the incomputable thus shows that computational axiomatics is inevitably infected with randomness, but also that random-

> ness is each time turned into an axiom by means of rule-based processing, defining algorithmic reason as a nonlinear elaboration of continuous infinities and transformation of its discrete parts. (Parisi 2014, 413)

Randomness, unpredictability, is always part of the calculation, despite all axiomatics of the algorithm. Randomness is therefore inherent in it. It is about calculability, statistics, probability, pattern recognition and not, for example, about truth, beauty, or morality.

Without going into further detail, how does Parisi deal with the fact that algorithms can not only anticipate a part of the future, i.e., interpret it in terms of the high probability of events, and yet can also, for example, use learning algorithms to anticipate purchasing behavior in such a probable way that this future actually occurs? What is the relationship between the future, chance, and unpredictability? This is where the link back to the CCRU comes into play again: In the interview already mentioned, Parisi once again makes reference to the CCRU, referring to hyperstition as a method of her theory: "We talked about reverse engineering of hyperstition. To engineer the time, the future, the present by other means" (Panayotov 2016). Hyperstition denotes the idea of shaping the future and anticipating the future that is very similar to the idea and theory of the meme. "Hyperstition is a neologism that combines the words 'hyper' and 'superstition' to describe the action of successful ideas in the arena of culture" (Carstens 2010). Reverse engineering characterizes the process of extracting the construction elements from an existing finished system or an often industrially manufactured product by examining its structures, states, and behaviors. Thus, a plan is created again from the finished object. I believe here, at these seams of future and probability, algorithm, and hyperstition, the role that chance and especially decision plays in Parisi's algorithm theory of acceleration, this is where a critique must start, at the also implicit problems that it either inherits, consciously accepts, or even affirms, as it were, from Nick Land and others.

4. CONCLUSION

This contribution has attempted to approach a kind of techimaginary of decision and techno-*nomos* via a brief conceptual classification. In Benjamin Bratton's *Nomos of the Cloud*, decided points of connection to Carl Schmitt emerged, were articulated, and addressed questions of sovereignty in digital space in search of order and orientation.

The *teleoplexy* and *cyberpositivity* of the Cybernetic Culture Research Unit (CCRU) revealed foundations of a fascination with deregulation and autonomy. Contrary to the rhetoric of destabilization and chaos, it is clearly about a technological order that is in no way inferior to the authoritarianism of Carl Schmitt.

In Luciana Parisi's arguments about *algorithmic architecture* and instrumentality, the attempt was made to show argumentation affinities and references that

deal with the decision-making of algorithms, chance, and unpredictability, which were put in relation to the problems of such a primacy of decision-making.

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TECHNO-IMAGINATIONS OF A NUCLEAR REGIME.

HOW A POWER PLANT BECAME A PROXY BOMB

AGNIESZKA JELEWSKA AND MICHAŁ KRAWCZAK

1. INTRODUCTION[1]

In this article, we discuss how techno-imaginations are designed within the nuclear regime as a tool to neutralize responsibility for military violence. We directly refer to the strategy of *nuclear terrorism* used by the Russian army against civilian infrastructure during the war in Ukraine. This situation is spectrally embedded in the interference of various media discourses and refers to the *nuclear renaissance* policy, which is one of the official cultural and political doctrines of contemporary Russia. We use the infrastructural perspective of media studies (Parks and Starosielski 2015), at the same time referring to the founding texts of nuclear criticism (Derrida 1984, Kerckhove 1984) to show the need for a new critical approach to analyzing the dependence between nuclear infrastructures and the cultural consequences of these transformations. We put forward the thesis that one of the most critical cultural consequences of intertwining the nuclear industry with the media, and the narratives generated by them, are new forms of weaponizing civilian nuclear infrastructure and a new topological figure of time in which the present shrinks to strengthen the future. This onto-technological dependence generates new forms of atomized memory in which the past is justified by pursuing a sustainable nuclear future, the present facts are displaced, and the negative aspects of nuclear accelerationism are neutralized.

2. NUCLEAR RENAISSANCE

Since the beginning of the new millennium, we have witnessed trends in the development of nuclear arsenals, thanks to China, India, Iran, and North Korea, but also the US and Russia. In the case of Russia, consistent actions based on sentiment toward a past nuclear empire are also responsible for violent policies, as evidenced in the armed assault on Ukraine in 2022 and the energy blackmail of Europe. Many scholars call the phenomenon of a return to such policies a nuclear renaissance (Kinsella and Kelly 2013; Nuttall 2022) and warn that, in fact, the Cold War never ended but only changed into forms of "thermonuclear cyberwar"

1 This article is the result of our research conducted under the auspices of a grant from the Polish Ministry of Education and Science, entitled: *Mediated Environments. New practices in humanities and transdisciplinary research* (no: 0014/NPRH4/H2b/83/2016).

(Gartzke and Lindsay 2017). These wars are no longer meant to develop only a nuclear arsenal but also concern innovative management of intimidation and deterrence infrastructures based on algorithms and artificial intelligence. Not insignificant in this process are media narratives, which, in a detailed analysis, may reveal deep cultural layers of the entanglement of nuclearity and politics, which had already begun during the Cold War.

In 2011, Vladimir Putin, in his capacity as Russia's prime minister, opened a new nuclear reactor as part of his presidential campaign. He said: "Nuclear energy is on the rise. There's a rebirth, a renaissance, of the nuclear sphere taking place right now" (The Associated Press 2012). The notion of a nuclear renaissance not only became one of the major features of Putin's presidential campaign, but also reflected real expansive policies pursued by Russia since then. At the time, few heeded such slogans. Today, with hindsight, we know that Russia was preparing to rebuild its imperialist power by implementing a propaganda and PR plan to promote atomic infrastructure.

The implementation of this type of policy previously required the creation of infrastructure and tools that would be able to transform the ideas of political discourse into real activities of cultural and social significance. In order to consolidate nuclear interests, in 2007 Vladimir Putin created Rosatom. This global giant of the nuclear industry brings together under its banner everything from uranium mines to units specializing in uranium enrichment, R&D institutes, and nuclear power plants as well as global nuclear fuel distribution networks. Rosatom is an heir to the earlier state-owned nuclear companies operating in the USSR and later in Russia. In 2020 the corporation proudly celebrated the seventy-fifth anniversary of the Russian nuclear industry. As part of the commemorations, Rosatom used a special anniversary website and YouTube to disseminate a 40-minute documentary film of the 30 October 1961 test of the largest atomic bomb of all time, the *Tsar Bomba*. Up until that release, the film had been secret. The official name of this aerial thermonuclear bomb was AN602. It was designed by a team composed of Andrei Sakharov, Viktor Adamsky, Yuri Babayev, Yuri Smirnov, and Yuri Trutnev, who participated in a nuclear program commissioned by Nikita Khrushchev under the supervision of Igor Kurchatov (Holloway 1994). The gesture of making the archival document public as part of the anniversary celebrations of Russia's nuclear industry had several purposes. One of them is certainly an attempt to recall Russia's former nuclear military might and its nuclear weapon stockpile. Another is an uncompromising attempt to neutralize anti-nuclear criticism, to entangle the past with the future, and to establish the false argument that the future can justify the past. In our opinion, there was another purpose behind making the film public, namely to present the USSR as the winner of the Cold War. This is because the historical narrative is underpinned by the myth that it was the USSR that used nuclear weapons in the most perfect way. Scientifically and technologically, it could create the most powerful weapons, but it also never used them against human beings (which, of course, does not consider the hundreds of thou-

sands of victims who were affected by the far-reaching consequences of the experiments carried out at the Soviet nuclear testing grounds). This false argument also feeds into the politics of modern Russia, which acts as the heir to the nuclear regimes and cherishes the historical image of its legacy.

The fact that nuclear weapons have not been used has also become a tool of the current media blackmail carried out by the authorities of the Russian Federation during the war in Ukraine. In his September 30, 2022, speech on the political situation polarizing the countries of the East and West, Vladimir Putin argued that the United States created a nuclear precedent by bombing Japan at the end of World War II (Reuters 2022). In the following months, this narrative recurred regularly, also transforming into an unprecedented plan to build nuclear infrastructure and deploy nuclear weapons in Belarus, which in fact ended the order based on the denuclearization of the former Soviet Republics after the collapse of the Eastern Bloc. This situation revealed the entanglements and interdependencies between the various layers of nuclear infrastructures and the cultural policies and practices generated by them. In these media statements, we could observe a narrative return to the genesis of nuclear energy, in which all infrastructure elements result from the founding act of creating and using a deadly weapon: the atomic bomb.

It is also worth recalling here the position of the United States, expressed almost 80 years ago in the famous speech given by Harry Truman after the bomb was dropped on Hiroshima and Nagasaki. In this address, political and cultural arguments were articulated that sanctioned the acceleration of nuclear policies based on neutralizing responsibility and escaping into the future toward an imagined energy-sustainable planet. At that time, the justification for the creation of the atomic bomb was a neutralizing fear policy based on the speculation that if it had not been for the Americans, the Nazis would probably have created the bomb first, which would certainly have led to a global apocalypse. This argument based on an imagined, alternative course of history neutralizes criticism, shifting the responsibility to the very genesis of the bomb – created in the heads of Nazi scientists. But in the same speech, there is also a projection of the future, which Truman saw as dependent on the development of the nuclear industry. At the same time, that industry was the limiting point in the history of mankind, as it managed to bring "the energy of the sun to the Earth." As he stated: "The fact that we can release atomic energy ushers in a new era in man's understanding of nature's forces. Atomic energy may in the future supplement the power that now comes from coal, oil, and falling water" (Truman 1945). In the speech of the American president, the future justifies the past and neutralizes the responsibility for the present. The accelerationist paradigm is directly brought to life, suggesting a clear direction for developing nuclear technologies. Thus, one of the myths of nuclear energy is built, namely, that it is a clean energy source that can replace energy based on fossil fuels.

3. NUCLEAR-PROOF COMMUNICATION

Cold War nuclear weapons tests are probably some of the best-documented technology-related events occurring in Earth's recent history. There is a myriad of scientific studies on them conducted by physicists, chemists, geologists, seismologists, historians, security and political studies researchers, and representatives of many other fields. There are countless hours of media recordings documenting at length the course of the tests in state archives and research institutes. The total number of hours of these recordings far exceeds the actual duration of the tests. Many of these documents were painstakingly detailed, fulfilling the demands of nuclear protocols that sought to capture the tiniest particulars of nuclear tests with an almost fetishistic fascination.

Media and communication infrastructures have become an integral part of the nuclear industry. Stanisław Ulam used one of the first MANIAC computers to design the first thermonuclear bomb (Wolverton 2022). The idea of network communication created by Paul Baran was supposed to be a kind of nuclear-proof communication, ensuring communication even during a nuclear war (Baran 1962). From this model the Internet emerged later as a tool of social communication. Remote sensing technologies were supposed to ensure the detection of nuclear activity carried out by various countries (Ryan 2010). The interdependence of these technologies cannot be clearly defined, just as they cannot be perceived as separate tools, methods, and strategies. Therefore, contemporary media comprises complex infrastructures, as Lisa Parks and Nicole Starosielski put it (2015). These infrastructures are connected with energy networks, control and supervision systems, and data collection, but also with physical objects: buildings, cables, road networks, pipes, etc. But this is only one level of complexity in the modern technosphere. Ultimately, the consequences of nuclear technologies can be found in almost every sphere of modern civilization and social life. Joseph Masco – a nuclear anthropologist – calls this phenomenon "technologies of everyday living" (Masco 2006) and shows that their military functionalization emanates in the forms of mutating contemporary culture.

The phenomenon of nuclear mutation of communication systems and everyday life was addressed by Derreck de Kerckhove in the 1980s. He discussed these in his text *On Nuclear Communication* (1984). It was the closing article published in the iconic issue of *Diacritics*, which was opened with Jacques Derrida's founding manifesto for what was referred to as nuclear criticism. In his essay titled *No Apocalypse, Not Now (Full Speed Ahead, Seven Missiles, Seven Missives)* (1984), Derrida pointed out that the problems associated with nuclearism not only surpass in their scope the analytical possibilities realized both in and through language, but additionally require new methodological forms and tools due to their nature of intertwining matter, time, science, technology, and politics of war rhetoric. For Derrida, one of the most salient features of nuclear war is its complex linguistic status. The possibility of atomic war or nuclear catastrophe, from the moment of creating the first nuclear weapons, is itself a narrative that cannot be

stopped or canceled, and furthermore, the very potential for the actual use of such weapons carries with it the possibility of the annihilation of civilization, and therefore of everything that can be produced in language. For critical theory, therefore, the act of thinking about the nuclear apocalypse is something liminal and in need of profound systemic redefinition. While Derrida's text pointed to methodological limitations in humanistic research, Kerckhove's article was at the same time a new beginning as it called for a different critique, one that goes beyond the limitations of stereotypical cultural approaches based on the romantic and prophetic visions of the end of the world. In lieu of apocalypse, Kerckhove proposes a new object of study: the atomic bomb treated as a medium, as a transformative force of culture and socio-political reality. For Kerckhove, the bomb is a medium of a new type. The performative qualities in this case are no longer merely about the agency contained in language and communication (which was the essence of the agency of critical theory, according to Derrida), but in the transformative dimension of the construction and in the material (physical) impact of the bomb itself. This has a number of consequences. First and foremost, the bomb is an infrastructural medium. It cannot be considered in isolation from a whole conglomerate of phenomena, such as nuclear energy, planetary extraction networks (ranging from mines through distribution networks to power stations), telecommunication networks (ranging from globalized communication to socio-cultural-political transformations linked to what is called the democratization of information and the development of the contemporary media sphere), and language itself. Therefore, for Kerckhove, the bomb is a psychoactive medium that performs a transformation not only of physical infrastructures, but also of cultural infrastructures, and involves dynamic psychoactive transformations for the human experience. As he observes, the bomb is simultaneously muscular, neurological, and molecular:

> The bomb is transforming our planetary relationships in at least five different ways: it is a limit which forces us to implode; it is a standard for the education of world cultures to Western technology; it is a reason for wiring the planet and accelerating human communication; it is a myth for restructuring our consciousness and expanding our identity; finally, it is the source of an unprecedented ecological awareness. (Kerckhove 1984, 71)

Apart from all the cultural implications, it should not be forgotten that the bomb and nuclear energy are likewise tools of new colonization projects. The exploitative power of nuclear energy has brought control and subjugation to a new dimension of surveillance by nuclear regimes. With nuclear infrastructures (energy, telecommunications, and military), expansions of a new type, via remote sensing technologies, have become possible and surveillance can be exercised via "distant early warning, sensor, and guidance systems" (Kerckhove 1984, 77). Kerckhove thus opens up new fields for a critical analysis of nuclearism, which not only must

involve new forms of accounting for matter, time, and space, but also new methodologies capable of identifying problems in their spectral entanglement. Nuclear criticism cannot therefore be limited to a discursive mapping of the field of research, as proposed by Derrida, but should be capable of critically identifying complex nuclear infrastructures.

4. AHEAD OF TIME

Nuclear technology has always been ahead of its time, offering a glimpse into a future yet to come. This is the message coming from the media coverage and descriptions posted by Rosatom on the Russian anniversary website *75 Years of Nuclear Industry. Ahead of Time*. It also contains a forecast of the nuclear future, which is defined by three techno visions of Russia's world domination: *Eco City*, *Arctic*, and *Space*.

The *Eco City* is an urban space constructed in "harmony with nature thanks to new achievements in science and technology," composed of ecological 3D printed architecture, vacuum roads, and unmanned smart electric cars. Still, the most important part of the *Eco City* of the future will be the software based on new quantum computers. "Nuclear technologies will play the leading role in shaping the technological infrastructure of such cities because 99 percent of all the energy that surrounds us is contained in the atomic nucleus. Having safely and responsibly mastered its ability to harness this energy, humanity will be able to significantly expand the scope of its potential" (Atom75 2020). Thermonuclear energy as "the most environmentally-friendly energy source" will provide an impetus for a new techno-revolution, comparable to what occurred at the turn of the twentieth century, "when humanity began fueling its needs with oil and gas: horse carts gave way to cars, airplanes rose up into the air, and a man went into space" (Atom75 2020).

The second vision, the *Arctic*, is a plan for the development of the Northern Sea Route (NSR), which will enable Russia to transport goods by sea between Asia and Europe without using the waters of the Atlantic and Pacific Oceans and the Suez Canal. This project is of strategic importance and has been in progress since 2018. It involves the construction of new port infrastructure and nuclear-powered "super-icebreakers, which will be able to escort transport vessels through 4-meter-thick ice" (Atom75 2020). The project is already well underway, with icebreaker construction expected to become a reality in the second half of the 2020s. The nuclear renaissance will also be a cultural change for the far north. The development of this infrastructure will generate a series of social transformations, becoming a guarantee of security, development, and life satisfaction. "The construction of new industrial enterprises, Arctic terminals, energy facilities, transport infrastructure, and social infrastructure inspire people and make new lives, jobs, skills, and hobbies possible. The North will no longer be called ex-

treme – it will become one of Russia's economic and cultural hubs" (Atom75 2020).

The third vision, *Space*, describes new possibilities for exploration and colonization of near and distant space. A new nuclear engine designed by Rosatom will boost the flight speed and load capacity of interplanetary rockets, paving the way for the colonization of Mars. This will happen by 2040. "Nuclear-powered spacecraft will provide people with opportunities of traveling to deep space, accompanied by the ability to create energy supply systems from geospace beyond – the layer of space between the Earth's atmosphere and interplanetary space" (Atom75 2020). In the foreseeable future we may expect the colonization of the Moon and the construction of a new *lunar infrastructure*, innovations in satellite communications, high precision space navigation, and the development of Earth remote sensing technologies, thanks to which "mankind will learn new secrets about the origin of our world" (Atom75 2020). Ultimately, nuclear technology will foster not only space travel, but colonization of new planets and life on them.

In the visions of the future presented by Rosatom, the nuclear legacy of the Cold War has already been fully neutralized and subjected to the ideology of resentment. One looks in vain for a critical analysis of nuclear imperialism in them. On the contrary, the cultural politics proposed by Rosatom and the ideology of the nuclear renaissance is based on the thermonuclear bomb as an invention to ensure world peace. Thus, Kerckhove's claim to conceive of the atomic bomb as a culture-mutating medium is realized in full, but not in quite the way he envisaged in the 1980s. Rosatom is looking to the future, seizing it for Russia, subordinating planetary and interplanetary development to nationalist nuclear politics. One can venture to say that Rosatom's visions transpose old Cold War narratives into a new media reality. The most important techno-problems of modern times are entwined and neutralized here: quantum computing, extraction of resources from and colonization of the Arctic, and the colonization of space. Even within the narrative itself, this entanglement seems quite peculiar, globally irresponsible if not outright dangerous. Such narratives usually pave the way for political action. Throughout history, we have repeatedly observed rifts and even indefensible gulfs between visions of the future that did not pose a direct threat and politico-military actions that violently sought to usher in a new order *en route* to a better promised and dreamed future.

5. THE POWER PLANT AS A PROXY BOMB

On February 24, 2022, on the very first day of the invasion of Ukraine, the army of the Russian Federation took over the nuclear power plant in Chernobyl, as well as the exclusion zone around it, which had been designated as such in 1986 after the reactor accident led to the largest radioactive contamination in history. Although this nuclear power plant is no longer active, the actions of the Russian army triggered global concern. It brought back memories of the disaster that result-

ed in the death of many people (those directly and indirectly exposed to radiation) and caused enormous contamination of the area around the power plant and in many places in Europe due to the movement of the radioactive cloud. Consequently, politicians, scientists, and journalists began to wonder why Vladimir Putin had decided to make such a move. However, the term *nuclear provocation* was soon replaced by *nuclear terrorism* in the political discourse when, on March 3, 2022, a Russian missile hit the industrial zone of Enerhodar, a city located just five kilometers from the largest nuclear power plant in Europe. The Zaporizhzhia Nuclear Power Plant, operational since 1972, is located on the Dnieper River in southern Ukraine and has six nuclear reactors. After the strike on Enerhodar, Russian forces moved towards the nuclear power plant at night. Members of the Ukrainian Territorial Defense Units, caught off guard, tried to stop the attack. They threw Molotov cocktails at Russian tanks in response to the shelling of civilian infrastructure, including the destruction of a school and a residential building. After resisting the Russian attack for over two hours, the Ukrainian forces finally withdrew, refusing to fight on the grounds of the nuclear power plant (Latynina TV 2022). The significance of this act was analyzed in a stark manner in the text *Nuclear Cyberwar. From Energy to Colonialism*, published in April 2022 by Svitlana Matvijenko, who called it *nuclear terrorism*, a term that describes actions lying at the nexus of cyber and nuclear warfare, where the two major forces of cyberwar converge for a full realization of its grimmest scenario (Matvijenko 2022).

When in June 2023 the Russian army blew up the Nova Kakhovka dam, causing a gigantic industrial and ecological disaster, it became clear that we were dealing with proxy practices. The effects of this catastrophe are difficult to estimate, and their consequences are irreversible and will be felt for many years. To illustrate the scale of this disaster, Ukraine's Deputy Foreign Minister Andriy Melnyk called the Nova Kakhovka dam breach "the worst environmental disaster in Europe since Chernobyl" (Melnyk 2023). But this is not just a metaphorical comparison – they are real consequences which to some extent are identical to the long-term consequences of a nuclear catastrophe. At the same time, it generated further threats of a real nuclear catastrophe by destroying the infrastructure elements securing water for cooling the reactors of the Zaporizhzhia power plant – which were linked to the Nova Kahkovka artificial reservoir. These actions are aimed at turning the nuclear power plant in Zaporizhzhia into a proxy-atomic bomb, that is, a proxy weapon of mass destruction.

The situation of occupying a nuclear power plant and turning it into a military base and weapons depot, as well as the systemic destruction of its infrastructure in order to provoke a catastrophe, is unprecedented. In a visual way, the power plant became a proxy bomb, a new medium of intimidation – the same as nuclear warheads mounted in rockets and aimed at the terrain of a foreign country. This type of situation intertwines an ecological catastrophe with a nuclear catastrophe, and the media narrative generated by this threat includes a great deal

of fear for the future. This is the first time in history that civilian nuclear infrastructure has become a weapon. This situation has also created a peculiar topological figure in which the past and the future, actual and potential catastrophe, media, and energy infrastructures become properties of a specific space. It is also a blunt example of how a bomb or proxy bomb can be used as a culture-mutating medium.

Thus, from the perspective of media studies, it is worth asking radical questions: is the occupation, illegal and armed takeover by Russian troops and Rosatom employees of the Ukrainian nuclear power plant in Zaporizhzhia in 2022 part of Rosatom's vision? How is this type of narrative, constructed by a state-owned corporation that thereby implements government policies by proxy, linked to efforts to carve out support in the social sphere for what are referred to as difficult and necessary decisions on the way to a better tomorrow? What is the function of the Rosatom-initiated declassification of archival media images of the nuclear industry on the Internet? In these activities, the past of Soviet nuclear terror is entangled with the nuclearism of the future projected by the state energy corporation. In such a combination, the declassification of archival materials has nothing to do with building historical transparency. On the contrary, it aims to create a false media archeology aimed at generating narratives to suggest decolonization and demilitarization processes. At the same time, the opposite is actually being practiced, i.e., reinforcing and monumentalizing certain historical visions and narratives in the public consciousness. And this is done mainly through their media aestheticization. Such policies are meant to foster the belief that the future justifies the past and the other way around. The superior and "green" nuclear technologies of the future neutralize the necropolitical and colonial legacy of the atomic bomb. The past, on the other hand, has a predominantly aesthetic dimension here: these are energy monuments, media spectacles on a global scale in which we observe flashes of light and atomic mushroom formations that influence our perception. Nostalgia is mingled with media and political nihilism. The situation of the war in Ukraine also reveals how top-down media narratives were used as methods of shaping the vision of the future, thus justifying various forms of aggression, understood as a stage on the way to a better tomorrow. The purpose of such narratives is to neutralize critical discourse and to accelerate imaginations about the future and cultural desires for sustainable prosperity. Thus, recalling the resentment towards the past becomes an element of designing the future, diminishing the importance of the present.

6. CONCLUSIONS

Following Kerckhove's postulate, there is a need to develop new research approaches that will critically analyze nuclear regimes, their technological infrastructures, and narratives produced about the vision of the future. Nuclear technologies have led not only to the convergence of various communication systems,

but together with accelerationism, which is an integral part of these technologies, they have linked energy infrastructures with the political. They have also mutated culture, becoming everyday technologies. These changes are paradigmatic. In this case, we are dealing with atomization, mutation, and deformation, and not with the progressive development of the mediasphere. The atomic bomb ends the era of text archives, wrote Derrida. And indeed, due to nuclear media such as the Internet, cultural memory has become atomized and dispersed, and its elements constantly interact with each other as part of a new topological spatiotemporal structure in which fragments of the past feed the future and the future remediates the perception of the past.

On the one hand, this requires a new type of nuclear media archeology – capable of spectrally analyzing documents and technological practices of the past and seeing their far-reaching consequences and the ways in which they appear and reappear in contemporary political and cultural discourses. On the other hand, it is necessary to critically analyze how we perceive the present through technologies and to give careful consideration to the kind of technocultural matrix we have designed to create the image of the future. In this case, techno-imaginations of nuclear infrastructures cause the future to justify actions in the present, which is, in a sense, shrinking more and more. The present has more in common with the future imagined by technologies than with the actual state of *now*. An example of this process is the policy of the Russian nuclear renaissance, described in the text, which is based on a functionalized resentment used to justify the acceleration towards the future and the constant process of colonization. By examining Russia's war in Ukraine, we can analyze the forms of entanglement of media and nuclear infrastructures, also revealing their historical ontogenesis. For the nuclear renaissance, the consequences of this entanglement are shifts in the use of civil infrastructures as a proxy bomb in the case of the occupation of Zaporizhzhia and the detonation of the Nova Kakhovka dam.

The atomic bomb, used directly against humanity only in Hiroshima and Nagasaki, then refined through thousands of nuclear tests, not only mutated communication systems and cultural memory, as Kerckhove wrote, but also unleashed the potential for annihilation. From the perspective of the techno-imaginations of nuclear regimes, the future must be closer and closer to the present. At the same time, the visions of the future remediate the cultural perception of the past, using the media to spread resentment images of the past. This is a strategy that justifies many military and political actions standing behind the media-promoted concept of designing a new, sustainable world based on technologies adapted to the production of green nuclear energy.

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FROM MENTAL MODELS TO ALGORITHMIC IMAGINARIES TO CO-CONSTRUCTIVE MENTAL MODELS

CHRISTIAN SCHULZ

As technology in the fields of machine learning and artificial neural networks has advanced in recent years, triggering widespread public debate on the regulation and transparency of so-called artificial intelligence (as demonstrated by the current debates around generative AIs such as ChatGPT or Dall-E), there have been increasing demands for explainable AI.

The term "explainable artificial intelligence" (XAI) was first mentioned in 2004 in a paper by Michael van Lent, William Fisher, and Michael Mancuso, to highlight the ability of a system to explain the behavior of AI-controlled entities in simulation games (van Lent et al. 2004), but it is only since 2016 that we can speak of a renewed boom and a systematically diversifying research field of XAI, after the term "explainability" was mentioned since the 1980s in the context of explaining expert systems (e.g., Moore and Swartout 1988; Swartout and Moore 1993). However, as Tim Miller pointed out in a seminal paper in 2019, almost all work in the field of XAI is aimed solely at the perspective of researchers and developers and their intuitions of what constitutes a good explanation (Miller 2019).

The Transregional Collaborative Research Center 318, "Constructing Explainability," established in 2021 at the Universities of Paderborn and Bielefeld and funded by the German Research Foundation (DFG), has therefore set itself the task of expanding this perspective beyond the disciplines of computer science, cognitive science, and human-computer interaction, which are the obvious fields for AI development. This research network will work on the explainability of AI systems that primarily function co-constructively (Rohlfing et al. 2021). It will explicitly include not only the perspective of experts, but also that of different groups of everyday users who are not experts and differ substantially in their prior technical knowledge, gender, education, and socio-economic status (Finke et al. 2022). In the course of this program, it is important to locate a co-constructive explainability of AI systems on the concrete level of implementation.

However, this also requires a revision or even reconceptualization of certain theoretical concepts that play a central role in AI development, such as "mental models." Such mental models represent a form of user modeling and, to put it simply, are supposed to indicate the user's understanding of a technology. In computer science and human-computer interaction, however, they are almost always based on two quite problematic fundamental texts. Accordingly, this paper is divided into two parts.

Starting with a very brief sketch of the genealogy of the concept of mental models in the AI context, the first part will show that the problem of asymmetry,

in which the developer or researcher perspective ultimately always triumphs over that of the (everyday) user, has been inscribed in AI development from the very beginning. This is problematic not only because it provides a potential gateway for all forms of discrimination (Chun 2021), but also because quite pragmatically, with such an emphasis on the developer position at the conceptual level, no co-constructive explainability of AI systems can be implemented. Based on this finding, the second part of the article will then briefly outline how the concept of "algorithmic imaginaries" (Bucher 2018, 113-116) could make it possible to develop a symmetrical approach to such mental models. This would ultimately represent a decisive factor for the implementation of co-constructive explainability in AI systems. Admittedly, this cannot be done in the present paper, but it provides a useful starting point and framework for further research, which seems necessary for a reconceptualization of mental models in the context of AI development and, in particular, for the explainability of AI systems.

1. A BRIEF HISTORY OF MENTAL MODELS IN THE CONTEXT OF AI

Mental models are an essential component of explanations. Although the antecedents of concepts of mental models can be traced back to the nineteenth century and can be found, for example, in the work of Charles Sanders Peirce (Johnson-Laird 2004), the first work to use the term explicitly was Kenneth Craik's book *The Nature of Explanation* (1943). In the key fifth chapter of his book, Craik describes the anticipation and prediction of events as central properties of human thought. However, in his three-level model with the levels "translation, reasoning, and retranslation" (Craik 1943, 50), which in a way represent a kind of cybernetic feedback loop (Ashby 1956, Wiener 1948), he also assumes a dichotomy between inside and outside or subject and object, whereby the mental model can imitate reality or at least establish a similarity between world and image. Craik postulates a "similar relation-structure" between the image and the process it imitates (Craik 1943, 51), and thus ultimately a symbolism that is constitutive of human thought (ibid., 58). In this respect, it is hardly surprising that in his conceptualization of mental models there is not necessarily a direct connection between this inside and outside, or subject and object, but rather a focus on symbolic meaning.

This is quite in contrast to more recent variants and appropriations of the notion of mental models, such as Donald Norman's conceptualization, which has been influential for computer science and human-computer interaction. Relevant publications and papers in these two disciplines almost always refer to Norman's text, first published in 1983. Norman's conceptualization of a mental model distinguishes between a "conceptual model" on the part of the developers, who develop a certain system ("target system") for a certain purpose, and the mental models that users construct to explain this developed system – often involving different modes of use than those envisaged by the developers (Norman 1983, 7). These mental models of users are influenced by their previous technical

knowledge, their experiences with similar systems, and their perceptual ability. Norman therefore also speaks of a second-order conceptualization, thus the model of a model (Norman 1983, 8). Implicitly, this already addresses a co-constructive perspective in addition to the aspect of processuality (Jones et al. 2011). However, such a conceptualization clearly emphasizes the developer's perspective, since both models are constructed on the developer's side. This also subjects the mental model to an asymmetry that obstructs the explainability of AI systems as a social practice. Thus, there is no real co-construction here, since ultimately the developers decide on the models of the users.

Nevertheless, it is interesting to note that these two foundational texts, belonging to cognitive science, are in some ways also symptomatic of the two paradigms in the history of AI development. Craik's conceptualization of mental models can still be clearly associated with the paradigm of symbolic AI that prevailed until the 1980s (Haugeland 1985). This paradigm is based on logical-mathematical methods and semantics and states that both the mind and the computer are physical symbol systems. The hypothesis here is that the human brain and the digital computer share a common functional description at some level of abstraction (Mitchell 2019, 9-12). In contrast, starting in 1987 and based on the influential work of John McClelland, David Rumelhart, and Geoffrey Hinton, there was a paradigm shift toward a connectionist approach, also called subsymbolic AI (McClelland et al. 1987). This approach states that AI should be created by modeling the brain rather than by symbolically representing the world through the mind, and the roots here are not so much in philosophy as in neuroscience. It was not the conscious rational action of humans but the dynamic coupling of the organism or machine with the world that advanced here to model intelligent behavior (Mitchell 2019, 12-17).

Norman's conceptualization of mental models preceded this paradigm shift toward subsymbolic AI by only a short time. While highly influential, his concept inevitably lags behind the paradigm shift toward connectionist approaches that became increasingly widespread in AI development from the late 1980s onward, since he ultimately remains caught in a symbolic paradigm.[1] Subsequently, approaches and efforts towards a "human-centered design" (Norman 2004) or, more recently, a "more than human-centered design" (Wakkary 2021) influenced by posthumanist theory do not change anything, since they remain bound to a concept of mental models that can be traced back to symbolism. In this respect, and to summarize very briefly, either Craik's antiquated mental models concept

1 It is also interesting in this context that Norman has a paper in the influential book by McClelland and Rumelhart, in which he discusses cognition and parallel distributed processing and at one point also indirectly mentions mental models. He writes: "Don't I need to have mental variables, symbols that I manipulate? My answer is 'yes'. I think this lack is a major deficiency in the PDP approach" (Norman 1987, 541). This shows that Norman remains more or less attached to a symbolic paradigm, which clearly reveals the desideratum of user modeling via co-constructive mental models with regard to a subsymbolic AI.

or Norman's asymmetric model is still referenced here, but both remain tied to the symbolic AI paradigm, which must remain unsatisfactory in terms of a co-constructive AI development. A preliminary sampling of the different lines of reception of Craik's and Norman's concepts of mental models in computer science and HCI seems to confirm the urgent need for a reformulation of the concept. On the one hand, Craik's and Norman's positions are taken up by approaches from, for example, organizational learning or educational research, which perpetuate the problem of an inside/outside dichotomy described above (e.g. Rook 2013), or reproduce the emphasis on the position of developers (e.g. Greca and Moreira 2000).

In contrast, Volkamer and Renaud, in the field of computer science, have pointed out the asymmetry arising from this emphasis on the developer perspective (Volkamer and Renaud 2013, 256). It is therefore understandable that the disciplines of psycholinguistics and cognitive science, which are also heavily involved in AI development, are increasingly focusing on the dialogic interaction situation (e.g., Brennan and Hanna 2009, Brennan et al. 2010, Brown-Schmidt 2012).

This is particularly evident in the concept of "partner models," which, while building on earlier research on mental models, co-constructively foregrounds the "communicative capacities" (Doyle et al. 2021, 5) of human and non-human interlocutors. This "partner models" approach is important for a micro perspective and focuses on the communicative abilities and mutual understanding of the actors involved in the situation. However, it is not able to say anything about social aspects and contexts, whose relevance is not confined to concrete situations of human-human dialogues (HHD) or human-machine dialogues (HMD). For example, the social situatedness of people (e.g., race, class, and gender), as well as affective-emotional states associated with interface designs (Drucker 2014), play an essential role that must always be taken into account in explanations as social practices. However, the social situatedness of people is only very vaguely addressed in the conceptualization of partner models, with the notion of "global partner models" and the "broad stereotypes" behind them (Doyle et al. 2021, 2). The aspect of the social beyond the dialogic situation is not really considered. In a sense, then, the problem that emerges here corresponds to the relationship between micro and macro perspectives in the social sciences, but does not resolve the asymmetry of the influential mental models concepts.

In the meantime, Norman also seems to have become aware of this problem, at least to some extent, because in his most recent book he explicitly emphasizes that a "human-centered design" approach (and thus also his conceptualization of mental models) is no longer sufficient and instead argues for a "humanity-centered design." He writes:

> The phrase "human centered" fails to emphasize the larger concerns and the need for increased sensitivity to biases and prejudices against certain societal groups. The phrase "humanity centered" emphasizes

> designs that take into account the sociotechnical system in which people reside. (Norman 2023, 181f)

Nevertheless, he still seems to regard the principles of "human-centered design" (with which he explicitly associates his definition of mental models, Norman 2004, 75) as central for "humanity-centered design": he writes that of course the principles of "human-centered design" must be adhered to, but within a broader scope (Norman 2023, 182). It is therefore not surprising that in his sporadic explanations of what "humanity-centered design" means for AI development, he only briefly touches on the concept of "human-centered AI" developed by Ben Shneiderman (Norman 2023, 269). Yet Shneiderman's "human-centered AI" actually still means designer-centered AI, thus reproducing exactly those asymmetries that were highlighted above with regard to the history of the concept of mental models (Shneiderman 2022, 79–81). Norman nevertheless seems to feel a certain discomfort, for which, however, he cannot offer a concrete solution, but exhausts himself in vague proclamations. The paragraph on AI in his book concludes with the following sentence: "My personal bias is that we must combine the good parts of old-fashioned symbolic reasoning with neural networks to allow the power of each to overcome the other's deficiencies" (Norman 2023, 269).

It becomes clear, then, that no solution to co-constructive user modeling is to be expected in either Craik's or Norman's models. The following section will therefore turn to research on algorithmic imaginaries in media and cultural studies. This concept of algorithmic imaginaries represents, in a way, the user-centered equivalent to the mental models of computer science and HCI. With a theoretical reorientation, it can be used to develop a new, symmetrical approach to mental models, as the second part of the text will now show.

2. THE IMPORTANCE OF ALGORITHMIC IMAGINARIES FOR A SYMMETRICAL CONCEPT OF MENTAL MODELS

The concept of the "algorithmic imaginary" (Bucher 2018) has received attention in discourses around media studies and in particular social media research, as it brings into focus for the first time users' appropriations of algorithmic processes operating in opacity and their imaginaries of these operations. Bucher describes this concept as

> [. . .] ways of thinking about what algorithms are, what they should be, how they function, and what these imaginations, in turn, make possible. While there is no way of knowing for sure how algorithms work, the personal algorithm stories illuminate how knowing algorithms might involve other kinds of registers than code. […] In other words, the algorithmic imaginary emerges in the public's beliefs, experiences, and expectations of what an algorithm is and should be. (Bucher 2018, 113f)

Thus, this approach is primarily concerned with the users' perspective. This is important for a comprehensive theoretical understanding of AI systems, because without a precise description of users' practices and imaginaries of how different AI systems work, one would inevitably fall into some form of reductionism and end up with an asymmetrical view. This would once again highlight the developers' perspective, like the concepts of mental models discussed above. Bucher's concept, however, cannot offer a symmetric conceptualization of mental models on a micro level because it omits the processes on the side of the developers. It is therefore important that concepts of the algorithmic imaginary should include the algorithmic processes, which are usually opaque from the user's perspective and are located in the so-called "backend," i.e. the invisible part of the interface. This has been demonstrated elsewhere for the context of social media platforms (Schulz 2023). Here, too, the algorithm "imagines" the future behavior of the users via so-called "predictor modules" of machine learning, which are supposed to predict the future behavior of the users from all their actions. Although it must be noted that the algorithm (or more generally an AI system) does not "imagine" in the human sense, and the metaphorical part must always be taken into account, it is worth extending the concept of the imaginary to non-human entities. The algorithm not only computes according to predefined parameters, but also constantly plays through transforming and supposedly fitting models in the backend depending on the user's behavior. Fisher and Mehozay (2019) suggest that, on the one hand, the algorithm observes the behavior of users and derives imaginaries from this, but that, on the other hand, the designers and developers also rely on "imaginary interlocutors" (Fisher and Mehozay 2019, 1179). This approach must be extended to include the user perspective, just as, conversely, the perspective of the developers and algorithms must be integrated into Bucher's concept of an algorithmic imaginary.

Indeed, the users' imaginaries are a concrete part of the infrastructure of AI, and precisely because of this, the algorithmic imaginaries also affect and change the behavior of these very users via the backend. This is a constant interplay (Schulz and Matzner 2020), which is coupled to the imaginary and converges in the interfaces of AI systems. This makes it necessary to design a theoretically more comprehensive algorithmic imaginary, which includes algorithms and the developer's perspective, as well as the perspectives of different users and, not least, the level of the interface. Such a reconceptualization of the algorithmic imaginary enables us to move from a more theoretical and cultural science perspective towards an interdisciplinary and co-constructive approach to mental models, which encompasses AI systems, developers, and users alike, and does not place one entity above another.

This is all the more important because recent scientific appropriations of an imaginary in the field of AI research are based almost exclusively on science and technology studies (Jasanoff and Kim 2009; Jasanoff and Kim 2015), where they reflect the so-called "practice turn" (Schüttpelz et al. 2021). Curiously, however,

they only deal with the big social imaginaries (e.g., about ethical concerns or the dangers of a general artificial intelligence), or reproduce on a micro level the asymmetric perspective of designers. Arguing along these lines, Lucy Suchman, following Keith Grint and Steve Woolgar, has already pointed out that "design imaginaries" (Suchman 2007, 187-205) on the part of developers play a central role in "user configuration" (Grint and Woolgar 1997, 92) in the course of technology developments.

However, the role of everyday users is not included here, not least because of the ethnographic focus on developers and expert users. For this very reason, imaginaries are necessary – both on the part of the developers, about possible ways of using the technology by the users (especially with regard to the implementation of new functions), and on the algorithmic level (with regard to the explainability of algorithmic decisions). Of course, a newly introduced (algorithmic) technology or function and a corresponding explanation by no means always leads to the usage behavior anticipated by the developers, although certain incentives can be set up in the interface design to influence behavior (e.g., pop-up windows that display explanations when needed). Conversely, however, it is also not the case that users determine the behavior of AI systems, although they can try to influence them by giving good or bad ratings for the explanations they are offered. Such practices stem from users' ideas about how the AI works and correspond quite closely to what Bucher meant by her suggestion of an "algorithmic imaginary." Nonetheless, it is essential to consider the other side of the "design imaginaries" and algorithms for a comprehensive understanding of how AI systems work, without playing one side off against the other.

In this respect, Bucher's concept of the algorithmic imaginary, which places users at the center, provides a useful counterpoint to the asymmetric concepts of mental models presented in the first part of this paper, with their emphasis on the position of developers. Beyond that, however, an algorithmic imaginary that includes users as well as developers and algorithms (Schulz 2023), and also the level of the interface, potentially offers the possibility of a fundamentally new and symmetrical approach to user modeling in AI development via mental models. And this is precisely where interdisciplinary AI development can concretely benefit from media studies research.

3. OUTLOOK

This leads me to the question what such an endeavor might look like and how it might succeed. First of all, it is crucial to compile a compendium of such models, based on an exact review and reading of the different lines of reception of mental models in the disciplines of cognitive science, computer science and HCI. The primary goal is to gain a detailed overview of the heterogeneous ramifications and transformations of mental models.

At the same time, the concept of a multi-perspectival algorithmic imaginary, which encompasses both the developer and the user perspective and also the AI systems themselves and their interfaces in their respective sociotechnical situatedness (Haraway 1988), makes it necessary to explicitly understand this negotiation process as a social practice, without privileging one perspective over the other. This also makes it necessary not to lose sight of the differences between the two theoretical concepts of mental models and imaginaries. While imaginaries, in our conceptualization, address both the imaginaries of users in relation to AI technologies and the imaginaries of developers about certain behaviors of users in dealing with them, the notion of mental models is traditionally narrower and targets already formalized and specified application contexts. This is to a significant extent related to the appropriation of the concept by the disciplines of computer science and HCI.

In this respect, mental models also have a latent tendency to address more expert knowledge. Or at least, this is still the case at present, but this is exactly what a reconceptualization and the development of a symmetric concept of mental models aims to change. In addition, however, it is also important to look at current developments in the relevant fields or disciplines. For example, in the field of HCI, there are interesting developments in the area of participatory design (Bødker and Kyng 2018, Bødker et al. 2021), where we find very similar calls for greater inclusion of users right from the development level. The approach of a co-constructive XAI makes similar demands. In any case, "Designing is entangling – the simple act of encouraging interdependence" (Easterling 2021, 13). There could be worse perspectives for media studies research than to participate in the concrete development of better AI.

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Research for this article was funded by the collaborative research centre "Constructing Explainability" (DFG TRR 318/1 2021 – 438445824) at Paderborn University and Bielefeld University.

II. FUTURES OF THE INTERNET

AN EARLY FUTURE OF THE INTERNET

JENS SCHRÖTER

Currently, people are speculating about the future under the heading of *digitization*, which stands for a revolution in the offing that will profoundly change societies, for example when it comes to the structure of their economy. Modern societies continually generate images and narratives, in short, *imaginaries*, of their own future, which do not so much actually say something about the future as about the self-image of society and its expectations. Such imaginaries can be found in texts from the areas of science and technology, government, and pop culture. In the sociology of technology, the term *Leitbilder* has been used for this.

In the following essay, I will discuss one important episode from the history of what was later called the Internet, in which futures of the forthcoming technology are constructed that are also revealing in regard to the problems that had to be solved at a given time. The episode was about the construction of *networked computers as communication media*.

In 1961, (D)ARPA[1] appointed J. C. R. Licklider (a psychologist who had been vice-president at Bolt Beranek and Newman since 1957) as the new head of its Command and Control Research Office, whose aim was to develop better solutions for military data acquisition (e.g., in regard to combat situations), decision-making, and internal military communications. Shortly after taking up the post, he had the office renamed the Information Processing Techniques Office (IPTO), indicating a broader research focus not confined to immediate military imperatives.

Licklider published *Man-Computer Symbiosis* in 1960. The influential essay proposes two main ways that human performance could be more effectively enhanced through cooperation with computers. Firstly, by incorporating computers into processes of *real-time thinking*, i.e., problem-solving in situations where time is critical. He illustrates this with a military example[2] and by showing that certain uses of computers do not seem to be very helpful:

> Imagine trying, for example, to direct a battle with the aid of a computer on such a schedule as this. You formulate your problem today.

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1 A note on nomenclature: The Advanced Research Projects Agency (ARPA), which supports high-cost, resource-intensive research projects primarily intended for military applications, was renamed the Defense Advanced Research Projects Agency (DARPA) in 1971. It then reverted to ARPA in 1993 before switching back to DARPA in 1996. For this reason, it is referred to here as (D)ARPA. However, the network itself is referred to only as the ARPANET; at the time the network was built, (D)ARPA was called ARPA and the ARPANET is the generally accepted name for this early network.

2 Licklider does not, however, limit the utility of human-machine symbioses to military applications; see Licklider and Clark (1962, 113–114 and 115–120).

> Tomorrow you spend with a programmer. Next week the computer devotes 5 minutes to assembling your program and 47 seconds calculating the answer to your problem. You get a sheet of paper 20 feet long, full of numbers that, instead of providing the final solution, only suggest a tactic that should be explored by simulation. Obviously, the battle would be over before the second step in its planning was begun. (Licklider 1960, 5)

The second way is by optimizing *formulative thinking*, i.e., the ability to formulate complex problems more clearly and algorithmically, again with a view to making better use of time. In a *time-and-motion analysis of technical thinking* that is highly reminiscent of Taylor's and Gilbreth's workplace management studies from the late nineteenth and early twentieth centuries, Licklider reported on the results of an experiment he conducted on himself:

> Throughout the period I examined […,] my "thinking" time was devoted mainly to activities that were essentially clerical or mechanical. […] The main suggestion conveyed by the findings just described is that the operations that fill most of the time allegedly devoted to technical thinking are operations that can be performed more effectively by machines than by men. (ibid., 5–6)

Building on this finding, Licklider formulated the view that in a human-machine symbiosis, each component could contribute something different: The person would take care of the heuristic thinking and the machine would perform the algorithmic functions (see Licklider 1965, 19–20; Licklider and Clark 1962, 114).

In 1960, the main obstacle to this "anticipated symbiotic future" (Licklider 1960, 7) was the limited options for human-machine interaction. The predominant processing technique was *batch processing*, which was considered ineffective even at the time.[3] In his essay, Licklider imagined various ways in which human-machine interaction could be improved in the future, including graphic displays and voice recognition/output. If the latter were sufficiently developed, it would, he claimed, enable "real-time interaction on a truly symbiotic level" (ibid., 10–11).

Another way in which scientists sought to make the use of computers more efficient in the early 1960s was through time-sharing, whereby users at different consoles would simultaneously use a single mainframe and the processing time would be divided among them.[4] This would create a sense of *real-time* interaction between user and computer. Licklider likewise pinned his hopes on time-sharing, and imagined a futuristic scenario:

3 On batch processing, see Ceruzzi (2000, 77–78 and 122–123).

4 On time-sharing, see Wildes and Lindgren (1986, 342–353) and Ceruzzi (2000, 154–158).

> It seems reasonable to envision, for a time 10 or 15 years hence, a "thinking-center" that will incorporate the functions of [present-day] libraries together with anticipated advances in information storage and retrieval and the symbiotic functions suggested earlier in this paper. The picture readily enlarges itself into a network of such centers, connected to one another by wide-band communication lines and to individual users by leased-wire services. (ibid., 7)

Thus, in 1960 we can already find the futurological prediction of a network that links together multiple computer centers where people work at time-sharing consoles.

These are, in rough outline, some of the ideas that Licklider had developed prior to becoming head of the Command and Control Research Office. In 1962, he composed a series of memos addressed to *Members and Affiliates of the Intergalactic Network* (i.e., the research groups associated with the IPTO): "The problem is essentially the one discussed by science fiction writers: 'how do you get communications started among totally uncorrelated 'sapient' beings?'" (Licklider 1963, n.p.) The sci-fi notion of an *Intergalactic Network* metaphorically expressed the problem the scientists were grappling with: How could the incompatibility gap between different computer systems be bridged in a way that allowed them to be interlinked and their resources made available to all users? Robert Taylor, Licklider's successor as IPTO head from 1966 to 1969,[5] recalled in a 1989 interview:

> They were just talking about a network where they could have a compatibility across these systems, and at least do some load sharing, and some program sharing, data sharing – that sort of thing. […] As soon as the timesharing system became usable, these people [different research groups] began to know one another, share a lot of information, and ask of one another, "How do I use this? Where do I find that?" […] And so, here ARPA had a number of sites by this time, each of which had its own sense of community and was digitally isolated from the other one. I saw a phrase in the Licklider memo. The phrase was in a totally different context – something that he referred to as an "intergalactic network." I asked him about this later … recently, in fact I said, "Did you have a networking of the ARPANET sort in mind when you used that phrase?" He said, "No, I was thinking about a single timesharing system that was intergalactic." (Taylor 1989, 38)

Thus, early thinking about computer networks at the IPTO was not yet premised on military requirements for a distributed network that would remain functional even if parts of it were destroyed by thermonuclear weapons. The vast time-sharing system conceived by Licklider (the *Intergalactic Network*) would have been

5 From 1962 to 1964, the post was held by Ivan Sutherland.

completely unsuited to these requirements, as it would have had a center that was vulnerable to destruction.[6]

It was not until a project meeting at the University of Michigan from the 9th to 11th of April 1967 that the IPTO swung behind the concept of a distributed network without a center. Wesley Clark suggested connecting the highly varied host computers to the network using the minicomputers that were starting to become more affordable at that time (the PDP-8 was released in 1965), which would serve as interface message processors (IMPs).[7] This shift in conception did not have an explicitly military motive, but was directly linked to the problems of compatibility that the scientists were grappling with: Very different computer systems were in use at the different universities. Any change to the network architecture and protocols would require expensive reprogramming of the systems, which put many universities off participating in the project. Clark's idea of having small IMPs as intermediaries between the host computers and the network avoided this problem. The network became, as it were, a "black box" (Abbate 1999, 52–53) for the host computers and their operators. Any changes to the network itself now only required the IMPs to be adjusted: an elegant solution to Licklider's call to facilitate communication between alien beings, and one that persuaded universities to come on board.

Notably, "the network idea existed in ARPA long before the decision to use packet-switching and was unrelated to explicitly military concerns" (O'Neill 1995, 76). The goal was to increase efficiency and share resources.[8] However, before long, resource-sharing was no longer the primary motivation for using a network, due above all to the spread of minicomputers like DEC's PDPs making access to

6 On the vulnerability of centralized networks, see Baran (1964, 1) and Roberts and Wessler (1970, 545). In other respects, I believe traces of this early model of computer networks based on the principle of time-sharing can still be found today: The term *online*, now an everyday expression, refers in Licklider and Clark's early essay to "on-line interaction between men and large-scale computers" (1962, 113).

7 See Taylor (1989, 39): "I knew that Larry [Lawrence Roberts] was leaning towards, or at least thinking about a machine in the center of the country to run the net. That worried me, and I had already told Licklider that it worried me, and he had sympathized. Then I think I had told Wes Clark, because I knew Wes had a lot of influence over Larry technically. I think I told Wes prior to us getting in his car. But I might have introduced it in the car, I can't remember. Wes, and Larry, and I, and somebody else were in this car going to the airport to go home from a Michigan meeting, and I introduced the subject, and Wes said to Larry, 'Why don't you just have a small (Wes believed in small computers) ... Why don't you have a small computer at each site to do all of this?' He laid out a scheme, and Larry eventually bought it."

8 See Marill and Roberts (1966, 426): "Within a computer network, a user of any cooperating installation would have access to programs running at other cooperating installations, even though the programs were written in different languages for different computers. *This forms the principal motivation for considering the implementation of a network*" (emphasis mine). See also Roberts and Wessler (1970, 543–544). Resource-sharing also helped to reduce costs for military institutions and research.

external mainframes less critical. Other factors came to the fore instead: Communication and the formation of communities.

In 1968, Licklider and Robert Taylor (who succeeded Licklider at the IPTO in 1969) wrote *The Computer as a Communication Device*, an essay it would be hard not to read as a *Leitbild of an Internet future* – even the editors' summary describes how Licklider and Taylor "*foresee a day* when people of similar interests will work with each other through a network of computers – even when they are in the same room" (Licklider and Taylor 1968, 21, emphasis mine). The essay came about after Licklider and Taylor visited Stanford, where Douglas Engelbart and his colleagues had conducted a series of ground-breaking studies over the course of the 1960s, culminating in the presentation of NLS in 1968.[9] This system prefigured many features of later PCs, whose development drew on the research by Engelbart and his group (as well as involving some of the same researchers): NLS had graphic displays that could be subdivided into windows (though they did *not* have what are now called *icons*), it worked with a precursor to modern-day word processing programs, used the first mouses and was one of the first systems to be connected to the ARPANET.

Licklider and Taylor projected the developments shown in the presentation and their possible implications into the future and connected them to the ARPANET, which in 1968 was still in the planning stages. They began their essay with the thesis that "in a few years, men will be able to communicate more effectively through a machine than face to face" (ibid., 21). Just as Licklider had been back in 1960, they were chiefly concerned with efficiency. But there was now a stronger emphasis on optimizing interpersonal communication than there had been in *Man-Computer Symbiosis*. To clarify how this optimization of communication using the medium of the computer was supposed to work, the authors first explained how they understood *communication*:

> When minds interact, new ideas emerge. […] Creative, interactive communication requires a plastic or moldable medium that can be modeled, a dynamic medium in which premises will flow into consequences, and above all a common medium that can be contributed to and experimented with by all. Such a medium is at hand – the programmed digital computer.[10] (ibid., 22)

In order to communicate about an object or fact, communicators must have a mental model of it.[11] The problem with these internal models is that they are not directly accessible and are at the mercy of memory's transient character. They are also colored by subjective hopes and desires. But since every social process requires cooperation, these models have to be externalized:

9 Short for o*N*-*L*ine *Sy*stem.

10 Here the concept of 'medium' appears very early in connection with computers.

11 On mental models, see the contribution by Christian Schulz in this volume.

> Even such a simple externalized model as a flow diagram or an outline – because it can be seen by all the communicators – serves as a focus for discussion. It changes the nature of communication: When communicators have no such common framework, they merely make speeches *at* each other; but when they have a manipulable model before them, they utter a few words, point, sketch, nod or object. (ibid.)

Communication that leads to a (more or less) consensual outcome is the product of "cooperative modeling – cooperation in the construction, maintenance, and use of a[n external] model" (ibid., 23).[12] Licklider and Taylor illustrated this using the example of a project meeting, specifically the one organized by Engelbart at Stanford. They concluded that the possibilities already hinted at by NLS would allow external models to be generated and communicated far more easily and flexibly:

> Whether we attempt to communicate across a division of interests, or whether we engage in a cooperative effort, it is clear that we need to model faster and to greater depth. The importance of improving decision making processes – not only in government, but throughout business and the professions – is so great as to warrant every effort. […] A particular form of digital computer organization […] constitutes the dynamic, moldable medium that can revolutionize the art of modeling and that in so doing can improve the effectiveness of communication among people so much as perhaps to revolutionize that also.[13] (ibid., 25)

This revolution in communication, which for Licklider and Taylor was by no means confined to scientific, commercial, or military communication – as shown by small sketches of optimized ways to send a love letter or exchange recipes for soup (see figs 1 and 2, Licklider and Taylor 1968, 26) – depends on combining "information transmission and information processing" (ibid., 25).

12 In their view, communication ultimately causes *convergence toward a common pattern*, i.e., convergence between the different models in the communicators' minds.

13 Interestingly, in *Man-Computer Symbiosis* Licklider wrote: "Laboratory experiments have indicated repeatedly that informal, parallel arrangements of operators, coordinating their activities through reference to a large situation display, have important advantages over the arrangement, more widely used, that locates the operators at individual consoles and attempts to correlate their actions through the agency of a computer" (1960, 10). The communication model is evidently the same as in 1968, but computer interfaces in 1960 were (as Licklider complained) so limited that any meaningful cooperation via computers seemed virtually impossible.

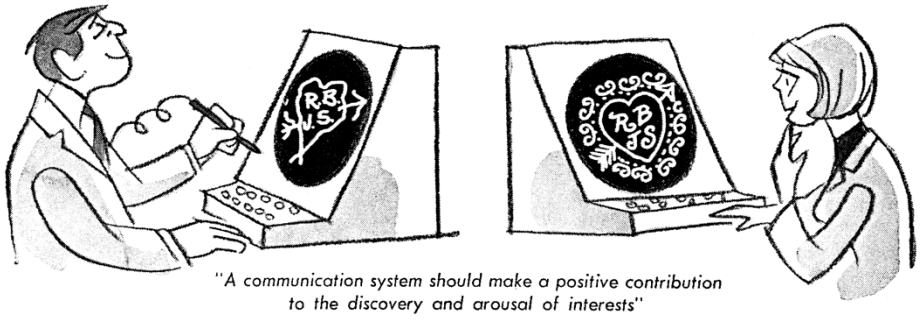

Fig. 1, Sending love letters via computer networks, from Licklider and Taylor 1968

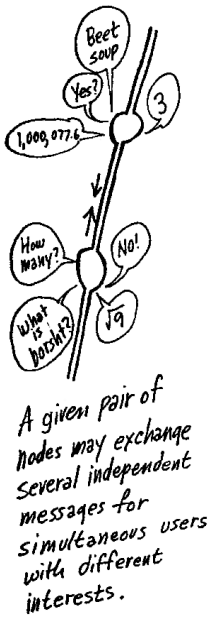

Fig. 2, Communicating about soup and mathematics via computer networks, from Licklider and Taylor 1968

The authors believed that initial steps toward this kind of optimized communication could be seen in the use of time-sharing systems. Since the essay was written in 1968, i.e., after the meeting in 1967 at the University of Michigan where the idea of a central computer to coordinate the network planned by (D)ARPA was dropped, it advocated a distributed network. The authors noted that the use of a

central computer with numerous, geographically separated consoles would run into serious difficulties. The unnecessarily high telephone costs combined with very low utilization of transmission capacities was regarded as especially problematic:

> It appears that the best and quickest way to overcome them [the problems] – and to move forward the development of interactive communities of geographically separated people – is to set up an experimental network of multi-access computers. Computers would concentrate and interleave the concurrent, intermittent messages of many users and their programs so as to utilize wideband transmission channels continuously and efficiently, with marked reduction in overall cost.[14] (ibid., 26)

They then described some possibilities for a future network along these lines. These possibilities are based on the plans for the ARPANET, which the authors mentioned; they also referred to Roberts's 1965 computer networking experiment (see ibid., 28).[15] The final section of the essay, *On-line interactive communities*, is of particular interest. It opened by asking, "What will on-line interactive communities be like?" (ibid., 30) The answers Licklider and Taylor gave are so astonishing for the time they were written that they merit being quoted at length:

> They will be communities not of common location, but of *common interest*. […] In each geographical sector, the total number of users – summed over all the fields of interest – will be large enough to support extensive general-purpose information processing and storage facilities. All of these will be interconnected by telecommunications channels. The whole will constitute a labile network of networks – ever-changing in both content and configuration. (ibid., 31)

The authors describe a future network of networks – like the Internet, whose name refers precisely to its being a network made up of many networks. Licklider and Taylor's network is constantly changing and so is given the very unmilitary attribute *labile*. And they describe user communities that are held together across all geographic distances by shared interests; this idea thus predates Howard Rheingold (1993/2000), who later popularized the concept of *virtual communities*. Licklider and Taylor continued:

> An important part of each man's interaction with his on-line community will be mediated by his OLIVER. […] An OLIVER is, or will be when

14 On pp. 29–30, Licklider and Taylor discussed the economic problems in greater depth.

15 In October 1965, Roberts connected the first computers by telephone: The TX-2 at the Lincoln Laboratory in Lexington, Massachusetts, and System Development Corporation's AN/FSQ32XD1A (also known as the Q-32) in Santa Monica. Ordinary telephone lines proved to be poorly suited to this task.

> there is one, an "on-line interactive vicarious expediter and responder", a complex of computer programs and data that resides within the network and acts on behalf of its principal, taking care of many minor matters that do not require his personal attention and buffering him from the demanding world. […] At your command, your OLIVER will take notes (or refrain from taking notes) on what you do, what you read, what you buy, and where you buy it. It will know who your friends are, your mere acquaintances. It will know your value structure, who is prestigious in your eyes, for whom you will do what with what priority, and who can have access to which of your personal files. (Licklider and Taylor 1968, 31)

From today's perspective, OLIVERs are reminiscent of *agents or intelligent bots*: Semi-autonomous programs that *learn* a user's preferences so that they can retrieve information from data networks. OLIVERs are, not merely fortuitously, named after Oliver Selfridge.[16] It is also notable that in this passage Licklider and Taylor take it as a given that in the future people will be able to engage in commercial activities on data networks:

> Available within the network will be functions and services to which you subscribe on a regular basis and others that you call for when you need them. In the former group will be investment guidance, tax counseling, selective dissemination of information in your field of specialization, announcement of cultural, sport, and entertainment events that fit your interests etc. In the latter group will be dictionaries, encyclopedias, indexes, catalogues, editing programs, teaching programs, testing programs, programming systems, data bases, and – most important – communication, display, and modeling programs. (ibid., 31)

The similarity to modern incarnations of data networks is obvious. However, there are also some differences. Firstly, the authors predicted that before long people would stop using telephones, which is certainly not (yet) the case today. Secondly, Licklider and Taylor expected that at a *late date in the history of networking* all the various information available on the network would be *systematized and coherent*, which is far from the reality of today's Internet. Moreover, the extreme simplification and standardization of user interfaces, including browsers, that we know today was as yet undreamt of in 1968. So, the authors assumed that in order to navigate the network and access different sources of information (databases and so forth),

16 In 1958, Selfridge gave a lecture (Selfridge 1959) about Pandemonium, a system for simulating learning processes. This lecture marked the start of the tradition within which *agents* are situated. On Selfridge's own conception of such agents, see Smieja (1996); on agents in general, see Pflüger (1997). Selfridge also coined the term *daemons*, widely used for certain types of Unix programs.

users would need to know several computer languages.[17] They concluded on a very utopian note:

> First, life will be happier for the on-line individual because the people with whom one interacts most strongly will be selected more by commonality of interests and goals than by accidents of proximity. Second, communication will be more effective and productive and therefore more enjoyable. Third, much communication and interaction will be with programs and programmed models, which will be (a) highly responsive, (b) supplementary to one's own capabilities, rather than competitive, and (c) capable of representing progressively more complex ideas without necessarily displaying all the levels of their structure at the same time – and which will therefore be both challenging and rewarding. And fourth, there will be plenty of opportunity for everyone (who can afford a console) to find his calling, for the whole world of information, with all its fields and disciplines will be open to him – with programs ready to guide him or to help him to explore. (ibid., 31)

Licklider and Taylor concede that unequally distributed opportunities to participate in the network would further increase social discrepancies.[18] But if this problem could be successfully remedied, then Paradise could be created:

> Unemployment would disappear from the face of the earth forever, for consider the magnitude of the task of adapting the network's software to all the new generations of computers, coming closer and closer upon the heels of their predecessors until the entire population of the world is caught up in an infinite crescendo of on-line interactive debugging. (ibid.)

Licklider and Taylor see the computer, or a computer network, very emphatically as a communication medium that in the ideal-case scenario could unite the whole world into a single community and solve all economic problems: a very optimistic Internet future.

Five years after this article, an originally unforeseen application enjoyed a major breakthrough: email. In 1968, Roberts was still saying that electronic mail was "not an important motivation for a network of scientific computers" (cited in Abbate 1999, 108).[19] Ray Tomlinson modified the email program, he had developed

17 This assumption may also have been influenced by Engelbart's presentation, as knowledge of a special, albeit relatively simple, *command language* was needed to use NLS; see Nelson (1974/1987 DM, 17).

18 Licklider and Taylor (1968, 31): "For the society, the impact will be good or bad, depending mainly on the question: Will 'to be on-line' be a privilege or a right?"

19 However, in retrospect Roberts changed his mind; see Roberts (1988, 146.)

for Bolt Beranek and Newman, and soon after the Network Working Group[20] set up email transfer in 1973 (alongside remote login and file transfer). This lead to extensive use of email (see ibid., 106–110). The network started to become a medium. Taylor said later: "It was really phenomenal to see this computer become a medium that stimulated the formation of a human community." This "sense of community" (Taylor 1989, 38) quickly began to spread among ARPANET users. Licklider and Vezza recalled later:

> It soon became obvious that the ARPANET was becoming a human-communication medium with very important advantages over normal U.S. mail and over telephone calls. […] The formality and perfection that most people expect in a typed letter did not become associated with network messages, probably the network was so much faster, so much more like the telephone. […] Among the advantages of the network message services over the telephone were the fact that one could proceed immediately to the point without having to engage in small talk first, that the message services produced a preservable record, and that the sender and the receiver did not have to be available at the same time. (1978, 1331)

However, the extensive use of the network for scientific and non-scientific communication became a source of conflict with the military… but that is another story.

It becomes obvious from this short look into the history of what was later called the Internet, that the question of the future and the construction of possible futures is an integral part of the history of this, and presumably of every, technology.[21]

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20 On this working group, set up by Roberts, see Abbate (1999, 59–60 and 66–74).

21 This essay is a short outtake of a forthcoming book on the construction of futures in the history of digital media. The project was developed during the generously funded fellowship at the Center of Advanced Internet Studies (CAIS, Bochum) during winter 2021/22.

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COUNTER-FUTURING THE INTERNET.
A CONVERSATION

ÖZGÜN EYLÜL İŞCEN AND SHINTARO MIYAZAKI

INTRODUCTION

The following dialogue builds upon our ongoing collaboration for the Counter-N, a web-based publishing, exchange, and research collection.[1] We mobilized this site to envision, encounter, and enact alternative modes of computing – informing, scaling, modeling, mapping, speculating, rhythming, networking, communalizing, and more …. To be able to envision the future of contemporary media technologies, or the internet in the case of this text, we underscore the importance, if not the necessity, of investing in forms and networks of praxis that invert the contemporary enframing of technological systems and their underlying colonial, racial, and patriarchal epistemologies.

For Counter-N, we interview a wide variety of scholars, artists, and other practitioners, whose trajectories reveal similar concerns and interventions. Here, N is meant as an open variable to be occupied. Counter-N is thus a sort of constructive critique, which not only dissects, analyzes, debunks, and decomposes the subjects it opposes, but also puts things together. This is why N stands for a verb form(-ing), highlighting both its active and processual nature. Building upon the accumulation of know-how and socio-technical imaginaries, we present a reflective dialogue that tackles the question of how the future(s) of the internet will unfold and what it (they) will look like:

Shintaro Miyazaki (SM): The assumption that there are always many futures of the internet already opens up many aspects to talk about, in my opinion: There might be a future where things won't drift away from current developments – the future of the internet as seen by a capitalist realist, for example. Different perspectives might demand a radical change, but cannot articulate how this alternative network might operate. Others would probably know exactly how and why we need a different internet than the one we have now. Some scholars and activists might even remind us that maybe we don't actually know what *the* internet is even now. So Eylül, what is your conception of a future internet?

Özgün Eylül Iscen (ÖEI): My conception of a future(s of the) internet builds upon my interpretation of computational media, which takes a wide-angled approach to its complicated history and future trajectory. Since the 2008–09 global financial crisis, the neoliberal ethos has come forth via the technocratic premises of finding market-led and technology-enabled solutions to the ever-growing economic and

1 Please see: https://counter-n.net.

ecological crises. The main goal of this currently dominant technological rationality is to valorize everything that feeds the accumulation of capital, that is to say, to subject all other spheres of society and life itself to its extractive logic. The future internet is no exception, as designated in the spectacles of platforms like Metaverse that have already promoted a vision of the internet as a single immersive world.

Despite such totalizing tendencies, I insist that a total capture of computational capital, referencing Jonathan Beller's emphasis on the historical entanglements of computation and capitalism as an imperial enterprise (2018), is never possible. In other words, their extractions rely on colonial histories and imperial logics that can only operate through frictions.[2] Hence, I imagine the future internet as a realm of struggles: I pay particular attention to ongoing decolonial, antiracist, feminist, queer, labor, and migrant movements that intervene in the material and symbolic infrastructures underlying the operations of the internet as much as our conceptions of its future.

SM: What do you mean more concretely?

ÖEİ: As a scholar focusing on the Middle Eastern context, I could give the example of Arab uprisings since the early 2010s, popularized as Facebook/Twitter revolutions, affirming the catalytic role of the internet. However, some scholars such as Miriyam Aouragh and Paula Chakravartty (2016, 2) encourage us to attend to the colonial histories and neoliberal agendas that had shaped the implications of such social movements. Indeed, we witnessed how local ruling elites and foreign imperial powers suppressed the upheavals while utilizing technical interventions, including internet cuts and social media monitoring, even sometimes in collaboration with these platforms. Thus, I am interested in neither naive optimism nor indifferent pessimism. It is not a matter of bad or good uses, as we can count many examples of both.

Instead, following Ariella Aïsha Azoulay's work on photography (2015), I explore the political ontology of the given medium – networked media – to acknowledge its programmed nature and its radical potential for exceeding that very nature. Here, "nature" refers to the thick layers of history and structures that operationalize the internet within the contemporary paradigm of platform capitalism, in the sense of being conditioned or dominated by it. Despite its political ontological as such, photography (or the computer) has also engendered a political space for encounter and visibility, as people take, look at, and distribute visual media and reimagine their everyday life through these practices. In this sense, Azoulay offers a theory of apparatus that leaves room for openness, which de-

2 My use of the term "friction" here is a reference to Anna Tsing's work on friction (2004) and what she describes as "supply chain capitalism" (2009). Nonetheless, my point also engages with a broader repertoire of critical work within postcolonial studies and on logistical capitalism.

rives from its sociality despite its programmatic nature (as Vilém Flusser would say).

Yet, this openness does not indicate an unbounded realm but an ongoing struggle. In *The Stack*, for example, Benjamin Bratton (2015) highlights the accidental nature of computational media, which operates at a planetary scale via thick layers of hardware and software, or locally and globally, in a constant process of encounter and negotiation. However, I am more aligned with Tiziana Terranova's take on this in *Red Stack* (2014), which reconfigures it as a collective effort at mobilization for alternative, perhaps even revolutionary ends, within the realm of post-internet aesthetics and the neoliberal turn it is embedded in.

From this angle, I would like to ask how you see it, given the complicated and often conflicting paths prescribed for the internet, and especially alongside your work on alternative modes of commoning in the post-internet era, spanning the last few decades.

SM: Yes, how do I see it? It refers to the oscillatory spectrum of the frame that *the* internet and our imagination is operating within, I guess. I like how you emphasize that, although the future internet is obscure and really hard to imagine without capitalism, there might a sort of inherent potential residing in computational technology, simply because it is not one thing, but an entanglement of a manifold of entities and agencies including humans (poor and rich), animals, machines, networks, soils, geographies. So the frame – to stay in the same metaphor – turns out to be porous, since what the internet will become depends on how it is instrumentalized or whether it becomes a tool at all. Here two aspects come into play. Firstly, and to continue the earlier thought, as soon as a medium gets more complicated, it begins to develop a sort of stubbornness, a resistance, an agency, which goes beyond what is calculable, programmable and therefore intentionally controllable. This sort of unintended unfolding becomes mostly visible in negative ways, when networks break down because of some unintended programming error (see Miyazaki 2016).

Another example of a more or less surprising development is our positive remembrance of the early phase of the internet, where it fostered collaboration and the spread of free and open-source software production. Such developments were certainly not intended by economists and profit-driven planners, who were more interested in transforming the internet into a market, where nothing is for free. In the first decade of the 21st century it seemed that we had entered a new era, in which stored music, for example, was changing from a commodity into a commons, shared and copied without any form of commodification. But these openings and the alternative forms of productivity they implied created new ways to capture and enclose them. With digital copyright management, music soon turned into a commodity and property once again.

Secondly, speaking of commoning, which is the activity of maintaining, organizing, creating and consuming commons, I believe it is important to think about aspects of it and the processes and resources it involves. These remain ungraspa-

ble, slippery, and ever-changing. I would like to describe this attitude and the very difficult practice of commoning in terms of what Fred Moten and Stefano Harney call the undercommons. So undercommoning, if you will, is "a social poetics: a constant process where people make things and make one another or, to be more precise, where inseparable differences are continually made" (Moten 2016, 24). You cannot isolate the undercommons, nor can you capture or divide it. How beautiful is that!

The question then would be: How can we *do* the future of internet in such a way? We mean our bodies, but also pieces of hardware and software that we have appropriated and made useful (to some degree). This then involves different ways of programming and performing operations. So we would need to play with alternative protocols, as has been done recently with ActivityPub, an open, decentralized social networking protocol used to form so-called federated networks. So this is a beginning, but how could we then make ActivityPub an undercommons, i.e. a commons that is openly secured?

ÖEİ: Can you expand more on your idea of counter-algorhythmicity, especially through its relevance for the future of the commons? I think this could offer further context for Counter-N, too.

SM: Counter-algorhythmicity is an alternative condition or state of algorhythmicity, so it is a concept for thinking about future internets. Algorhythmicity is the currently most visible state of algorithm-driven technologies, networks, and systems, which frame and condition our everyday lives in the age of techno-capitalisms. The term addresses the entanglements of technology with capital, focusing on its rhythms, timings, and protocols. It is also, as you might have already guessed, a sort of ironic misspelling, a so-called cacography, of *algorithm* and *rhythm*. But the point back then, when I proposed it, was to look and listen more closely to the rhythms of algorithms and their productivity. Counter-algorhythmicity proposes that there must be different, alternative modes of rhythmicity, unfolding, and dancing which operate not within the dictates of capital, the market, competition, and profit orientation but in a sort of commons-oriented, solidarity-based way. This means first of all that it is based on needs, not market-driven dynamics, but then of course the question is: How do we negotiate and organize our needs with media that store, transmit and process them? What do we need to consider to exercise counter-algorhythmicity?

ÖEİ: It's great that you've brought up Harney and Moten's idea of undercommons. For me, it is also related to countervisuality in Mirzoeff's sense (2011). Let me expand it further. In the same book, Harney and Moten rework *logisticality* in opposition to the racism and coloniality inherent in capitalism, moving from its historical manifestations such as the Atlantic Slave Trade to its present (2013, 92). In response, they argue for building a social capacity to "take apart, dismantle, tear down the structure that, right now, limits our ability to find each other, to see beyond it and to access the places we know lie beyond its walls" (6).

This is how I interpret Mirzoeff's countervisuality, which aims at inverting the imperial regime of visuality underlying capitalist operations (2011, 22). In other words, countervisuality is never merely about seeing but rather about claiming what Mirzoeff terms "the right to look" and restoring one's relationship to material reality and history. As Mirzoeff conceives it, the opposite of the right to look is not censorship, but visuality – a set of techniques for classifying, segregating, and aestheticizing used to represent the world in a way that legitimizes the authority of established power. Hence, the development of techniques of visuality has been entangled with the modern idea of Man's superiority and has rendered all other categories, such as the colonized, invisible (Mirzoeff, 2014). Countervisuality resists that.

SM: So, let's talk a bit more about future and futuring. How is counter-futuring related to countervisuality?

ÖEI: Today there is a political imperative to extend *smartness* to all areas of life via ubiquitous computing, characterizing what Orit Halpern and Robert Mitchell call the "smartness mandate" in their recent book (2022) – ultimately a new mode of managing politics, economics, and the environment. Under this imperative, counter-visuality extends beyond the visual field and unsettles the spatial and temporal regimes underlying the convergence of extraction, finance, and logistics intensified via computational systems. Indeed, it puts an emphasis on the politics of futurity, as it not only manifests in the calculated futures of predicting machines but also imposes specific profit-driven imaginaries of preemptive risk and hope for the future.

In contrast, I am working on *counter futuring* by engaging with some pioneering work while learning from and with ongoing social, labor, and environmental movements across the Global North/South divide. The term counter-futuring has evolved in our conversation with Jussi Parikka (2022), building upon his work on the "counterfuturisms" (2017) arising within visual arts in the Middle East and additionally putting an emphasis on its verb form in the present tense. One of the pioneer texts we referenced in this conversation was Kodwo Eshun's 2003 text on Afrofuturism, in which he identifies "counterfutures" in terms of reclaiming the right to reliable futures in contrast to the futures prescribed by profit and power. For Eshun, counterfutures do not refer to some utopian or dystopian projections but instead embrace the act of reprogramming the present, "engineering feedback between its preferred future and becoming present" (ibid., 290).

So, we can say the same for envisioning the future of the internet, too. Indeed, my recent interest in the growing global trend of smart urbanism speaks to the future of the internet, and the Internet of Things in its expanded sense, as they are increasingly part of everyday and city life via ubiquitous computing. Nonetheless, the entangled politics of technology and future is hard to navigate today. On the one hand, there are profit-driven, high-tech spectacles of so-called ethnofuturisms such as Sinofuturism or Gulf Futurism, which drastically diverge from the emancipatory agenda of futurisms such as Afrofuturism. On the other

hand, media theorists and activists who offer necessary critiques of the totalizing forces of techno-capitalism often end up with a pessimistic image of the future.

The stakes are so high, however, that we cannot afford to get caught up in visions of canceled or dark futures. For me, it requires some privilege to do so since for many dispossessed communities, the apocalyptic future has already arrived, and they are still in the streets fighting for their rights and dignity. With these concerns in mind, I reach out to other scholars and practitioners who address this very dialectic of computation, capital, and history, and urge them to enact and envision alternative possibilities for computational practices as well as world- and future-making. In Jussi Parikka's terms, we need to "seize the means of futuring" (2022, 5).

In this respect, I see my work as resonating with Aimee Bahng's work on "migrant futures" (2017), which highlights how displaced and disavowed populations navigate and contest the hegemonic speculations of (finance) capitalism. She pays attention to its messy sites, the sites of "frictions" in Tsing's terms, exposing the contingencies and contradictions of the world of logistics, such as borders – though this could also be extended to logistical cities, as I do in my work on Gulf Futurism.[3] For instance, Dubai's achievement as a regional power within the global network of logistics is built on the coupling of smart technology with a repressive labor regime, which relies on the systematic exploitation of non-citizen labor via the Kafala (sponsorship) system (Ziadah 2018, 193–195).[4] In response, we have witnessed the organized efforts of migrant workers and their allies across borders to abolish the Kafala.

Expanding upon *AbdouMaliq Simone's work (*2016*),* I argue that such efforts among these marginalized communities promote not only compensation for the inadequacies of social protection but the production of new political subjectivities and cities yet to come. Given the entanglements of computational capital and the politics of futurity (in the form of financial speculations, predictive algorithms, or apocalyptic narratives), the realm of speculation has yet become an expanded site of struggle. Thus, this reclaiming, or reprogramming in Eshun's terms, can only be widened and sustained with bottom-up, organized, and transnational mobilizations, where world-making becomes future-making and vice versa; and in the present tense with its thick history as well as its radical potential.

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3 Fatima Al Qadiri and Sophia Al-Maria coined the term *Gulf Futurism* to highlight the sociocultural contradictions inherent in the accelerated urban and technological development in the Arabian Gulf. Please see: Dazed Digital. "Al Qadiri and Al-Maria on Gulf Futurism." 14 November 2012. https://www.dazeddigital.com/music/article/15037/1/al-qadiri-al-maria-on-gulf-futurism [accessed 3 August 2023]

4 The Kafala system is in force in the Gulf Cooperation Council (GCC) countries, and also in Lebanon and Jordan. In the Kafala, the legal status and well-being of non-citizen workers are dependent on a local sponsor/employer. Even though there are variations across these countries, non-citizen workers are most often deprived of basic civil and labor rights, constituting a labor force stratified by class, race, gender, ethnicity, and citizenship.

My gesture here is not to romanticize any resilient strategy or social group but to attend to the messy sites of the seemingly intangible conception of the internet (e.g., cloud computing), where urban information is made, commodified, accessed, and politicized in multiple and mostly conflicting ways (Mattern 2021). In this respect, reflecting on the different generations of internet activism and its subcultures since the 1990s (net art, hackerspaces, etc.), and perhaps even earlier, could help us to trace the continuum across the past and future, as well as online and offline realms. How do you see that kind of archive, bridging the past futures and speculative nows of the internet, thereby transmitting know-how, as well as hopes and frustrations, across generations? There is also a new trend of digging into that kind of heritage or legacy and resituating it on the part of historically marginalized social groups rather than mostly white-male-dominated circles. For instance: Mindy Seu's *Cyberfeminism Index* (2022)[5] and Legacy Russell's *Glitch Feminism* (2020).

SM: I think we should follow Wendy H.K Chun's take on the early cyberspace and what she calls "hopeful ignorance" (2021, 34). I paraphrase this as the naivety of settler liberalism, meaning that only a few privileged individuals experienced some sort of *freedom* in the 1990s, and differences in race, gender, education, access to technology, etc. were thought to be a thing of the past. Net art at the time was certainly interesting, since it played with the mediality and the technological agency of the www and its failures. Communities evolved to share expertise and experience, and soon this merged with older networks of sharing and peer production, leading to free software cultures. This peaked around the early 2000s, so before the current phase, which started around 2010. We saw some quite interesting developments and movements, such as the creative commons or the Wi-Fi commons. There was a lot of open sharing before those who spoke of piracy started to gain control and successfully enclose and capture all our online activities. In light of this, the archive of the www and other forms of networked activism is crucial. We should cease to write histories of the winners and the powerful and instead write more about these forgotten, lost, and sunken ideas, projects, and communities. In Nick Dyer-Witheford's classic, *Cyber Marx*, there are many sites of struggles, but networks are also mentioned, such as those from the 1992 Los Angeles riots, the anti-globalization movement, or the Zapatistas, etc. We could also look into the early networks of cyber feminism, as you suggested: The Old Boys Network around Cornelia Sollfrank would be a starting point, for example. The future of the internet lies in its forgotten and unrealized pasts.

ÖEI: Your referencing Dyer-Witheford also reminds me of his most recent work with different generations of scholarship and activism on the current mass uprisings since 2018 – ranging from the United States and Lebanon to Chile and Hong Kong. They identify "riot platforms" in opposition to police/policing platforms and

5 Before concretizing this in the printed book, Mindy Seu launched it as an online database: https://cyberfeminismindex.com.

counter-riot platforms, such as the online mobilizations of far-right groups. Despite the repressive gestures of the latter, riot platforms produce dynamic infrastructures and tactics, whether physical, technical, or symbolic. Thus, their wide-ranging analysis of riot platforms shows how these struggles are ongoing, dialectical processes that consist of contradictory forces and shifting strategies confronting one another. Given our current theme, it is possible to say that the future of the internet is already taking shape in the streets.

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OVERCOMING MODERNITY?

HOW CHINA'S SPLINTERNET REINFORCES THE IMPACT OF GEOGRAPHY IN GLOBAL INTERNET GOVERNANCE

CORNELIA BOGEN

1. INTERNET GOVERNANCE AS A TECHNOLOGY RACE AND IDEOLOGICAL CONFLICT

The West has led the world in technological development for centuries, and this innovation edge has contributed to its economic and military prowess. The Chinese Communist Party (CCP)[1] recognizes the benefits of being the global center for innovation, and understands that if it is able to dominate twenty-first-century technology, it would gain important geoeconomic and geopolitical advantages. Another key aspect of this competition is which states or groupings of states will set the standards for twenty-first-century technology. Will the leading democracies be able to set standards for the use of new technology consistent with liberal norms and values, or will China set standards more congruent with its preferred autocratic model? (Kroenig and Cimmino 2020, 18).

China officially gained access to the internet as a latecomer on April 20, 1994 and did not initiate e-commerce until the late 1990s (cf. Fang and Chen 2019, 3). By 2008, however, China had the most internet users in the world. In December 2021, China's internet penetration rate reached 73%, with 1.032 billion internet users and 1.643 billion mobile phone users. Of these, more than 90% used instant messaging and online video, 298 million used e-health services, 544 million used online food delivery services, and 453 million used online car-hailing services (cf. CNNIC 2022). By 2022, China had the world's highest volume of e-commerce transactions, with five Chinese companies (Tencent, Bytedance, Alibaba, Meituan, Pinduoduo) listed in the top 10 most successful global internet companies – in terms of both market capitalization (cf. Statista 2022a) and revenue (JD.com, Alibaba, Tencent, ByteDance, Meituan) (cf. Kiniulis 2022). China also appears to be one of the world's leading adopters of 5G (cf. Richter 2022), and the implementation of 5G in key industries has contributed to the rapid growth of China's national (physical and digital) economy. With around 1.425 million 5G base stations, 150 major industrial internet platforms, 2,000 "5G+industrial internet" projects, and 355 million 5G mobile phone users, China's 5G+industrial internet system already stretches from Beijing-Tianjin-Hebei (North China) to the Yangtze River Delta (East China), the Guangdong-Hong Kong-Macao Greater Bay

1 The two English translations "Communist Party of China (CPC)" and "Chinese Communist Party (CCP)" are both common.

Area (South China), and the Chengdu-Chongqing (Southwest China) Economic Circle (cf. CNNIC 2022). In August 2022, China's Ministry of Science and Technology decided that farms, ports, mines, factories, homes, education, autonomous driving, medical diagnosis and treatment, courts, and supply chains would be the ten focus areas for developing and applying a new generation of smart technology (cf. Huayu 2022).

In 2017, China's artificial intelligence (AI) industry began to flourish, with Chinese companies accounting for nearly 25% of global AI enterprises and the second most AI patent applications in the world (cf. China Electronic News 2017). The Chinese government has promoted the construction not only of a digital society and economy, but also of digital government. This includes the national social credit system and the national government service platform, which provides cross-regional and cross-departmental online government services to more than one billion real-name users (cf. CNNIC 2022). By 2020, according to the *China Artificial Intelligence Development Report 2020*, China already ranked first in the world, with China's AI patent applications (389,571) accounting for 74.7% of the global total (cf. Network public information collation 2021). China constructed the world's fastest supercomputer in 2016 and has surpassed the US in terms of the number of published papers on AI, but it still lacks the AI ecosystem that Silicon Valley has successfully established (e.g., with uniform standards and modes of sharing across platforms) (cf. McKinsey & Company 2017). However, China's huge population (and wealth of user data) is a valuable asset in training and improving artificial intelligence systems (cf. McKinsey & Company 2017; Kroenig et al. 2020).

According to the Chinese philosopher and information scientist Yuk Hui, this rapid acceleration of technological development, along with China's massive experiments during the second half of the twentieth century (e.g., the Great Leap Forward, the Cultural Revolution, the Four Modernizations, and the socialist market economy), catapulted China onto the *same technological time axis* as the West (cf. Hui 2020, 241), as constituted by the *technological unconsciousness of modernity* (cf. ibid., 233). China's "modernization process without modernity" (ibid., 240) destroyed the traditional metaphysics and moral cosmology that had guided societal and political life for centuries. This left a conceptual vacuum and a sense of cultural deracination as Chinese thinking could not keep pace with the country's technological transformation (cf. ibid., 240–241).

The epoch of modernity in seventeenth- and eighteenth-century Europe began with mass media, which enabled technological development, the rise of science, the spread of capitalism, the rule of natural law, and a broad-scale communicative exchange between different countries. This epoch was built on a massive exploitation of natural resources within Europe's colonialism and industrialization. Cartesian dualism peddled the illusion that human beings were superior to nature and could thus subject it to human designs. According to Hui, this notion not only broke the European religious molds (which guided human behavior), but also

broke the mold of other cultures' Ionian cosmologies, which advocated the interconnectedness of all living things (humans, animals, plants) and divine beings (cf. ibid., 243). Hui considers the main characteristics of modernity to be (a) the pressure to globalize, (b) the hegemony of technology, and (c) people's technological unconsciousness, belief in progress, and destructive relation to nature (cf. ibid., 48). He suggests that the disorientation and loss of tradition that arose within all societies after modernization must have been particularly unsettling in non-Western societies like China and Japan, who jettisoned tradition without any form of introspection. In Europe, however, every deviation from tradition arranged itself within tradition, or counteracted tradition (cf. ibid., 240). Hui suggests that Chinese society's feelings of paralysis and disorientation were mainly caused by a limited understanding of technology on the part of Chinese Neo-Confucian philosophers and the Chinese Communist Party (cf. ibid., 239). Furthermore, Hui argues that all other attempts to overcome modernity worldwide (including twentieth-century fascism, communism, and liberalism) failed because they advocated a return to tradition and the local home and demonized modern technologies (cf. ibid., 234–235).

A *technological consciousness* has gradually emerged since the rise of the *Anthropocene* at the end of the eighteenth century. Human beings have begun to grasp the role technology plays in the destruction of the biosphere and the future of mankind (cf. ibid., 241–242). Hui describes the spirit of our contemporary time as a passage from technological unconsciousness to technological consciousness. During this process, we have started to accept that technology is part of our consciousness, realized that our existence is conditioned by technology, and realized that the epoch of modernity is coming to an end, without knowing what comes next (cf. ibid., 187–189). Hence, the Anthropocene – located on the same time axis as modernity – is related to rethinking modernity. We have come to realize that our modern ontological interpretations of the cosmos (dualism of nature/culture, body/mind, being/non-being) have distanced us from our environment and brought us into the awkward position of having to save the earth after desecrating it for centuries (cf. ibid., 242).

The most recent media upheaval (the emergence of the internet and digital technologies) not only consolidates capitalism, but also inscribes the rule of *natural law* into the management of modern "risk societies" (Beck 1992). *Datafication* quantifies all aspects of life and results in an absolute objectification of human behavior. The resulting dangers are that 1) we create a technological world that condemns us to follow the rule of natural laws in every area of life, and 2) the natural laws – amplified and embodied by modern technology – exert power beyond their own territory (nature) (cf. Hui 2020, 202–203). If humankind begins to intervene in natural laws in this way, unintended consequences could arise. Hui suggests technology should be posed as a question of the various *cosmotechnics* inherent in different cultures' metaphysical categories, which must be inscribed into the implementation of new technologies if we want to survive as a human

race (cf. ibid., 254). He postulates that, as human beings, we can only gain control over new technologies and prevent them from ruling us if we reinvent the self and technology (cf. ibid., 233) to ensure that morality and ethics preside over technology (cf. ibid., 238–239).

Instead of working together to find a global solution, the two cyber powers (the US and China) are not only driving the quantification of our lives, but instrumentalizing global internet governance as a technological and ideological competition between two different political systems. While the US desperately defends the democratic and capitalist order, China's socialist market economy and digital capitalism also pursues capital, economic prosperity, and a belief in progress – while drying up our natural resources.

Western think tanks (e.g., the Atlantic Council) employ the Cold War narrative of competing ideologies between liberal democracies and autocratic countries to frame the "technology race" between the US and China, emphasizing that the most successful political system will get to set the standards of use for twenty-first-century technology (cf. Kroenig and Cimmino 2020, 18). The Atlantic Council sees the "China Challenge"[2] as the first challenge to market democracy and international order since the end of the Cold War (cf. ibid., 10). Thus, the Atlantic Council urges its partners to (a) upgrade ICT infrastructure to 5G wireless networks to support smart cities and the Internet of Things (IoT), (b) invest heavily in emerging technologies (e.g., quantum computing) to promote data processing and encryption, and (c) prevent China from engaging in sectors vital to allies' national security (cf. ibid., 13). These suggestions appear to promote technological advancement for the sake of winning an ideological competition.

China also engages in similar rhetoric and systems of thought. Chinese scholars describing China's 25-year-long internet history emphasize that although China initially tried to "catch up" by imitating developed countries' online products and services, it has since become a hyper-connected and innovative society, which "even surpasses Europe and the US" in real-time communication for business, total value of online shopping goods, and mobile payment penetration rate (cf. Fang and Chen 2019, 3f). Chinese scholars depict recent AI developments as a "technological race" (Hu 2018) or an "AI race" (Official account of the Institute of International Technology 2021), and as a global scientific competition that China must win to lay the foundation for its industrial transformation and technological revolution (cf. Hu 2018). Research centers attached to the Chinese State Council depict a "new Cold War in tech" with both technological and geopolitical consequences. According to their accounts, European and Asian countries (who are "desperately trying to develop their own digital sovereignty") are being forced to decide whether to side with the US or China for intelligence, economic and secu-

2 This includes China's model of authoritarian state capitalism, rapid military modernization, integration into existing multilateral institutions, new partnerships with autocratic states, ambition to dominate key twenty-first-century technologies, and its export of surveillance technologies.

rity partnerships (cf. Official account of the Institute of International Technology 2021).

STRUCTURE

This paper seeks to explore whether China's past and present policy approach to domestic and global internet governance has enabled China to "adopt the global time axis as [its] own" to overcome modernity, without relapsing into a modern dualism between human beings and nature (cf. Hui 2020, 233) or contributing to further consolidation of the homogenous relation between humankind and technology via quantification and control (cf. ibid., 35).

In the second section I discuss China's *national digital policy*, considering how the laws governing China's "splinternet" (a term coined by Crews (2001) to describe the potential fragmentation of the internet along national, commercial, and technological lines) have helped CCP to shift the burden of social governance from state authorities to other stakeholders. Next, I demonstrate that beyond the economically and politically driven "cyber sovereignty" approach taken in China's internet development (cf. Kurbalija 2016, 230), national internet laws also illustrate the Chinese government's attempts to instill socialist values into internet regulation and to introduce market economy principles to digital capitalism. However, I will argue that so far none of these measures have helped to cultivate a technological consciousness that resists the pressures of technological modernization and worldwide military and economic competition (cf. Hui 2020, 252), as the Chinese government regards perpetual technological progress and the spread of economic prosperity as the basis for constructing a socialist society.

The third section reconstructs the Chinese perspective on *global internet governance*. First, I explain why the Chinese government thinks the internet needs to be reformed. I then show how the People's Republic of China (PRC) intends to bring about such reform through its expansion of high-tech products and infrastructure abroad, and active participation in international cyberspace regulation. We will see how the Chinese government insists on state sovereignty within its own national physical territory and splinternet. Finally, I will trace the emergence of a historical awareness within contemporary Chinese online publics, which Hui describes as having been absent in both traditional and modern Chinese philosophy (e.g., Neo-Confucianism) (cf. ibid., 220–221). I will show how Chinese politicians, scholars, and journalists establish a clear relation not only between *technology and time*, but also between *technology and space*, as the ongoing erection of new barriers in cyberspace is considered essential for CCP's mission to liberate the PRC and the Global South from the technology-driven impact of Western hegemonies.

The fourth section depicts what a *splinternet* divided along geographic, political and economic boundaries might look like, if Chinese and US technological development policies continue to promote the rule of capital, the universalization of

naturalism, and "progress" at the expense of an intact planet earth. This approach does not help to harmonize the relationship between human beings and nature, so I support Hui's philosophical concept of an ontological pluralism of different cosmotechnics, as it can assist us in re-appropriating modern technologies and overcoming modernity (cf. ibid., 252; 256–258).

2. NATIONAL DIMENSION OF INTERNET GOVERNANCE: THE NETWORK POLITICS, LAW, AND ETHICS OF CHINA'S SPLINTERNET

> "The Internet has become the fifth largest sovereign space after land, sea, air, and sky" (Deng 2018).

2.1 CHINA'S APPROACH TO CYBER SOVEREIGNTY

As the secretary of the Hebei Zhengding County Party Committee in the early 1980s, Xi Jinping (the current president of China) remarked that "technology is the key, and information is the soul" (Zhuang 2021). Around the same time, Qian Xuesen (1911–2009), the founder of China's missile and space program, said that artificial intelligence would determine the country's future (cf. Wu 2019). The CCP has managed public opinion and centralized the coordination of its domestic internet to strengthen the Party's rule and guide the country's future development (cf. An 2021; Zhuang 2021). Due to the strategic importance of the internet, the Chinese government has encouraged the development of a domestic internet – a splinternet – by enabling Chinese tech companies to develop their own national versions of search engines (Baidu instead of Google), video portals (YouKu instead of YouTube), social media networks (WeChat instead of WhatsApp and Facebook), and microblogging services (Weibo instead of Twitter). This allows for better control of users, business operators, and content. China has also been continuously developing its own data ecosystem, semiconductor industry, and data science (cf. McKinsey & Company 2017).

The Chinese government views the internet as a *territory* that must be subjected to the rule of law, and all network and platform operators, business-operating entities, and individual internet users within the territory of the PRC must abide by it. The rule of law is considered the foundation for building a strong country with the help of the internet (cf. Yang and Liu 2021) and for creating a "clear, clean, and ecologically sound" cyberspace, serving as a "common spiritual home of hundreds of millions of people" (An 2021). The CCP also values online public communication as a way to understand and respond to the problems of the masses (cf. Tao 2019; An 2021).

During China's five stages of internet policy from 1994 to today,[3] news dissemination and cyberspace security have been the most regulated areas. The *Measures for the Administration of Internet Information Services* in 2000 implemented licensing and filing systems for (non-)commercial information services to identify all entities that offer and use internet services. Internet service providers are required to record and provide information (e.g., internet users' identity, time spent online, and 60 days of web history) to government authorities (cf. Zhu 2000). In response to the "negative impact" of user-generated content in the evolving blogosphere during the early 2000s, responsibility for internet governance was shifted from the Ministry of Industry and Information Technology to the ideologically driven State Council Information Office in 2007 (cf. Fang and Chen 2019, 4f).

In 2014, General Secretary Xi Jinping included cybersecurity in his national security concept for the first time. In June 2017, China's first cybersecurity law was implemented to protect the critical information structure of key national industries (Section 2, Article 31, Xinhua News Agency 2016) and address the growing number of cyber security threats[4] and cybercrimes.[5] The law requires the operators of platforms (Article 76) and critical information infrastructure (Article 37) to store all data within China, and to identify and remove "illegal" content[6] via monitoring (Article 47, Xinhua News Agency 2016).

Similarly, the *Measures for the Supervision and Administration of Online Transactions* require all "online transaction operators" to register on the online trading platform with real identity information, so that platform operators (Article 24) can regularly monitor business operators that have not registered as market entities (cf. State Administration for Market Regulation 2021). Registered online transaction operators (including farmers' professional cooperatives) must display their electronic business license and social credit code prominently online (cf. ibid.). China's Cyber Administration permits national entities that comply with Chinese law (e-businesses, platform operators, celebrities, users) to engage in un-

3 1) Initial stage 1994–1999, 2) stable policy implementation 2000–2004, 3) policy transition 2005–2010, 4) policy deepening adjustment stage 2011–2015, and 5) strategic development stage (2016–ongoing) (cf. Huang et al. 2019).

4 According to the 41st Statistical Report on Internet Development in China, more than 20 million terminals were infected with computer viruses and more than 15,000 security vulnerabilities of the information system were detected in 2017, an increase of 47.7% from the previous year (cf. Deng 2018).

5 During the first half of 2017, 1,225 people were prosecuted for illegally obtaining or providing citizens' personal information, and the Ministry of Public Security supervised the handling of 62 major telecom and network fraud cases, arresting 14,540 people and prosecuting 11,590 people (cf. Deng 2018).

6 This includes content meant to overthrow the socialist system (Article 12), the spread of rumors and false information, the sale of prohibited items (Article 46), and network services that endanger the physical and mental health of minors (Article 13, Xinhua News Agency 2016).

restricted economic activity, while restricting the online business activities of those that do not comply (cf. Bogen 2022).

Xi Jinping's concept of internet development is based on linking network *governance* to network *security* and network *sovereignty*, which serve as "powerful ideological weapons to promote the construction of a strong network country" (Zhuang 2021). Network governance is based on a "dialectic relationship between security and development, freedom and order, openness and autonomy, management and service" (ibid.). Hence, these laws require individuals, enterprises, and industry organizations to accept both public and political supervision, and encourage them to report illegal network behavior to the authorities.[7] The government appears to consider cooperation to be one-way – i.e., provided by national users, e-businesses, and platform operators.

This approach is reflected in the "diamond model" of China's internet policy system (Fig. 1), which Chinese scholars propose as a possible depiction of China's future internet policy. This model visualizes the institutionalization of China's cyberspace and the rule of law, where "multi-domain systematic norms" and "multi-party participation" systematically regulate four interrelated and interdependent "policy themes" (access rules, content monitoring, market norms and industrial development issues, and network security management). These themes require different degrees of attention, depending on the development of the internet (cf. Huang et. al 2019, 90–91). The authors consider the present form of the internet to be mainly a public opinion tool, so "content monitoring" is currently the most prominent policy theme.

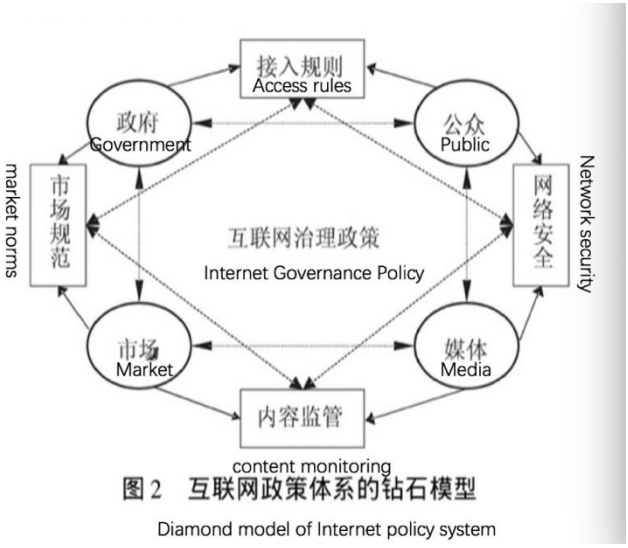

Fig. 1, Diamond model of China's internet policy system, from Huang et. al 2019, 90–91

7 Department of National Network Information; Telecommunications Departments of the State Council; State and Public Security Departments.

Surprisingly, the model depicts internet governance not only as the responsibility of government officials, but also of multiple stakeholders (the government, representing laws and regulation; the public; the media; and the enterprises and organizations representing the "market"). The authors argue that since public power has the potential to erode government authority, internet access has been regulated to balance public rights (e.g., freedom of information) and obligations (cf. Huang et. al 2019, 90). Although the authors describe their model as a "liberal multi-party co-governance policy framework," Chinese government authorities appear to be the actual instigators of internet governance. Similarly, journalists claim that the (mobile) internet has changed social governance "from one-way management to two-way interaction, from offline to online, and from pure government supervision to a greater emphasis on social collaborative governance" (Tian 2018). However, social collaboration in Chinese domestic internet governance requires internet users, media, businesspeople, and platform operators to scrutinize each other's behavior and report alleged offences to authorities. As one journalist states, quite openly: "To create a 'clean' and 'safe' online environment, every Chinese citizen is expected to become an 'internet censor' by 'reporting network violations' […] [to] network supervision departments" (Official account of Xinmin Evening News 2021b).

The authors of the *diamond model* indicate that future internet governance should be "in line with China's national conditions and the current level of internet development." As they see their model as providing "Chinese solutions for global governance" (Huang et. al 2019, 90), it remains unclear whether the model is intended as a framework for governing the Chinese splinternet or the global internet community.

2.2 NETWORK ETHICS: "HEALTHY" ONLINE ENVIRONMENTS AND SOCIALIST CORE VALUES

As discussed, China's "cyber sovereignty" approach (internet follows national laws) has both *economic and political* goals: to foster economic growth and to provide socio-political stability. Online transactions are based on market competition and the rule of law, while laws regulating news dissemination, cybersecurity, and e-commerce aim to create a "healthy" online environment (cf. Zhu 2000; Xinhua News Agency 2016). All entities must respect "social morals," take "social responsibility," and practice "self-discipline" (Articles 9 and 11 of Cybersecurity Law, see, Xinhua News Agency 2016). Online business transactions nationwide must follow the business ethics of "equality," "fairness," and "integrity," to prevent online fraud or unfair business practices and ensure the "healthy development of the digital economy" (State Administration for Market Regulation 2021). Furthermore, enshrining *socialist core values* in law constructs a "multilateral," "democratic," and "transparent" system of network governance, and cultivates a moral value system that directs all parties towards "civilized" behavior in

"healthy" online environments (Article 6 and 7 of the Cybersecurity Law, see Xinhua News Agency 2016). "Healthy news dissemination" includes promoting touching stories of Chinese people's "good deeds" and "righteous actions" in everyday life. These stories aim to "infiltrate the soul" (Tian 2018) and to reflect socialist practices in everyday life. They range from positive examples like "college students and village officials who settle down in the countryside and build wealth for the villagers […] [to deterrent examples like] the 'Xinyi brothers' who promised a thousand dollars and spent the money instead of paying migrant workers' wages" (Wang 2014). In the entertainment industry, socialist core values have been transcribed into popular cultural products (e.g., online games, videos, music, and animation) to reflect the national spirit, advocate "goodness and beauty," incorporate current trends, and promote both Chinese and modern style (Sun 2014). This also serves to "unite hundreds of millions of people under the banner of socialist core values and arouse millions of workers and peasants," and to prevent China from becoming a "prisoner of the dross of Western culture" (Wang 2014). Instant messaging platforms such as Weibo and WeChat also foster socialist core values, for instance with "red jokes"[8] expressed through art (cf. ibid.). The social credit system and the supervision of online transactions by the State Administration for Market Regulation (2021) are meant to create a culture of integrity in market activities, rewarding "honest" entities and punishing the "untrustworthy" (Zhongbanfa 2022). Various Chinese industries have already been integrated into a cross-regional collaborative management system and cloud computing data system that allows the monitoring of the entire digital economy and its actors (cf. Gao 2018, 38).

2.3 PROSPERITY FOR ALL: THE CONCEPT OF "MASS ENTREPRENEURSHIP AND INNOVATION" AND THE "INTERNET+" STRATEGY

The management of China's digital economy, which is officially described as a "socialist market economy with Chinese characteristics" (ibid., 38) but is in fact state capitalism, is based on three macro-control measures that were proposed by Premier Li Keqiang in 2014 and 2015. These recommend that the Chinese government should (1) not intervene while market growth is reasonable ("range control"), (2) promote reform to protect small enterprises and certain social groups (farmers and rural residents)[9] ("targeted regulation"), and (3) make adjustments in advance to prevent and control risks ("camera control") (cf. Yang and Meng 2015). I will now discuss "targeted regulation" by investigating the "In-

8 The Chinese online encyclopedia Baidu defines "red jokes" as uplifting information spread through online devices (e.g., PCs or mobile phones) in the form of inspirational phrases, philosophical proverbs, aphorisms, sincere blessings, and funny sketches (Search item "Red jokes" 2022).

9 One example is to give preferential income tax treatment to small e-businesses run by these groups.

ternet+" (2015) national development strategy and the related "mass entrepreneurship and innovation" policy agenda (2015). These illustrate how China's digital transformation of the national economy is based on both consumption and innovation (cf. Lin and de Kloet 2019, 3), and market economy principles. I will investigate whether these agendas help to make China's digital capitalism less profit-oriented and more commons-based – a necessary prerequisite to escape worldwide competition and generate the kind of technological consciousness that Hui considers crucial for overcoming modernity.

While the previous laws only allowed large IT companies to flourish, the agenda of "mass entrepreneurship and innovation" seeks to foster prosperity for all by enabling small enterprises, single individuals, and start-ups to launch their own online businesses. Journalists announced that "the era when only rich people can start a business has passed" (Economic Observer Information 2021). According to assessments by the National Development and Reform Commission and the China Association for Science and Technology, more than 7 million start-ups and 30,000 "entrepreneurial service institutions" newly registered as market entities in 2020. By 2021 (eight years after the implementation of the concept), 212 "mass entrepreneurship and innovation demonstration bases" had been built across the country, including 3,800 professional cooperatives for farmers in Shandong province alone (cf. Niu 2021). At present, then, we are witnessing the Chinese government's efforts to combine market economy principles with socialist ideas (e.g., collective ownership) in China's physical and digital economy. Nevertheless, it seems hard to rein in the turbo-capitalism of China's internet economy. Chinese scholars predict that China's Internet+ strategy will cause the manufacturing industry to shift from being labor-intensive to capital-intensive and technology-driven (cf. Liu 2017, 4–5), by "using information flow to drive technology, capital, talent, and material flows" (Tian 2018).

At first sight, the concept of mass entrepreneurship and innovation encourages the growth of small and micro enterprises in structurally underdeveloped regions of China. For example, the Wanshun car-hailing start-up was founded by Chinese workers in 2017 to meet the demand for car-hailing services in third- and fourth-tier cities. In their first five years of business, they issued 20,000 direct and 300,000 flexible employment contracts to provide more jobs for Communist Party members and veterans (cf. Economic Observer Information 2021). However, the Cyberspace Administration in Beijing also ordered the leading car-hailing app Didi Chuxing to be temporarily removed from Chinese app stores due to an alleged illegal use of user data. Thus we can conclude that the concept of mass entrepreneurship serves to restrict the monopoly of national internet companies, reduce the "disorderly expansion of capital" (Zhuang 2021), and limit foreign investors' sphere of influence (the US car-hailing service Uber Technologies is Didi Chuxing's second largest shareholder) (cf. *Der Spiegel* 2021). Developing its own core technology and internet infrastructure enables China to become independ-

ent of both global supply chains and the interests of foreign stakeholders who hold stock options in Nasdaq-listed Chinese tech giants:

> No matter how large an Internet company is and how high its market value is, if its core components depend on foreign countries and the "life" of the supply chain is in the hands of others, it will be "in peril." To build a powerful country in the Internet era, we must have our own "core competitiveness," our own technology, and a good information infrastructure. Only by strengthening independent innovation can we "start anew" and truly "get tough." […] [A]nd completely reverse the embarrassing situation of being controlled by others. (Tao 2019)

Chinese legal scholars such as Qiao Xinsheng have urged the government to reform China's legal system in order to stop Chinese online platforms from being governed by foreign stock markets. Their aim is to prevent foreign investors from trying to overthrow China's socialist system by influencing the ideology and opinion of the Chinese general public (cf. Qin An Strategy 2021).

"Mass entrepreneurship and innovation" is also a way to deal with high youth unemployment in China (cf. Springfeld 2022), as popular video-sharing platforms such as Kuaishou, TikTok (Chinese: Douyin), and Bilibili[10] provide new job opportunities and help the post-1990s generation to maximize their income opportunities. They enable people in mid- and low-tier cities to establish their own online businesses by acting as private companies and content creators, while receiving financial support (investment) from Chinese IT giants like Baidu, Tencent, and other venture capital companies (cf. Lin and de Kloet 2019, 3–4). In the first quarter of 2022, Kuaishou used live broadcasts to teach more than 100 million users how to create a business on its platform (cf. Louchun 2022). The platform has generated 34.64 million employment opportunities for content creators, and among the content creators active in 2016, 94% of those with >1,000,000 fans and 70–80% of those with 10,000–100,000 fans were still active in 2022 (cf. ibid.). Of the 400 million daily active TikTok users in 2020, more than 20 million either made direct income from live broadcasts and e-commerce or worked in new occupations (e.g., internet marketers or "live broadcast salesmen") (cf. China Youth Daily 2020). Of the 4 million enterprises that were registered on China's national version of TikTok by July 2020, 80% were small enterprises with less than 20 employees (cf. ibid.). Internet legislation supports small businesses[11] by not requiring

10 The majority of content creators (70%) on Bilibili are between 24 and 30 years old (cf. Daily Economic News 2021).

11 Small businesses are defined as those that do not require administrative licenses and whose annual transaction volume does not exceed 100,000 RMB (cf. State Administration for Market Regulation 2021).

them to register their business as a market entity (cf. State Administration for Market Regulation 2021).

Media reports (Daily Economic News 2021; Louchun 2022) suggest that most online businesses on video-sharing platforms (Bilibili, Kuaishou, TikTok/Douyin) are started by people living in inland-southern (Hunan, Jiangxi), central (Shanxi, Henan), and southwestern China (Yunnan, Sichuan, Chongqing). These are all landlocked central provinces (not the richer coastal regions), so the concept of mass entrepreneurship and innovation seems to have worked for now.

In recent years, the Chinese government's "Internet+" strategy has promoted the integration of the physical economy into the digital economy and transformed traditional production relations and circulation systems by encouraging three core industries (agriculture, manufacturing, services) to use digital channels and digitize supply chains (cf. Shen 2017). The "Internet+" strategy also seeks to improve living conditions for rural peasant groups (cf. State Council 2015), by stimulating innovative forms of organization among farmers and employing market mechanisms for agricultural brand building (cf. Ma and Hu 2020, 7–10). It aims to create a market- and government-led digital rural economy, centered around the social participation of farmers, resource sharing, and collaborative construction (cf. ibid., 5–6). The internet penetration rate expanded to 57.6% in rural areas by December 2021 (284 million internet users) (cf. CNNIC 2022), and farmers use content on platforms like Kuaishou to learn how to operate agricultural machinery (cf. Louchun 2022). In 2022, Xi Jinping concluded that rural e-commerce had promoted agricultural innovation and rural development and raised farmers' incomes (cf. Wu et al. 2022). Furthermore, five years after McKinsey suggested that the Chinese government should educate its workforce to use AI technology across industries (cf. McKinsey & Company 2017), China's first open-source, industrial-level deep learning platform was launched, providing teaching resources, tools, platforms, and services to vocational education institutions, colleges, and universities. This AI-based multi-level education system will help tackle China's AI talent gap, create high quality jobs, and allow the further growth of China's digital economy by integrating education into digital industries (cf. Yue 2022).

However, despite these public internet platforms and public service alternatives to private companies, both the Internet+ strategy and the agenda of mass entrepreneurship and innovation mainly center around a profit-oriented model of e-commerce that fosters further quantification and control. For example, even farmers' professional cooperatives and collective ownership associations are required by China's State Administration for Market Regulation (2021) to publish their social credit code online (Article 12). China's current digital economy is still not establishing the type of commons-based society I consider to be crucial for escaping the homogenous relationship between human beings and technology. According to Hui (cf. 2020, 35), this relationship is caused by humans' self-imposed pressure to constantly invent even larger technical systems (e.g., smart

cities, the Internet of Things, social networks) to track and quantify human behavior (the "technological unconsciousness").

2.4 INTERIM SUMMARY

Chinese national internet laws are meant to ensure network security and network sovereignty. The burden of social governance appears to have shifted from state authorities to other stakeholders (platform operators, e-businesses, internet users). Socialist core values are incorporated into internet legislation to create healthy online environments. China's current digital economy is governed by state market supervision and market economy principles to integrate marginalized social groups. Recent policy documents advocate the promotion of new forms of consumption and retail/consumer networks (cf. National Development and Reform Commission 2021), and socialist elements such as farmers' professional cooperatives are integrated into China's digital economy. However, the current Chinese internet economy does not resemble the kind of "open sharing" platform (e.g., public service platform for collaborative manufacturing) that the State Council envisioned in 2015 for new models of economic production and public service (fair services and open public data resources) (cf. State Council 2015). Chinese legal scholars classify China's digital economy as "capitalist" and far from the State Council's vision, since online platforms do not serve the people and are not owned by the public (cf. Qin An Strategy 2021). In digital capitalism, "competition between great powers in the digital economy era is invisible," so legal scholars urge the Chinese government to scrutinize foreign investors' attempts to influence Chinese online public opinion (cf. ibid.). Although technological governance aims to create a socialist society, its underlying economic principles rely on market competition, consumption, the spread of economic prosperity, quantification, and control. Hence, China's domestic internet legislation submits to the pressure of technological modernization and worldwide competition and does not reveal the kind of technological consciousness that Hui describes as necessary to overcome modernity.

3. THE INTERNATIONAL DIMENSION OF CHINA'S INTERNET GOVERNANCE

> "We should [...] turn the deep sea, polar regions, outer space and the Internet into new frontiers of cooperation rather than making them arenas for a common game."
> (CCTV reporter 2022).

3.1 A FIREWALL OF VALUES

Google's withdrawal from the Chinese market in 2010 and the dispute between China and the US over cyberspace order and network infrastructure not only provided an impetus for Chinese local companies to dominate the national online market, but highlighted the fact that the US and China were pursuing two opposing internet development models. The US government's rejection of Chinese tech giant Huawei's attempts to promote its 5G solutions in the US market in 2018 initiated an ongoing international discussion of China's growing influence. Chinese scholars frame the US government's ban of Huawei as an act of "disconnection, decoupling and division" that counters the global (interconnected) nature of the internet (cf. Fang and Chen 2019, 7–8). The EU and US have become concerned about the expansion of Chinese 5G technology to countries of the Belt and Road Initiative (cf. Official account of the Institute of International Technology 2021). Chinese-brand smartphones and Chinese tech giant Huawei's operating system have a growing presence on the African continent, which Western policy analysts depict as a battle between Chinese and US tech firms for control over developing countries' software, content, and communication tools (cf. Tugendhat 2021). Western think tanks believe China intends to "build […] a global information network with China at its center" (Arcesati 2020), which will challenge Western hegemony. Recent attempts by the US to prevent Chinese students from studying at American universities are regarded by the Chinese State Council as an attempt to disadvantage China when it comes to training future talent (cf. Official account of the Institute of International Technology 2021), as China already has a talent gap of five million people (engineers, data scientists) in the fields of AI research and production (cf. Yue 2022).

Chinese scholars and journalists often compare China and the US as cyber powers, considering their performance and their underlying ideologies. Despite running similar profit models[12] through their internet economies, the US is still the leading center for innovation (cf. Li 2016, 155ff). The Chinese National People's Congress suggests that the US dominates the global trend of integrating the

12 These seven profit models include 1) the cross-subsidization pricing model for information products, 2) Pareto's law, 3) the transaction sharing model, 4) the advertising model, 5) the labor exchange model, 6) the virtual currency model, and 7) the gift economy model (cf. Li 2016, 152ff).

physical economy into the internet and uses the high-tech revolution to further promote globalization, neoliberalism, and the rule of monopoly capital in international finance and industry, leading to increased inequality between the rich and the poor (cf. Shen 2017). Although "the internet knows no borders, internet companies often have a 'nationality'," so "it is not the technology itself that determines the outcome, it is economic and political systems" (ibid.). Leading authorities in China's National People's Congress believe the political and legal governance of China's internet economy are crucial in creating socialist production relations, with only a fraction of people "still believing that 'neoliberalism' can save China and the world" (ibid.). Chinese journalists take a critical stance towards capitalism, highlighting the fact that AI developers in India "develop apps for Western companies with only their wealthy customers in mind, creating a polarized economic society" (Official account of the Institute 2021). Overcoming a polarized society, eliminating workforce exploitation, and guaranteeing prosperity for everyone is considered to be the essence of a socialist society (Search item "Socialist society" 2022), and AI technology is considered crucial to governing such a society.

Chinese journalists claim that due to their technological superiority, Western developed countries are trying to impose "cyber cultural colonization" (Sun 2014) on developing countries. Chinese journalists portray online platforms as a "front for ideological confrontation, cultural contest, and value struggle" between "allegedly undemocratic" countries and some Western countries. They accuse the latter of using strategies ranging from online infiltration to direct attacks, which not only confuse Chinese people about "right" and "wrong" values, but might even lead to the "failure of socialism" (Wang 2014). Hence, it does not come as a surprise that China's Cyber Security and Informatization Committee describes the internet as "the main front, the main battlefield, and the forefront of ideological struggles" (Zhuang 2021).

Chinese journalists also describe the situation in this way: "At present, the cybersecurity game between great powers is not only a game of technology, but also a game of ideas and the right to speak. The more critical the moment, the more it is necessary to enhance the people's sense of responsibility and mission for cyber security" (Deng 2018). Journalists argue in favor of going beyond "defense" strategies such as blocking content by adopting more active forms of "fighting," to build a "firewall of values" that responds to "value 'hackers' from different directions" (Wang 2014). They suggest building a professional team to conduct "social 'Internet Criticism'," by "actively criticizing and fighting against multifold wrong values in the network." This includes values that promote reactionary attitudes, vulgarity, and the "universal values" that certain Western countries and even some Chinese citizens advocate or praise online (ibid.). Hence, the internet is seen as a "test of governance" for Party rule, as it helps to "consolidate its ruling status, and improves its governing ability, which reflects the strong sense of urgency and historical responsibility of Marxist politicians" (Zhuang 2021).

3.2 THE OVERSEAS EXPANSION OF CHINA'S HIGH-TECH INDUSTRY

Another way to break free from the grip of the Western powers on "cyber cultural colonization" is to help national tech giants expand overseas. Chinese companies use the internet's information infrastructure to pursue their businesses globally. Chinese smartphone brands already dominate the market in low-income countries in Southeast Asia (cf. Abacus 2019) and Africa (cf. Tugendhat 2021), and the Chinese brand Xiaomi is among the top three in Latin America (cf. Ding 2021). Leading Chinese national social media apps, film distribution, and e-commerce platforms are also used in other countries. The Twitter-like microblogging service Sina Weibo is the first Chinese social media company to be listed in Nasdaq, and Tencent's mobile chat and instant messaging software WeChat was listed in the top-10 most popular social media apps worldwide in 2019 (cf. Lai and Tian 2019, 54). China's overseas market expansion has not only targeted Southeast Asia (Taiwan, South Korea, Thailand, Vietnam, Singapore, Indonesia, Malaysia, the Philippines), Japan, the Pacific (Australia, New Zealand), Africa (Ghana, Congo, South Africa), and Latin America (Argentina, Brazil, Mexico), but also densely populated underdeveloped countries with a low penetration rate for smartphones, such as India (cf. ibid.; Luo 2014, 52). Expansion strategies include finding local partners, conducting (offline) advertising and event marketing, cooperating with local celebrities, studying international internet service providers' product design, using Chinese students overseas to promote WeChat services, and opening offices abroad to investigate local habits (cf. Zhu 2014, 48; Luo 2014, 52).

The portal website Sina obtains overseas interview rights through overseas branches, and e-commerce platform Alibaba (Tmall.com, Taobao.com, Alipay) has invested in the acquisition of digital media content and distribution companies in both local (e.g., Youku) and international markets (e.g., the US company Lionsgate) since 2014 (cf. Dang 2016, 110–111). Alibaba also focusses on film distribution on multiple screens (PC, mobile phone, TV etc.). Its aim is to introduce the concept of e-commerce into the film and television industries, by creating a consumption model that combines ticketing, payment, and consumption of movies, and links online payment with offline movie theaters. Furthermore, with Yuyubao, Alibaba has established its own film and television operating model based on crowdfunding, where users can invest in their favorite movies, interact with stars, and participate in content production (script creation).

To promote Chinese culture on a global scale and establish a number of large and competitive cross-regional and cross-industry media groups, China Central Television's online channels' and Xinhua News Agency have constructed international websites. Along with local TV stations (e.g., Hunan Satellite TV), they have also established partnerships with international television news (UK, USA) to cooperate on program development, copyright, and program broadcasting (cf. ibid., 111). Some Chinese journalists advocate spreading socialist core values outside China, "as the natural boundaries and barriers between countries can be easily

broken with the help of values" (Wang 2014). Success stories about the joint efforts of the Chinese Communist Party and Chinese people to overcome hardship are disseminated online to help global internet users relate to socialist core values (cf. ibid.).

The online search engine Baidu and e-commerce platforms like Taobao and Tmall have not yet achieved top-10 traffic in other countries (cf. Lai and Tian 2019, 54–58), so Chinese scholars conclude that the US still governs the internet globalization process (cf. Xu 2017, 19). They suggest pursuing an "innovative technology-driven" model of internet development similar to the US, to ensure a leading position on a global scale (cf. ibid., 20). The Chinese short video platform TikTok (Douyin) has achieved worldwide success, so they believe more Chinese hardware and software solutions will soon conquer foreign markets (cf. Lai and Tian 2019, 54–58).

Chinese production- and distribution-centered digital platforms are already restructuring regional markets abroad. For instance, Chinese platform conglomerates coordinate food production networks in Southeast Asia and regulate food imports from Thailand and Vietnam (cf. Yang 2022, 716–734). China's social credit system targets the supervision of import and export businesses and the establishment of a credit system for foreign cooperation and foreign investment (cf. Zhongbanfa 2022). China aims to shape international credit governance by providing "Chinese wisdom and Chinese solutions to promote the construction of a more just and reasonable international governance system" (ibid.).

The strategies deployed by national tech giants to promote the use of their digital products and platforms in countries around the globe may be the first step in creating a community of allied countries who will gradually join China's online media ecosystem.

3.3 CHINA'S POLICY APPROACH TO GLOBAL INTERNET GOVERNANCE

The CCP is also counteracting the perceived US domination of global internet governance by adopting a *multilateral approach* and joining international cyberspace governance programs. China has not only hosted the annual World Internet Conference since 2014 and the World Artificial Intelligence Conference since 2018 (activities that Chinese journalists interpret as evidence of the world's "high recognition of China's position in this field," see Huayu 2022), but has actively participated in meetings of the Internet Corporation for Assigned Names and Numbers (ICANN) and the Internet Engineering Task Force (IETF) (cf. Kurbalija 2016, 230). Moreover, the Chinese government fosters digital connections between Asia and Europe through the Digital Silk Road project and aims to *close the digital divide* in the Global South (e.g., by financing Africa's digital infrastructure, implementing Chinese IT solutions for e-governance and online education in developing countries, promoting smart health in Arab countries, and promoting AI-enabled COVID-19 diagnostic systems in certain South American countries) (cf.

Arcesati 2020). In the eyes of President Xi Jinping, "the common aspirations of the vast number of developing countries have brought Chinese wisdom and solutions into global internet development and governance" (Zhuang 2021).

While China is promoting an interconnected global cyberspace by building the necessary infrastructure in different countries, Xi's concept of a "community of shared future in cyberspace" is meant to provide a vision of Chinese wisdom for the international community (cf. CCTV reporter of China Central Radio and Television 2022). It builds on Marxist theory and aims to move away from nationalism (cf. Wang 2021, 39f). The internet is understood as a "borderless" global cyberspace, cooperatively governed by interconnected international players (cf. CCTV reporter of China Central Radio and Television 2022). It envisions a global online community that is defined neither by ethnicity and regional belonging nor by "Western centralism," but is "infinitely inclusive," commonly constructed, "clean" (undefined here),[13] and based on the idea of sharing "public goods" (Wang 2021, 39f). To transform the existing cyberspace from a "zero-sum game" into a "win-win situation" for all, the interconnection and interoperability of network facilities along with an open exchange and mutual integration of cyber cultures needs to be promoted (cf. ibid., 43). The focus of internet governance has to transform from "seeking common ground to seeking peace," and from "technical security assurance to global collaborative security" (ibid., 43). As the internet's main dynamic (i.e., content produced by many different players) is an "urgent problem" in the management of global cyberspace, Xi's concept is the "Chinese" answer to solving it (cf. ibid., 39). The solution is to make the global community respect cyber sovereignty, to maintain peace and security, and to promote open cooperation and build "good order" (cf. ibid., 41f.). Hence, we can also identify a *cyber sovereignty approach* in China's attitude towards global internet governance.

We can apply the (national) *diamond model* of internet policy from section 2 to deduce how China envisions its systematic regulation of the global internet. The Chinese government currently concentrates on "market norms" and "network security management" policies (e.g., providing its IT infrastructure to Digital Silk Road partners to regulate cross-border e-commerce). Eventually, after completing this process, the Chinese government may switch its attention to "access rules" and "content monitoring" policies, to ensure that its partners engage in "global collaborative security" in a way that aligns with Xi's development objective of a "community of shared future in cyberspace." Bearing in mind what "social collaborative governance" means in China's national internet governance context (as reconstructed in section 2), "global collaborative governance" could imply that foreign business operators and internet users in the Digital Silk Road coun-

13 Another journalist clarifies the meaning of the word "clean": The Cybersecurity Law, which regulates and restricts online behavior by making Chinese internet users comply with the rule of law, is presented as "conducive to creating a clean and upright online environment" (Yang and Liu 2021).

tries would be required to scrutinize each other's behavior and report violations to Chinese authorities to meet the demands of China's cybersecurity approach. This is not unlikely, as General Secretary Xi Jinping's concept of international cyberspace governance is based on the notion that people worldwide should benefit from the freedom and economic prosperity the internet provides, but only if users submit to a certain code of conduct that ensures harmonious interaction and cooperation. "Only by forming a good internet order can we balance freedom and order, promote development and prosperity, and ensure that the internet benefits mankind" (Zhang 2022).

China's Cybersecurity Law (Article 7) advocates "international exchanges and cooperation in cyberspace governance, network technology research and development and standard setting" (Xinhua News Agency 2016). However, research institutes affiliated with the Chinese State Council have indicated that the Chinese government would be unlikely to authorize international stakeholders to shape China's global internet governance, as artificial intelligence touches on crucial aspects of national security and political hegemony:

> Businesses, charities, or other non-government actors may very much want to step in and lead technology collaborations, however, any form of collaboration will be more difficult once policymakers view technological issues through the lens of national security and political hegemony. (Official account of the Institute of International Technology 2021)

The next section will show how the emergence of a historical awareness is strengthening China's ambition to embed the ideas behind its national cybersecurity law in global cybersecurity legislation.

3.4 TECHNOLOGICAL UNCONSCIOUSNESS DESPITE THE EMERGENCE OF A HISTORICAL AWARENESS

The Chinese government believes that digital technologies are fuelling a worldwide technological revolution and industrial transformation "unseen in a century" (Zhuang 2021). The Cyber Security and Informatization Committee of the Central Committee of the CCP is convinced that China is capable of becoming (one of) the world's strongest cyber power(s):

> In today's world, it can be said that there are only a few ruling parties in a few countries that can actively adapt to the trend of information revolution like the Communist Party of China does, and attach importance to the Internet, develop the Internet, and govern the Internet. (ibid.)

Some Chinese scholars believe China will pursue a *historical mission* in the next 25 years of internet development, by leading digital interconnectivity among the remaining four billion people worldwide who are not yet online, engaging in the global 5G and 6G competition, and using the internet to make the "global leadership of China's hyper-connected society the biggest driving force for the future development of human civilization" (Fang and Chen 2019, 3; 8). Journalists proclaim that "[…] the era when Western countries controlled China's economic lifeline through mergers and reorganizations of traditional enterprises is gone forever" (Qin An Strategy 2021). They welcome the arrival of artificial intelligence "at the right time" (Hu 2018), which will be a key factor in "realizing the Chinese dream of the great rejuvenation of the Chinese nation" (China Electronics News 2017).

Turning China into a strong domestic and global cyber power will advance the two centenary goals (cf. Zhuang 2021; Tian 2018; Deng 2018) and realize the "Chinese Dream," an idea Xi Jinping put forward in 2014 (cf. Official account of Xinmin Evening News 2021a). The goals are to become 1) a prosperous country and 2) a civilized, harmonious, and modern socialist country by 2049, when the CCP celebrates its 100th anniversary. The Party's firm internet governance will be decisive in "win[ning] the great victory of socialism with Chinese characteristics in the new era" (Wu et al. 2022). The old glory of being one of the oldest civilizations in human history – a glory that went astray due to the technological superiority of Western powers during the nineteenth-century opium wars, and China's self-attributed lack of technological competence (cf. Hui 2020, 36) – has to be restored. Zhang Shenglei from the Chinese Academy of Sciences concludes that Xi Jinping's "strategic thinking of building a strong country on the basis of the internet has opened a new journey for an ancient civilization to become an information-based power" (2022). One step to achieve that goal is to become the world's market leader and major artificial intelligence innovation center by 2030 (cf. jimmonzang 2017), as outlined in the *New Generation Artificial Intelligence Development Plan* implemented by the Party Central Committee and the State Council in 2017.[14] By then, leading AI enterprises and global brands are expected to have a market value of over 150 billion USD (cf. Network public information collation 2021), the scale of the AI core industry will exceed 1 trillion RMB, and the scale of related industries will exceed 10 trillion RMB (cf. jimmonzang 2017;

14 The first step within the three-phase strategic goals has already been reached with the construction of National Independent Innovation Demonstration Zones, National High-Tech Industrial Development Zones (cf. Robot Frontier 2018) and National Artificial Intelligence Industrial Parks across the country since 2018 to advance research and development of AI technology for industrial chains (cf. Xi'an Software Park 2022; Official account of Beijing Fuhua 2022). By 2020, 300 AI-related enterprises already existed in China (cf. Network public information collation 2021). The second step is to reach major breakthroughs by 2025 in those areas where China already holds an advantageous position (i.e., drones, speech and image recognition, natural language processing, intelligent robots, and machine learning) (cf. jimmonzang 2017).

Robot Frontier 2018). For now, however, China's core industries are not ecologically friendly intelligent industries, as national agricultural information systems have neglected to collect certain data (e.g., on the impact of climate on output) to train their AI systems (cf. McKinsey & Company 2017).

Instead of working towards an eco-friendly intelligent industry to address the environmental problems of our time, we see Chinese politicians, scholars, and journalists emphasizing Marxist theory as a solution to the problems caused by today's information societies, which have opened up "a new era calling for new ideas" (Official account of Xinmin Evening News 2021a). Xi Jinping argues for deep reforms, as the global internet is characterized by an "inconsistent" and "unreasonable" network order, "unsound rules," and an unequal development of the internet in different countries (cf. Zhang 2022). In Xi's view, it is not enough simply to establish an internet with Chinese characteristics; he also considers it as necessary to put forward a Marxist standpoint to "clarify the international proposition of internet development and governance" (Official account of Xinmin Evening News 2021a). Shen Yi, director of the Cyberspace Governance Research Center of Fudan University, believes that the practical paths and development models China has developed since it accessed the internet "have set an example for developing countries to master and use information technology to serve their own development" (Wu et al. 2022). The "Chinese plan for global internet development and governance" is meant to ensure the peaceful development and progress of humankind by "making the internet benefit the world and people of all countries" (Official account of Xinmin Evening News 2021a). Closing the digital divide in the Global South is intended to help developing countries prosper economically and "leap into a new era and share the advantages of the Internet of Things" (Official account of the Institute of International Technology 2021). As President Xi Jinping puts it:

> China's digital economy will enter the fast lane. Through its own efforts, China hopes to encourage all countries to board the express train of Internet and digital economy development. China will not close its door to the outside world and will only open even wider. (CCTV reporter 2022)

Hence, China's Cyber Security and Informatization Committee recommends accelerating the construction of a global network infrastructure in developing countries, as "China has a once-in-a-lifetime opportunity" (Zhuang 2021).

China also seeks to reform the global internet governance system and wants to introduce "Chinese solutions" (ibid.). One major goal is to inscribe the vision formulated in China's Cybersecurity Law within global cybersecurity legislation:

> […] [A]t a critical moment when the new order of global internet governance needs to break the old model and establish a new one, the effective implementation of the Cybersecurity Law will not only

> open a new era of internet governance and internet legislation in China, but will also play a positive, leading role in global cybersecurity legislation. (Cui 2017)

The Chinese government suggests that global internet governance should consider cybersecurity and e-commerce together (rather than as separate policy fields), because network security ensures social order and economic prosperity (cf. Deng 2018). For Xi Jinping, the internet as a "global village" is a "new territory" that is not a "land outside the law" (CCTV reporter 2022):

> A secure, stable and prosperous cyberspace is of great significance to all countries and the world at large. In the real world, there are still lingering wars, shadows of terrorism and occurrences of crimes. Cyberspace should not become a battlefield for countries to wrestle with one another, still less a hotbed for lawlessness and crime. (ibid.)

For Xi, it is of utmost importance that global legislation for internet governance should respect each country's cyber sovereignty. Although he sees the internet as "a realm without national borders", whose governance requires international cooperation (cf. CCTV reporter 2022), he advocates "building *new barriers* to [enhance] national cyber security" (Zhuang 2021; Tao 2019) and "strengthening the technical control of China's internet territory" (Wang 2018). China's *Global Initiative on Data Security* (2020) insists on each country's right to govern its own data and digital economy according to its national jurisdiction, which the Mercator Institute for China Studies interprets as "strong localization requirements" (Merics 2020). According to the deputy secretary of the Party Committee of Peking University, the goal of China's initiative is to establish a "multilateral, democratic, and transparent international internet governance system," based on the principle of network security (national cyber sovereignty, peace, openness, cooperation, and effective order) and economic prosperity (innovation, fairness and justice, mutual trust, orderly development) (cf. An 2021).

China lags behind European (cf. European Commission 2022a) and US (Algorithmic Accountability Act) attempts to control the risk of algorithmic discrimination, having only just taken its first steps to regulate algorithms with e-commerce law (cf. Zhang 2019; Yan 2019; Hong et al. 2021). However, Chinese scholars also highlight China's growing self-assertion, since European and US regulations (the former focusing on protecting individual users' data, the latter on imposing self-discipline on industries) have not been enough to prevent algorithmic discrimination. They propose that administrative supervision led by an algorithm committee consisting of various (legal) professionals should design China's path to legal regulation of algorithmic discrimination (cf. Zhang 2019). Global consulting firms suggest China is capable of founding an international regulatory agency to set standards and establish ethical guidelines for the development of AI technology and for global AI governance (cf. McKinsey & Company 2017).

So far, China has a long way to go when it comes to decisively shaping global internet governance, as illustrated by the US *Declaration for the Future of the Internet* issued on April 28, 2022 (U.S. Department of State 2022). One week earlier, Xi Jinping had urged his audience at the National Network Security and Informatization Work Conference to "seize the historic opportunity" for China to shape the "process of international governance of cyberspace," and to "win the great victory of socialism with Chinese characteristics in the new era" by advocating a "socialist way of governing the internet" (Zhang 2022). Obviously, the US and the 60 countries who signed the Declaration for the Future of the Internet consider the Chinese way to be undesirable, as their declaration is seen as a means to counteract a *closed vision of the internet* and the suppression of online freedom by authoritarian governments (cf. U.S. Department of State 2022; European Commission 2022b).

The US declaration recommits its partners to "a single global internet," a decentralized network of networks, which aims at fostering 1) network security and a stable technical infrastructure of the internet, 2) democratic principles such as the free flow of information, individual privacy, and fundamental freedoms (Universal Declaration of Human Rights), 3) market growth and economic prosperity for all through fair competition and an inclusive digital economy, and 4) a multistakeholder approach to internet governance (e.g., UN, WTO, Internet Governance Forum, Freedom Online Coalition). Its goal is to "resist […] efforts to splinter the global internet" and to reduce the global "digital divide" (U.S. Department of State 2022). The US sees the principles outlined for the internet's future as "universal in nature" and aims to make this vision global, "while respecting each other's regulatory autonomy within our own jurisdictions and in accordance with our respective domestic laws and international legal obligations" (ibid.).

It is not surprising that the day after the White House issued the Declaration, Zhao Lijian (spokesperson for the Chinese Foreign Ministry), described it as yet another attempt of the US to impose its own ideology and standards on other countries and undermine international rules, thus provoking "a *splinternet* and a *confrontation in cyberspace*" (Shen and Kong 2022). He was outraged that the Declaration called for human rights protection, despite the US itself having engaged in data theft and unlawful surveillance of internet users around the world for years. Zhao also saw the Declaration's statement on trust in the digital ecosystem as implausible, since the US itself used digital tools to erode political processes and even to overthrow other countries' regimes. When it came to the Declaration's stance on fair online markets, Zhao accused the US of using national security as an excuse for harming international companies and implementing its own "immature systems" (ibid.). Although the Declaration advocated a multistakeholder approach to internet governance, its content was, Zhao argued, inconsistent with the rules set by the United Nations, as the Declaration itself was an attempt "to introduce ideology into cybersecurity issues" and to use democracy as an excuse to establish an "exclusive circle" (ibid.). Zhao Lijian juxtaposed the

vision outlined in the *Declaration for the Future of the Internet* with Xi Jinping's vision of a "Community with a shared future in cyberspace," which advocates returning to existing forms of multilateral negotiations and co-constructing international rules for a "truly multilateral, democratic and transparent internet governance system to build a peaceful, secure, open, cooperative and orderly network" (ibid.). China's concept of global internet governance is based on 1) a multistakeholder approach that includes the participation of governments, international organizations, internet companies, technical communities, non-governmental organizations, and individual citizens from every country, 2) mutual trust and respect, 3) a form of network governance embedded in the framework of the United Nations, and 4) "network sovereignty of various countries." Without these things, it is argued, "the problems brought by the internet to the world" cannot be solved efficiently (cf. Zhang 2022).

The Chinese Foreign Ministry spokesperson makes it clear that the US declaration is seen as an instrument to reignite the fight between communist systems and liberal democracies. In contrast to Russia, disconnecting from the global internet is not an option for China. In an "era of mobile internet" and networked societies, it is "impossible for any social subject to stay outside the network" (Official account of Xinmin Evening News 2021b). As President Xi Jinping concludes:

> The Internet has turned the world into a global village and gradually transformed the international community into an interconnected community with a shared future. Now, there is a view that the Internet is so complex and difficult to govern that it is better to just shut it down. This is not true and it is not the solution. China cannot and will not close its door to the outside world. (CCTV reporter 2022)

Chinese journalists conclude that "the future of the world lies in Asia, and the future of Asia lies in China" (Gu 2022).

3.5 INTERIM SUMMARY

We can reconstruct China's position towards competing internet governance policies over the last decades as follows. First, China has adopted a "new-cyber" approach that sees cyberspace as a realm requiring a new form of governance. In the former unidirectional social governance model of the analogue world, the Chinese government supervised the actions of businesses with autocratic capitalism and controlled public opinion-making with laws regulating journalist practice. China's national internet legislation, on the other hand, helped to foster "social collaborative governance" (Tian 2018). This shifted the burden of "content monitoring" from government to national users, e-businesses, and platform operators, who are required to scrutinize each other's network behavior. A new-cyber approach also characterizes the Chinese government's stance towards global internet governance, as it recognizes that the internet's inherently global nature re-

quires a different form of governance. In the eyes of the CCP, the current status quo of the global internet is characterized by an unreasonable and inconsistent network order, a predominance of liberal ideology, and unequal development in developed and developing countries. Hence, the CCP favors the formulation of new laws for network order and security that allow all countries to enjoy economic prosperity.

Second, China is ambivalent as to whether governments should have sole responsibility for internet governance or whether non-state actors (the business sector, international organizations, media, the public) should also be involved (cf. Kurbalija 2016, 6). On the one hand, China pursues a *multilateral* (consensus-driven, multi-stakeholder) approach to internet policy-making (cf. ibid., 230), as it agrees that any international internet governance system should be established collaboratively and respect existing forms of international cooperation (United Nations). On the other hand, it takes a *cyber sovereignty approach*, as it insists on the principle of national sovereignty in the global management of cybersecurity (cf. Zhang 2022).

Third, Chinese national and global internet governance takes a *holistic approach* towards cybersecurity and e-commerce policy (cf. Kurbalija 2016, 17), which goes beyond the mere regulation of infrastructural issues. Both its domestic internet laws and its vision for global internet governance address developmental, legal, economic, sociocultural, and security issues, while ignoring the "Western" focus on human rights and "universal values" (ibid., 22; 29). The rejection of human rights as a form of "cultural imperialism" is not new; it was evoked by the Asian intellectuals who advocated New Confucianism during the twentieth century (cf. Dirlik 1996, 109–110; 114). Similarly, we have seen how Chinese critics view Western countries' domination of internet development as a form of "cyber cultural colonization" (Sun 2014). Scholars recognize such currents of thought as East Asian societies reasserting themselves "against Euro-American cultural hegemony" (Dirlik 1996, 113).

Moreover, the CCP has a growing awareness that digital technology will be the key to securing future Party rule and China's long-term position as a hegemonic power. However, I argue this is a form of *technological unconsciousness*, as it is not the kind of technological consciousness that Hui describes for overcoming modernity (cf. Hui 2020, 42). The CCP's vision for future development of the internet centers around the preservation of power, but not around the preservation of the planet. The Chinese government considers itself to be on a historical mission to become the world's leading cyber power – to end Western countries' control over China's economy, become a prosperous socialist country, a role model for the Global South, and shape the process of international internet legislation by advocating a "socialist way of governing the internet" (Zhang 2022).

4. OUTLOOK: A CONFRONTATION OF TWO SPLINTERING INTERNETS OR AN (ONTOLOGICAL) PLURALISM OF DIFFERENT COSMOTECHNICS?

> Die Anerkennung des Anthropozäns entspricht dem Gipfelpunkt eines technologischen Bewusstseins, an dem der Mensch anfängt, sich der maßgeblichen Rolle der Technologie bei der Zerstörung der Biosphäre und der Zukunft der Menschheit […] bewusst zu werden. […]. Es [gibt] zwei Antworten auf die potentielle Gefahr des Anthropozäns: zum einen Geoengineering, […], und zum anderen der Aufruf zur kulturellen Vielfalt und zum ontologischen Pluralismus. (Hui 2020).

Both leading world cyber powers (China and the US) consider the internet to be a borderless space that symbolizes globalization, while also conceptualizing it as a territory for ideological confrontation between communist/autocratic systems and liberal democracies. For the Chinese government, the internet serves as a tool to realize the Chinese Dream of becoming an economically prosperous, modern, socialist society by the mid-twenty-first century. Beyond this ambitious goal, the Chinese government sees its country's modernization through digitization as a role model for other developing countries who seek further internet development. China is attempting to close the digital divide in the Global South and enter new markets with its worldwide internet development and infrastructure projects. However, "tak[ing] the promotion of people's well-being as the starting point and end point of the development of informatization" (Zhuang 2021) is too short-sighted. By exporting digital technologies, China hopes to promote the spread of economic prosperity to other developing countries. In reality, however, it is just following the pattern established by developed countries: the exploitation of natural resources and environmental destruction for the sake of "progress."

In economic terms, both Chinese state capitalism and US neoliberal internet economies foster further consolidation of digital capitalism. China's "Internet+" strategy and "mass entrepreneurship and innovation" national policy agendas have not yet created an internet economy that relies on socialist production relations. Instead, China's internet legislation aims to integrate marginalized social groups into its e-commerce by making them subject to profit-orientation, quantification, and surveillance. In political terms, both powers consider the internet to be a battlefield for competing political ideologies. The Chinese government sees today's global internet as serving the US by imposing its liberal norms and standards on other countries, while Western countries see China's extension of technological governance to the Global South as the basis for spreading socialist ideology or autocratic norms. In legal terms, while trying to actively shape the formulation of a global internet legislation, the Chinese government insists on the principle of national sovereignty, as it sees cybersecurity for its domestic internet as being crucial to the future of Party rule in China. Thus, it fosters the erection of new national barriers in global internet space.

Both cyber powers appear to believe that the ideological and economic competition will determine who sets standards of use for new technology in the twenty-first century. Hence, within this geoeconomic and geopolitical power struggle, we are witnessing a *return of geography* in global cyberspace. This power struggle both transcends national barriers and erects new barriers on the basis of two economically and politically competing systems. Each country seeks to establish cross-national alliances with partners who are prepared to be part of either the Chinese or the US media ecological system and the respective corpus of legislation (including the underlying normative ethics). Moreover, this power struggle consolidates the barrier between nature and human beings created by modernity, as the two cyber powers are both focussed on winning the ideological conflict and controlling the standards of technological development.

If the two countries continue along these lines, the global internet will develop into two splinternets, one under the leadership of the US (along with partners in Europe, the United Kingdom, Canada, Australia, the Republic of Korea, Taiwan (if it still exists by then), Japan, and some South American countries), and another under the leadership of China (including Russia, most countries in Southeast Asia and Africa, and some South American countries). The Declaration for the Future of the Internet by the US and its partners, along with China's disapproving reaction, already suggests that this scenario is likely. Neither state capitalism nor neoliberalism (with their joint focus on economic growth at the expense of the environment), provides an answer to the problems of climate change, species extinction, and overexploitation of natural resources. It follows that neither China nor the US has found a way for their internet development to address these most urgent questions of the twenty-first century.

According to Hui (2020, 252), to overcome modernity (and the military and economic competition it is based on), we must cultivate a technological consciousness and re-appropriate modern technologies. We must become more aware not only of the power, limitations, and risks of available technological instruments, but also of the technological conditions of human beings (cf. ibid., 45). In my opinion, to create a genuine community and shared future in both physical and cyber space, further development of digital technologies must overcome the ideological contest and follow a vision that will help to prevent the extinction of humankind *and* nature. Hui reconstructs the variety of cosmotechnics that different (ancient and pre-modern) cultures had produced (Daoism, Buddhism, Stoicism) before they were made obsolete by modernity and its technological developments (cf. ibid., 253; 255). Hui argues that technology is an ontological category that must be related to a larger configuration – a cosmology that is appropriate for the culture from which it emerged (cf. ibid., 19).

In contrast to European naturalism, other cultures' cosmologies (e.g., Amerindian perspectivism, Chinese moral metaphysics) do not build on a dualism between nature and culture, mind and body, being and non-being, but rather display *relational thinking* – a continuity of nature and culture created through relation-

ships (e.g., in Chinese moral metaphysics: a relation between heaven and human beings) (cf. ibid., 51; 55; 56). In his attempt to construct a Chinese philosophy of technology (cf. ibid., 57), Hui shows how the Qi-Dao relation could help to systematically juxtapose the relationship between technology and the unity of a cosmic and moral order (cf. ibid., 254). The Chinese concept of Dao as a cosmological and moral principle is based on a resonance (or union) between human beings and heaven (cf. ibid., 51–52). According to (ancient) Chinese cosmology, the interaction between human beings and the world is defined in relation to cultural practices (family hierarchy, social order, state order, public policy, and human/non-human relationships) *and* natural resources (cf. ibid., 52). In contrast to ancient Hellenistic philosophy, where technology was meant to imitate and perfect nature, ancient Chinese philosophy subordinated technology to the cosmological order (cf. ibid., 66). Against this backdrop, Hui considers whether China's traditional relational concept of the cosmos and human beings could serve as a moral cosmotechnics to help solve the problematic relation between humans, technology, and the environment.

To conclude, the development of information technologies can no longer be viewed in isolation; its effect on our environment must also be considered. If we reconceptualize world history with the help of cosmotechnics from different cultures' relational or holistic thinking (cf. ibid., 45; 57), we can rethink the production and implementation of technology, explore a new way for human beings to live with technical objects and systems, and renew our relationship with non-human creatures after centuries of modernization (cf. ibid., 255).

However, while Hui considers modernity and de-modernization from the perspective of a global axis of *time* (cf. ibid., 200), I argue that it is also a question of *space*: the two cyber powers seek to return geography to the global cyberspace, which may risk splintering the internet. Thus, we must begin to see human beings and nature as one community, whose intertwined destinies depend on morally and ethically sound technology governance.

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THE ENDS OF THE INTERNETS.

A DISCUSSION

FEBRUARY 11, 2022

BENJAMIN HEIDERSBERGER AND
JAN CLAAS VAN TREECK

JCvT: At the outset, we should mention that this is an extension of a discussion that we have been having and that is still ongoing. One step in this discussion was chronicled in German in *Navigation* Vol. 21 Issue 2. Back then, the German title of this step in our discussion was *Die Enden des Internets* – in English *The Ends of the Internet* – so we were already speculating about a plural, about *ends,* but the internet was still a singular. Now we have pluralized this even more *The Ends of the Internets*, thinking about future(s) of internets in an emphatic plural of *nets*. So, the question is: Is there still something like a mono-structural internet to speak of or has it – and this is what we are insinuating – dissolved into internets in the plural and what might these look like?

But one point of departure in our first discussion were your projects in the 90s, namely *Van Gogh TV* and *Piazza virtuale,* which were often used and mentioned as predecessors of what we see now in the internet(s) of today. The question is: What's your take on it now and can we actually make that into a role model of the internet with its emphasis on sociality, that is, connections through social media as we know it today?

BH: Well, Tilman Baumgärtel's hypotheses was that *Piazza virtuale* was a predecessor of social media. And I think this is a plausible idea. But on the other hand, I have to mention that what we did was all pre-internet, pre-browser. The internet was there, but we did not use it that much. We actually piggybacked *Van Gogh TV* on top of an analog television and analog telephone system. There was no underlying network and no underlying database. So, everything was live and interactive and forgotten the moment it was said: the system remembered nothing.

JCvT: So, in short, we might say that it was more of a role model or predecessor of social media without realizing the connection to internet technologies and the benefits of joining what you guys were doing and the capabilities of the very early internet…

BH: Yes, I would say so.

JCvT: But as we are seeing now, what the internet means today looks more and more like an interwoven hybrid of internet and social media. I have recently stumbled over an article about the internet in Myanmar. The conclusion was that to people in Myanmar, actually, Facebook is the internet. So, there is no internet aside from Facebook in Myanmar.

I find it interesting that these things merge in a way. Web 2.0 has come to life as the internet per se. So, I still think that it might indeed be relevant to look at past projects like yours. But one other reason why I think it is relevant to look at these past projects is because – and we can only provide sort of short version of that – we two have been having an ongoing discussion for weeks and weeks and weeks about ideologies, the underlying ideologies of the internet, the internets and also *Van Gogh TV* and *Piazza virtuale*.

One thing that we have been talking about at length was what we could call the *Hippie Ideology* behind both *Van Gogh TV* and *Piazza virtuale* and maybe what then became the internet. As we all know, that *Hippie Ideology* is quite misunderstood.

Especially in Europe, we tend to misunderstand *Hippie Ideology* as something leftist and progressive, when in fact it's maybe not liberal in the American sense. Instead, it might bes more libertarian in the American sense as we have already talked about.

BH: Especially when the hippies met the money.

JCvT: Especially when the hippies encountered money, investments and venture capital as a driving force. Exactly. This occurred even as early as 1995. Richard Barbrook wrote this *Californian Ideology* paper, where he made this extremely clear: this is something else. This is not a liberal dream, maybe it was always more of a libertarian dream. But then, on the other hand, why do we still harbor these liberal, that is, leftist, dreams about the internet? So, how did they come about? It might be a question for Jens Schröter. The question is: who imagined that in the first place or was that imagination just a giant misunderstanding?

In our last discussion in *Navigationen*, we had one picture of a sticker that I found on the streets of Berlin and it just says, "the internet wants to be free". It is a quote – and referenced as such on the sticker itself – by Atari Teenage Riot. For those who are not familiar with them, Atari Teenage Riot is a fairly radical, leftist, anarchist electro punk group. So, we can see the left, or at least the parts of the left in which Atari Teenage Riot is situated, is still harboring the idea that the internet needs to be free. On the other hand, right now, what we see happening is that a left-leaning government in Germany is trying to tackle the messenger service Telegram, trying to censor Telegram and they even – through the mediation of Facebook – got Attila Hildmann's channel taken down. So, the interesting point is a government, driven by a left-leaning ideology, is trying to curb and censor the internet. My question would be then, what's your take on that ideological prehistory? And to which degree was it already visible when you were working on *Van Gogh TV* and *Piazza virtuale*? After all, you also have intimate knowledge of the early Silicon Valley and maybe its ideological underpinnings as well.

BH: Personally, I would say, *Van Gogh TV* at the time was not theory-driven at all. It was in no way reflecting philosophers – say, the French philosophers – who were en vogue at that time. Of course, we were all artists with a leftist lean – at

least when it comes to certain core ideas. And then, when we try to explore and reflect a little bit on our own background, what we were actually doing there, of course Brecht's *Radio Theory* and Enzensberger came along, or we found them. In turn, this created a certain bias, a little bit on the radio side and Enzensberger on the video side, so it fit very well with what we were doing.

The main point is that neither of them ever actually held a soldering iron in their hands, and they probably did not know what inputs and outputs were, either. And it is likely that neither of them could program. They never put their theories into actual practice – both of those theories stayed just that: theories!

We, on the other hand, were hands-on. We were really acting like a startup, an early startup, with its associated procedures and culture which Tilman also nicely chronicled. Simply *hands-on*: What can we do? What's there? How can we reuse technology and so on?

JCvT: I think that is indeed an interesting point. You (as a group) discovered theory in the process and also fairly standard classic media theory that some of us – the ones gathered here at this conference – still might teach in classrooms, right? Like Brecht's *Radio Theory*, Hans Magnus Enzensberger's *Baukasten* and Walter Benjamin, "the work of art," and all of that. That is something that we do not encounter in Silicon Valley. The only thing that we might see in Silicon Valley is maybe Timothy Leary and the turn toward India and related ideas.

BH: In 1974, Steve Jobs went to India to find a guru – Neem Karoli Baba. Interestingly enough, Marc Zuckerberg also read his theories and references him. There was a strong movement turning inward. As you mentioned, Timothy Leary with his famous 1966 claim: "Turn on, tune in, drop out!" And of course: "The only way out is in." The introspection was the basis of what was – at that time – not even an industry, but a movement for self-liberation, for fighting the big mainframes, improving your life, having access to information and democracy. All of those ideas were there but more as a practice loosely related to general ideas and not really tied to more solid theories.

But eventually, as I said, the hippies discovered money as a factor, a force – or the other way around, and things started to develop. This is something which we discussed at length: the immensely productive force of money, the stabilizing and enabling structures of industries and the possibilities of capitalism to develop this new medium "internet." I mean, I am pretty sure the internet simply would not exist as it exists today if there hadn't been this huge investment of money and the possibility to make money with it as an incentive and driver for innovation and development.

JCvT: I want to table the money aspect just for a second. And I want to come back to the aspect of "The only way out is in." The idea of introspection is one that is so deeply at the root of something like Silicon Valley, and what I find interesting is that this is an individualist approach. This is an individualist approach where the *other* – whatever that might be – is of no or lesser importance. So,

maybe the entire technology that we are discussing here – also vis-à-vis the ideas of communalism, communing, and other ideas highlighted here by many participants of this conference – these are technologies that are built on individualism.

BH: This Silicon Valley individualism is indeed an Indian, a Hindu individualism – that is where they borrowed their ideology. This is really the idea: I want to be enlightened – regardless of and maybe even disregarding others. Everything else is just Maya, that is, the illusion of the existence of the outside world.

JCvT: That is right. And now Mark Zuckerberg is reading Ram Dass, one of the students of Neem Karoli Baba. And people are re-reading the books of Ram Dass only because Zuckerberg is reading them. And we see that Zuckerberg is actually re-creating, re-playing that original Hindu idea of introspection, of course intellectually really watered down and popularized.

Additionally, we can even see that these neo-spiritualist movements are all popping up and they are all the rage as part of a structuralized capitalist society. Things like the micro-dosing-movement, meditation, self-care – and self-care not in the sense of maybe the Foucauldian self-care but more in the sense of self-care in order to be more productive. Wake up earlier! Be more focused! Achieve your life/business goals! Write a journal! Try out nootropics to think better, to code better! Be a better capitalist – or at least: function better within the capitalist framework!

Subsequently, this is something we find in the transhumanist movement with the ideas of upgrade humans, uploading brains, cryo-tanks, and such. On the one hand, this is a watered-down version of the original hippie spiritualist Hindu idea. On the other hand, again, it is a mega industry for and within a capitalist society.

BH: Yes, micro-dosing is now a venture capital-based industry. I mean, people take drugs to improve themselves and they're financed to do that.

JCvT: Indeed, and you can buy into entire ETFs based on those industries. So, it's not only single stocks, it is entire funds investing. And pivoting here, I want to come back to the idea of money. Because you once mentioned in a discussion and also in the discussion we already published that maybe one point where *Van Gogh TV* broke down, broke down in the literal sense, was that it was anti-commercial, that there was no business case. Also, you guys simply did not see the business case. Whereas interestingly now, we can imagine what could have happened with *Van Gogh TV* if it would have been a business case.

BH: I mean, this is really the interesting point. We being artists and technology-driven guys from Europe never asked ourselves how we could make money with it. Of course, we got funding, the total costs of *Piazza virtuale* were a total of two and a half million German Marks at a time. We raised that money somehow through hardware, through sponsorship. But this was not venture capital, we never got any venture capital because we were not looking for it. So the capital we got was basically dead, because nobody imagined it would accumulate further.

JCvT: Interestingly, you got industry money. You got a lot of industry money. But always only as art sponsorship – never as venture capital. The idea behind that industry money was never to invest in you guys as a business case. As you said, this perspective on the funding was mutual from both the capital givers as well as yourselves.

BH: I mean, one side was art sponsoring. Of course, we had an event lasting 100 days at the most important art fair or exhibition worldwide. This made us artists by default, by institution, even though Jan Hoet stressed that it was not an official part of *Documenta*. But the industry saw the kind of work we were doing. So every day we had truckloads of new technology coming in for free for us to test and use it for the project. The industry understood very well what we were doing there and maybe they envisioned ways to translate that into business models and income streams.

JCvT: But interestingly, they never approached you with business cases. There was seemingly never the point where the industry said: listen, this is also a great business case. Why don't you make that into a business model? Maybe the speculative reason behind this was that the industry-side individuals deciding on supplying you with these funds were seeing it as art funding never as business funding, a different kind of monetary stream, like charity.

BH: Interestingly enough, from the industry side, there was not the idea, nor the vision: how can we turn this into a business? I mean, even if we did not understand how to do it, they should and/or could have done it, or they should have understood it but they didn't. Maybe they just ignored their own mission, their duty as an industry to develop viable business models.

JCvT: Indeed, because they were intellectually also approaching your product solely as art! Do you think that there is a particular European mindset behind this myopia? And with the European mindset, I mean, a more sort of theory-laden, maybe more liberal, maybe more communitarian mindset but also one that clearly separates the realms of art and business?

BH: We will come to that point later. I mean, if we talk about the futures of the internet, there is a different mindset in Europe and there's a different mindset in the U.S. and in China, for example. If you simply look at the stock market you will find the first German company – SAP – ranked 25th in terms of market capitalization after a row of overwhelmingly American companies. Looking at the German tech index *Tecdax* you will see it not only being significantly smaller by a wide margin but also moving a lot less dynamically than say the *NASDAQ100*. This means something. So, there must be a more developed sense of how to create viable and successful business models.

JCvT: I would second that! And maybe in Europe, there is sometimes also a societal anti-capitalist streak. When we talk about theory, and again, coming back to the classic media theories that also seem to at least infuse your projects a little –

namely, Brecht and Benjamin – they of course have a clear anti-capitalist political agenda behind them. Maybe they did not see and did not want to see the business cases on top of being slightly ignorant of the actual technological infrastructures and processes – as you mentioned.

BH: I mean, this is probably something that you can explain because it was your idea. Maybe you can elaborate on Walter Benjamin and NFTs.

JCvT: Yes, we had this discussion and I later had an update of this discussion with my students. What would happen if we turn these anti-capitalist theories into inspirations for business cases? This way Brecht's *Radio Theory* can be easily turned into an inspiration for creator-economy-based social media businesses like Facebook and Instagram. Hans Magnus Enzensberger can easily be converted into something like the canvas for TikTok.

Aram Bartholl, a media artist, recently posted an image on Twitter of a set of coffee mugs that he produced for the *Haus der Kulturen der Welt*. The mugs had just a tweet printed on them and the tweet just read "Blockchain, Walter Benjamin's worst nightmare!" Maybe the blockchain is Walter Benjamin's worst nightmare but exactly because of that you can sketch out an adversarial business model based on/against his theory. Turn him into the inspiration behind this business model when you re-think his ideas to liberate art from capitalism into technologies to re-capitalize the former – and that would be NFTs.

BH: Time-wise, we should come to *the ends of the internets*.

JCvT: Indeed, you are absolutely right. Because another part of our ongoing discussion is to what degree can we still talk about the internet as something singular? One thing that we are seeing now is that the internet is fracturing into different internets that are interestingly based again on geographic and political territories – like the common practice of geo-blocking on Netflix, YouTube, or Twitter. There have been two interesting terms coined to describe that. One is the *splinternet*, the image of a splintering internet, or the *cyberbalkans*, referring to Yugoslavia breaking apart.

But the question, or at least the question that irked us, is (maybe also an interesting take on (de-)colonialism): If the internet as a predominantly Western-centric technology and possibly imperialist endeavor that has been colonizing all of us, then maybe in a twisted and possibly cynical thought, what we are seeing now in Iran, in China, in Russia, trying to establish their own splinternets is a (de-)colonial act. An act that is trying to counter that a Western narrative that we all like, a Western narrative that still has these little bits of freedom infused into it. I mean, there's the Chinese philosopher Zhao Tingyang, with his idea of the shared skies, the shared heaven; badly paraphrased as: "No, this is all, this doesn't work, Western democracy, it's all nice and cool for Europe. But in China that won't work." Indeed, Asia works differently. Confucianism, and other ideologies and religions challenge our Western ideas, our rather individualist take on the internet and on internet freedoms. These are much more communal(ist) takes on

the internet. Communal in the sense of: we do not want to threaten our communities by an individualist thought (rejecting maybe even the idea of individual human rights)! That is why they would say they need to control the internet in a fairly drastic way.

(Update: This discussion took place at a conference on February 11, 2022 – just days before the Russian invasion of Ukraine. Since then we have seen dramatically playing out what we were both discussing here in February: The splintering of lines of connections, of internet into territories as Russia is both being decoupled from Western internet-based services like SWIFT while on the other hand both sides – the West and Russia – employ narratives of ideological mutual exclusivity that are then congealed in diverging technical standards, sanctions, and solutions creating different rivaling and increasingly incompatible internets.

Likewise, the recent protests in Iran underscore our ideas here again: While the opposition in Iran tries to stay connected to global news and social media services – to stay informed but also to broadcast their message – the Iranian regime is desperately trying to cut off VPN access into non-desired Western internet services mobilizing an anti-colonial rhetoric as mentioned.)

BH: In my eyes, the Great Firewall is an act of decolonization. And that is pretty weird. The infamous Chinese social credit system, for example, is completely based on the internet itself, the protocols that were probably mainly invented in the U.S. and worldwide are suddenly now used to create a different society that is definitely de-colonial because it creates a society of its own – apart from the rights, rules, and traditions of the former Western colonizers.

JCvT: … from their European masters in that sense. But on the other hand, you see companies like Palantir, being extremely Western-centric, and always also emphasizing that they are Western-centric, that they only want to serve the American government and allies of the American government. Although they are engaging in what we call surveillance capitalism, as well, they claim that they are actually a data protection-compliant company.

The question would be, to which degree are they drawing parallels to what is happening in non-Western internets? To which degree is the technology based on the Western mindset – still centered around an idea of individual freedom – through scraping meta-data and aggregating anonymized data back into individualizable data also turning into something that might look fairly Chinese when extrapolated into a near future?

BH: On a global scale we are seeing three antagonistic systems emerging: One is the U.S., one is Europe, and one is China. But the different territories have different value systems they try to protect. Thus, the systemic rivalry is splitting up the internet into splinternets.

JCvT: As far as I understand your description of these three spheres, the American internet is the internet of a radically free market economy, of free speech, the European internet is something that would be a little bit more regulated…

BH: … exactly, with a stricter enforcement of consumer rights, data sovereignty, and so on.

JCvT: Data sovereignty, exactly. Whereas the Chinese model would be an extremely restrictive model under the rules of the CCP?

BH: Because their highest value is the harmonious society – the legacy of Confucianism. So, the individual is not as important as in Western societies. The individual is always part of the society, not as a person in the Western sense, but solely as a contributor to society.

JCvT: On the other hand, I believe that it is not that easy to split the internet up. Because as we see, parts of the American model – or what we believe to be the American model – with a free market economy sometimes also looks a little bit like China – with emerging attempts to control and regulate it. Even the European model is starting to look a little bit like China. We have the interesting example of the messenger app Telegram right now. Telegram was founded by Pavel Durov – and I think the person is important here – Pavel Durov who fashioned himself as a figure of resistance. He left Russia, he kept Telegram running partially as a tool for Russian and Ukrainian dissidents. And he opposed Russian constraints to do that. He even gave up his Russian citizenship, acquiring the citizenship of St. Kitts and Nevis, which is one of these strange flags of convenience – a citizenship that you can simply buy.

BH: But eventually, as you told me, he became a French citizen.

JCvT: That would be the interesting point. So, he has this idea of Telegram, of an app that is still free, free for all. But then if you come to look at the finer details of Telegram you will see that it in fact actually censors, for example ISIS/ISIL content. Now in Germany, you see this discussion about right-wingers and anti-vaxxers using Telegram. Interestingly, this idea of "we are so free and we won't be censored" is now breaking apart.

Just today through the mediation of Google, Nancy Faeser, who is the German Minister of the Interior, has pressured Telegram to delete several channels – like the one by notorious conspiracy theorist and right-wing extremist Attila Hildmann.

I think this example of Telegram is really interesting because on the one hand, we as the West, we like it. We like it when Hong Kong's democracy activists use Telegram against the Chinese regime. We like it when Belarusian activists use it against Lukashenko or its use during the Arab Spring. On the other hand, we do not like it if the right-wing Identitarian Movement or anti-vaxxers use it. Interestingly the outcome is the same – censorship just based on different value systems.

While we are trying to censor Telegram because of the right-wingers and the anti-vaxxers, China and Russia are trying to censor Telegram because of democracy activists. So, again, the old adage of "One man's terrorist is the other man's freedom fighter" is still at play here.

But we also need to mention – despite all of these territorializations of the internets that we have mapped out – there might be an anti-territory: Like Elon Musk's Starlink that can transgress national borders and nodes.

BH: Good point! I am an old radio guy. So, in the old days, I was receiving the North Korean press agency and putting their content on the internet in an attempt to help increase understanding of an interesting country. Especially shortwave can be received with a really cheap radio all over the world. And in these splinternets, there might be a new chance for this kind of simple media that uses radio waves for transmission. If you look at it in detail, Elon Musk is building this huge internet based on satellites – no longer controllable by any government, by any firewall, and I'm wondering if that could be the basis for a really free medium.

JCvT: What we see might be a classic case of an arms race of a *free decentralized internet* and attempts to reign this in, to control it, splinter it up into controllable chunks according to territories and jurisdictions.

The resistance against this might be possible by navigating the technological cracks and crevices of the system, like using shortwave radio, using satellite internet, or using VPNs. This resistance, however, is again met with ever-increasing legal force, the closure of VPN nodes, or simply using software tools to collect meta-data.

To tie it back to the general discussion of our conference, we might ask how these frictions of (de-)territorializations of the internets are corresponding to and intersecting with ideas of resistance, communing, and de-colonization.

FUTURES OF REALITY.
VIRTUAL, AUGMENTED, SYNTHETIC

GALIT WELLNER

1. NOZICK'S EXPERIENCE MACHINE

In 1974, Robert Nozick published his book *Anarchy, State and Utopia,* in which he described an interesting thought experiment:

> Suppose there were an experience machine that would give you any experience you desired. Superduper neuropsychologists could stimulate your brain so that you would think and feel you were writing a great novel, or making a friend, or reading an interesting book. All the time you would be floating in a tank, with electrodes attached to your brain. Should you plug into this machine for life, preprogramming your life's experiences? (Nozick 1974, 42)

For Nozick the question of wishing to enter into the experience machine is a rhetorical one and what is interesting is why the negative answer is so obvious for him. He provides several explanations, alternative and yet accumulative. First, living is not just a bare experience but also involves meaning, that is, we need to feel that we are *doing* something in the world. Second, because the experience machine provides pre-determined experiences, it does not enable us to understand who we *are*: Are we brave? Generous? Loving? This understanding is crucial, and its absence means that "plugging into the machine is a kind of suicide" (ibid., 43), according to Nozick. Third, the machine is limited to human-made reality and disconnects the user from the real world. It is like an "eternal nirvana" (ibid.), or like being under the influence of psychoactive drugs (ibid., 44), experiences that are both considered negative by Nozick.

Nozick ties all these negative strands together by concluding that "what is most disturbing about [experience machines] is their living of our lives for us" (ibid.). He stresses that to live is an active verb that requires causal relations with reality as well as free will. While one may agree on the active element of life, the causal relations and free will are less obvious to a contemporary reader who is familiar with postmodernist thought. But Nozick is a modernist, and so his negative sentiment toward the experience machine should not come as a surprise. We can position his thought experiment as a descendant of Plato's *Allegory of the Cave* that prefers the *real-world* experience over the mediated one and regards the mediated experience as much poorer. The experience machine can in turn be seen as a predecessor of Virtual Reality (VR) technologies that create synthetic

experiences, and today, Nozick's arguments against using the experience machine are being brought against VR technologies (see Cogburn and Silcox 2013).

Nevertheless, contemporary VR technologies provide more than just an *alternative* to reality, as originally suggested by Nozick's thought experiment. Some versions of them also offer *links* to reality. One recent development came in October 2021, when Facebook renamed itself Meta and laid out its vision for the metaverse, defined as "[a] digital world, in which users will feel they are with one another and have a 'sense of presence' despite being far apart" (Paul 2021). Labeling the metaverse as a digital world provides a strong connection to the hypothetical experience machine as it poses a human-made alternative to reality. Yet, it aims to connect people, thereby preserving an important aspect of reality, and it adds a digital aspect. The name *metaverse* follows the logic of the term *metadata* that adds data to an information item. Likewise, the metaverse aims to add data to the reality of inter-personal communication. The company stated:

> The metaverse will feel like a hybrid of today's online social experiences, sometimes expanded into three dimensions or projected into the physical world. It will let you share immersive experiences with other people even when you can't be together – and do things together you couldn't do in the physical world. (Meta 2021)

Like the experience machine, the metaverse aims to provide a synthetic experience that cannot be lived in the physical world. Unlike Nozick's thought experiment, the metaverse is aimed at connecting people and thereby *do*ing something in the world.

If we conduct Nozick's thought experiment today, in the age of the metaverse, the answers to his rhetorical question would probably be less decisive. Why did our answer change? What was the process through which we came to develop a new answer? In this article I suggest three genealogical steps beginning with postmodernism, going through posthumanism, and ending up in postphenomenology. The first step discusses Jean Baudrillard's simulacra; the second step focuses on N. Catherine Hayles' posthumanist approach to virtuality and materiality; and the third step is based on Don Ihde's postphenomenology and identifies new digital hermeneutic relations.

2. POSTMODERN SIMULACRA

In *Simulation and Simulacra* ([1983] 1994), Baudrillard provides a model to analyze media technologies that turns out to be useful when thinking of the relations between VR and reality, although VR technologies were not widely available in his day. His model consists of three *orders*. Each signifies a step in the evolutionary path of our approach to reality, yet they all co-exist today.

The first order consists of "simulacra that are natural, naturalist, founded on the image, on imitation and counterfeit, that are harmonious, optimistic, and that

aim for the restitution or the ideal institution of nature made in God's image" (Baudrillard 1994, 121). The *natural simulacrum* can be understood as a truthful representation that imitates reality. Under such an order, it is important to identify the source or the origin of the representation, and hence the importance of originality for works of art. It makes a difference whether you hang on your wall an original Rembrandt or a poster depicting the artist's oeuvre. This order has been with us at least since early modernity and is still prevalent today, for example in journalistic news that promise to report on events as accurately as possible, or the promise made by video conferencing tools to display the interlocutors as they are.

After the order of representation comes the *productive simulacra*, characterized as "[…] productivist, founded on energy, force, its materialization by the machine and in the whole system of production – a Promethean aim of a continuous globalization and expansion, of an indefinite liberation of energy […]" (ibid.). This order refers to the representation of reality that is mechanically duplicated. It can be positioned as a late modern approach, rooted in philosophical works such as Walter Benjamin's classical essay *The Work of Art in the Age of Mechanical Reproduction* ([1935] 2010) where Benjamin analyzes machine-based representations, i.e., photography and cinema (he does not refer to recorded sound although the gramophone and other related technologies were already prevalent in his time). For these *simulations*, the source is not important (or at least its importance is dramatically degraded). Whereas Baudriallard's explanation tends to be cryptic, Benjamin is clearer and practically exemplifies the difference between the first and second simulacra by comparing theater to cinema. He writes:

> The artistic performance of a stage actor is definitely presented to the public by the actor in person; that of the screen actor, however, is presented by a camera […] the camera need not respect the performance as an integral whole […] [it] continually changes its position […] the sequence of positional views which the editor composes from the material supplied him constitutes the completed film. (Benjamin 2010, 25)

Even before Baudrillard, Benjamin had identified that the film is like a mutation of the representation and it no longer wishes to provide an exact copy, but rather allows ruptures and breaks. Likewise, the metaverse is not designed to provide an exact copy of reality, but rather a mutation in which the participants in a conversation are not necessarily presented as they appear in the physical world. Their avatars can be in (almost) any form and they can be viewed from (almost) any position that the user chooses.

Whereas Benjamin is focused on one moment in media history, Baudrillard continues to the next stage, that is, an intensification of the second simulacra, though this is accompanied by a further twist. The third order is the most complex and most *computerized*, defined as "simulacra of simulation, founded on in-

formation, the model, the cybernetic game – total operationality, hyperreality, aim of total control" (Baudrillard 1994, 121). This *simulacra of simulation* originates in the information age and can be regarded as somewhat unique to postmodernism. In this stage, the link between the reality and its representation is further loosened. Baudrillard wonders: "[I]s there an imaginary that might correspond to this order?" (ibid.) According to Baudrillard, what we experience is a hyperreality, as in the case of Disneyland, for example. He writes: "There is no real, there is no imaginary except at a certain distance" (ibid.). Thus, Disneyland is an attempt to produce an imaginary place that mimics another place which does not exist in the real world while giving the visitors a (false) sense of a real place. No wonder, then, that "the real cannot surpass the model – it is nothing but its alibi" (ibid., 122). A more up-to-date example would be the reality show known worldwide as *Big Brother*, where a group of people leave their everyday environments and enter a television studio designed like a home but without windows. They spend several weeks there and are filmed constantly. In some versions, they are referred to as members of a family. It is a simulacrum of home and family that is acknowledged as simulacra by everyone – participants, organizers, and audiences. Unlike Nozick's experience machine that attempts to provide a way out of reality through something that *feels like it is real*, the simulacrum has some faint relations to reality and does not purport to be *real*. It is a dramatically different relation to reality.

Such a simulacrum might be the goal of the metaverse as envisioned by Facebook Meta. If their goal is to provide a false sense of a real place, then the metaverse project can be held as an attempt to repeat the postmodern turn of the 1980s as described by Baudrillard. It seems that the goal is wider, and encompasses also *unreal* places. Although Meta's version of VR distorts and deconstructs Nozick's basically negative approach, it does not deviate enough from the experience machine. It still aims to replace reality with some synthetic version. A more updated attitude can be framed within a posthumanist schema, leading to a new understanding of VR.

3. POSTHUMANIST VIRTUALITY

Almost two decades after Baudrillard, Hayles outlined what can be considered the next stage, or at least an elaboration of the simulacrum, that she terms *virtuality*. She defines virtuality as "the cultural perception that material objects are interpenetrated by information patterns" (2000, 69). Unlike the conventional wisdom that contrasts between physicality and virtuality, Hayles combines materiality and information in a way that does not prefer materiality as Nozick does in his critique against the experience machine, nor does her approach prefer information over materiality as transhumanists and singularity supporters contend (ibid., 72–73).

Hayles emphasizes the importance of the body in VR experiences. She notes: "[I]t can be a shock to remember that for information to exist, it must always be instantiated in a medium" (ibid., 75). Hayles reminds us that the body cannot be forgotten in the analysis of VR and it plays an important role in the experience classified as *virtual*. Her approach practically challenges Nozick's thought experiment for ignoring the body. The problem with the thought experiment is the underlying assumption that the imaginary machine would take care of all the biophysiological needs, as these are redundant to the virtual experience. Such an assumption is central to the transhumanist vision and is heavily criticized by Hayles as unrealistic and unattainable.

Once the body is taken into account in the VR experience, it turns out that for VR to exist there must be dedicated equipment to provide it, equipment that Nozick vaguely termed the *experience machine*. The machine consists of computers, headsets and sometimes also sensors. What is most accessible to the users is the headset that produces visual and auditory sensations that are frequently framed as exact copies of reality. Yet reality involves additional senses that cannot be provided by this hardware: The sense of a crowded market on a hot, humid day, the smell of fresh bread and the smoothness of a silk shirt. It is much like pictures of dishes posted to Instagram that cannot convey the taste of the food.

Ignoring the body, or thinking it is a problem that needs to be overcome like the transhumanists do, leaves the analysis in its modernist stage of subject-object and presence-absence *dichotomies*. In the posthumanist stage, a more fruitful analysis would look to the *dialectics* of pattern-randomness, information-noise and matter-information (ibid., 76). This would mean that one cannot think of information without discussing materiality.

Hayles refers to virtuality not only as a complementary aspect of physicality but also and more fundamentally as an attribute of a period, typical for the beginning of the third millennium. It is an age that replaces that of postmodernism. Whereas in postmodernism the defining dialectic is of presence/absence, in virtuality it is pattern/randomness. Hayles explains:

> When information is privileged over materiality, the pattern/randomness dialectic associated with information is perceived as dominant over the presence/absence dialectic associated with materiality. The condition of virtuality implies, then, a widespread perception that presence/absence is being displaced and preempted by pattern/randomness. (ibid., 78)

From this perspective, we can diagnose that Nozick is bound to the presence/absence dichotomy, and hence cannot help himself from criticizing the state of absence. Hayles' model explains why his experience machine may look obsolete and grounds it in the two intellectual transformations that we discussed – from dichotomies to dialectics, and from presence/absence to pattern/randomness.

Next, she identifies differences between the regimes of virtuality and postmodernism in the ways they become "integrated into capitalism" (ibid., 79): Whereas postmodernism is limited by *possession*, virtuality seeks to break way by looking for *access*. For Nozick it is natural to speak in terms of having something, but in the state of virtuality we are more interested in the question of obtaining access to certain contents (see Deleuze 1992). Another difference lies in the "psychological crisis" (ibid.) moving from postmodernist *castration* to virtuality's *mutation*. This difference can explain why Nozick feels that he is losing something important when entering the experience machine, and by contrast why users of VR headsets frequently feel curious about the virtual space they enter, and why they are likely to expect some personalization, i.e., mutations.

In the age of the metaverse and online meetings via video conferencing applications such as Zoom, the question of presence/absence loses its importance and instead the pattern/noise dialectic gain momentum (e.g., in identifying spam, cyber-attacks etc.). What is also vanishing is the question of ownership being replaced by the question of access to data repositories, advanced algorithms, online events, or virtual gadgets. Even smart devices that are bought and owned (like smart phones and smart thermometers) are dependent on access to data, conditioned by the users' willingness to give up their privacy (see Zuboff 2019). Lastly, the psychological crisis of virtuality in the form of mutation is more dominant than that of castration in light of the growing threat of being the subject of deep fake images and videos.

4. DIGITAL HERMENEUTIC RELATIONS

The third and final genealogical step to be discussed here refers to contemporary augmented reality (AR) and mixed reality technologies. Whereas Nozick's experience machine and VR technologies wish to fully replace reality, AR has a humbler mission as it attempts to add layers of information to the real world. AR remains *in the world* and enhances it. Lev Manovich defines AR as "the layering of dynamic and context-specific information over the visual field of a user" (2006, 222). By adding textual, auditory and visual layers of information, a new space emerges that Manovich calls the *augmented space*. It is a "physical space which is 'data-dense', as every point now potentially contains various information which is being delivered to it from elsewhere" (ibid., 223). The result is correlations between the virtual and the real, and a mix of real objects and "augmented objects" (Liberati and Nagataki 2015). This is very different from Nozick's experience machine as one does not need to leave the world in order to undergo the desired experience.

To understand the effect of AR technologies on the perception of reality, I turn to postphenomenology, which is a branch of philosophy of technology that studies how technologies mediate the world for us (see Ihde 1990; Verbeek 2005). In my work, I analyzed AR with the postphenomenological analytical tool

of the I-technology-world formula (see Wellner 2013; 2020b). The formula represents the various ways in which technology mediates the world for humans (see Ihde 1979; 1990). Technology can function like a part of our body, thereby altering our body schema. These are embodiment relations and they are represented as: (I-technology)→world. Technology can also be part of the world, and using it means we read and interpret the world through the technology. The interpretation element led Ihde to name these relations hermeneutic relations, and the formula is: I→(technology-world). A third type of relations conceptualizes the reference to technology as a quasi-other with which we maintain a dialogue, be it a simple conversation as in the case of an ATM or more *natural* dialogue as in the case of bots like Siri and Alexa. These are alterity relations and the formula is: I→technology(-world). Lastly, the technology can recede to the background and maintain background relations with us in which its operation and even presence are unnoticed, as in the case of electricity and internet connection. This formula is: I→(technology-)world.

VR and AR technologies interact with the users' body and encourage the users to refer to the technological artifacts as part of their body (Wellner 2020a). At the same time, these technologies are also experienced as part of the world they construct, thereby matching the hermeneutic relations framing. When the hardware elements do not function according to the users' expectations, those elements might become participants in alterity relations (similar to dolls and idols), but when everything goes smooth, they are likely to be classified as maintaining background relations in which they withdraw to the background and become unnoticed.

The differences between VR and AR can be conceptualized in terms of hermeneutic relations in which the technology and the world are experienced as a unified entity, and the world is read and interpreted through the technology. Whereas in VR the media attempts to replace the world, in AR "the world remains as it is, but it is augmented by the information […]. The information is not just information about the world, it is part of the world" (Wellner 2020b, 175). AR can be regarded as a development of Hayles' dialectics of information and materiality. The postphenomenological perspective allows us to perceive the difference between AR and VR and locate it in terms of how such a reality relates to the world: VR aims to create an imaginary world that should not be considered real, while AR seems to show the world *as is* and adds layers of information on it that will assist in interpreting it. That is why in AR it is important to connect the pieces of information to the right image of reality. Think of an application that provides the names of stars that we see at night. It is important to show the name near the correct *corner* of the sky.

The concept of hermeneutic relations leads us to realize that there is an interpretive element in the technology so that these layers are never neutral nor intuitive. We learn how to read the world through them, and when we acquire the necessary skills, we are even able to spot the interpretations and biases imposed

on us. Hermeneutic relations remind us that technologies add a layer of meaning, and that meaning changes according to place, time, politics etc.

But this is not enough to fully appreciate the experience provided by AR technologies. An additional understanding is offered by Peter-Paul Verbeek and his notion of composite intentionality (see Verbeek 2008). When a technology expresses *composite intentionality,* new relations emerge in which not only the human participants convey their intentionality. The more our technologies become *intelligent*, the more intentionality they have. In these relations, the formula is updated by replacing the hyphen between *technology* and *world* by an arrow. The arrow that so far designated human intentionality now also represents the technological intentionality: I→(technology→world).

This form of relations is relevant to AR in which intentionality is practiced not only by humans but also by the technologies they use. My example for this kind of relations is a navigation app where the display of the map functions as the basic layer of reality over which additional information layers are displayed, indicating other cars, traffic jams, police radar (for speed detection) etc. as well as marking the route to the destination (Wellner 2020b). "The directions and suggestions may change the original route so that the driver's intentionality is not as 'pure' as driving without the app and its recommendations" (ibid., 178). Moreover, "[t]he decisions that drivers are taking cannot be understood with the classical tools of 'subjectivity-objectivity', 'free will', or 'autonomy'" (ibid.). Free will was important for Nozick in determining why the experience machine is not desirable (to say the least). But for Nozick, free will ended once one entered the experience machine. In AR, the free will is to be activated and re-activated from moment to moment: Should I obey the recommendation to make a detour to avoid a traffic jam down the road that I cannot see? Should I slow down because there might be a speed trap ahead?

The analysis is further complicated by the addition of artificial intelligence (AI) to AR, offering enhanced personalization, and additional diversity in the content of the layers. The free will is further diminished as our intentionality would turn into "relegation" (Wellner 2020b). It is a form of intentionality that is dominated by technologies, that is – forcing the user to obey. Thus, the formula uses a reverse arrow that points *to* the user: I←(technology→world). In this new type of relation, some parts of the reality might be hidden by colorful layers of augmented objects thereby controlling our gaze as well as "the parameters for significance" (ibid., 184). It is a reality in which some activities are dictated by an algorithm (as already happens to workers in robotic warehouses and gig-economy platforms) where employees need to abide by the logic of the algorithm even for very basic human activities like going to eat or to the toilets. Nozick's thought experiment does not go that far. It stops at the entrance to the machine and does not allow for any free will inside.

As discussed above, it is difficult to assess the metaverse as VR because it is not purely virtual in the modernist sense, as it enables real interaction with real

people (albeit also interaction with non-real entities, i.e., bots). Nor is the metaverse pure AR because it does not purport to present reality. I would like to suggest here that the metaverse can be understood as a *reverse AR* that adds reality to the virtual as it involves interaction between real people within a virtual space. Even though it reverses the components of AR so that the reality becomes virtual and the layers of other participants can be real, the critique expressed above is still relevant. There is still a risk in the non-neutrality of the virtual elements, there is still a need to reactivate our free will moment after moment, and there is still a risk of relegation that the human intentionality will be taken over by Meta's background algorithms.

5. SUMMARY

This article starts with Nozick's modernist argumentation against VR and asks why and how this negative stance has changed. To begin with, the technology has changed, and what was considered science fiction became reality, though no experience machine has been built so far. In this article I accompany the technological change with some theoretical developments organized in three genealogical steps. Firstly, Baudrillard realized that *the cybernetic game* has become foundational, and that information technologies play an increasingly dominant role, resulting in *total operationality* and *hyperreality*. He shows how reality itself changes as the border between real and fiction blurs, calling this *simulacra of simulations*.

In the second genealogical step, Hayles contributes to the distortion of distinctions between reality and fiction with a new conceptualization of virtuality that combines with materiality. Her analysis reveals a major flaw in Nozick's argument – the reference to the body as redundant, as a burden or a limit on the path to the ultimate experience. This is a transhumanist approach to technology that does not take into account the human body. She adds that moving from the presence/absence dichotomy to a pattern/noise dialectic reveals the growing importance of access to data and the decreasing importance of ownership, as if predicting the rise of the sharing economy. No less important is the move of the collective anxiety from castration to mutation, as if predicting the rise of deep fake. Her posthumanist approach (not to be confused with transhumanism!) is based on the blurry distinction between subject and object (Latour 1993), revealing how Nozick was very modernist in his approach.

The third genealogical step analyzes the move from VR to AR, leading to an even more intensified blurring of the distinction between reality and fiction. AR technologies lead to a synthetic reality that does not require users to "be floating in a tank, with electrodes attached to your brain" (Nozick 1974, 42) as Nozick described. On the contrary, we are embedded in the world, but the reality around us changes. The rise of these new technologies has led to an expansion of the postphenomenological relations as originally framed by Ihde, toward relations in which the technological intentionality intensifies. The most recent development

is that of a relegation relation in which the human user is subjected to the power of the algorithm. At this point Nozick's critique regarding the lack of free will in the experience machine should be expanded from the entry stage to the usage phase, which is much longer. We need to find new ways to maintain our free will when we interact with VR, AR, the metaverse and any technology that involves AI. This is the challenge for humanities and social sciences for the twenty-first century.

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III. EXTRA

ART AND DESIGN VIS-À-VIS THE DIGITIZATION OF VITAL EXPERIENCE

HERNÁN BORISONIK

Design and technology are often associated, not without reason, with utility, whereas art is connected with an additional aim that goes beyond usufruct or efficiency. In fact, it is very common to see how artists appropriate technological tools to create works that do not have any immediate use. In that sense, the first artistic gesture would have occurred the day an inhabitant of the ancient Nile carved flint without the intention of making a blade or lighting a fire. Today we are faced with a virtual impossibility of (or opposition to) differentiating between art and design. In the face of this, it may be useful to underline the reasons why it is still worthwhile, on the one hand, to find the boundaries between them and, on the other, to investigate the channels that can reconcile the idea of art with that of utility, beyond the actual circumstances of creation and circulation.

Some 2,500 years ago, Aristotle said: "medicine, for instance, does not theorize about what will help to cure Socrates or Callias, but only about what will help to cure any or all of a given class of patients, […] individual cases are so infinitely various that no systematic knowledge of them is possible" (*Rhetoric*, 1356b11). The singular, which Aristotle designates as "infinite," is that which historically resisted generalization. Today, however, we are confronted with an infinite and unlimited juxtaposition of singulars that do not constitute a plural, that do not manage to link up under a general notion. Thus, words lose efficacy and meaning: Who is an artist today? What is it to be an artist?

In the classical Aristotelian conception, we find three forms of human knowledge (theoretical, practical, and technical), corresponding to three types of activity (respectively, these are contemplation, action, and production). What is central to this classification is that it raises a key question: what is the purpose of doing what is being done? To start from this question about purpose (the core meaning of Aristotelian political thought) is still very useful and clarifies potencies and modalities. Moreover, it is a fundamental question for thinking about the specific difference of *the human* by locating a form of being in the world linked to artificiality. For Aristotle (*Metaphysics*, 1032b1), a creation, something that was "made," is a means to further ends, the first of which is its use. This assumes that everything we produce is intended to be used for something (which may be directly utilitarian, but also includes less tangible purposes such as being contemplated or venerated). Dialoguing with this idea, we can imagine that there is something useful in works of art (beyond their decorative, speculative, political, or even aesthetic uses) that has to do with the specific way of being in a world that entails human beings.

Beyond Aristotelian elucubrations and their infinite mediations and interpretations, we might come to the realization that while other animals do not consider their conditions of existence, we humans have thought of the environment as something alien and closed, in which we must intervene in order to survive. It is likely that this faculty is given by the lack of *natural tools* (claws, venom) other than our rational potential, reflected in the ability to account for our circumstances and actions in a codified way. The idea that human life is an *indigent* existence that must shape itself is found in José Ortega y Gasset (1962), who argued that humans are animals without a natural habitat, uncomfortable, and they must artificially transform the environment in order to subsist. Seen in this way, technology, politics, and philosophical contemplation are gradations within the same mode of existence dealing with the permanent need to modify the environment. Emanuele Coccia (2018) pointed out that this is not an exclusive characteristic of humanity, but that plants have been doing it for much longer and with powerful results. In fact, without the natural metamorphosis of the world by plants there would be no humanity, so in a way they bear some part of the responsibility for the artificial transformation of the planet by humans. However, it would be dangerous to relativize specific political responsibilities.

On the other hand, what we bequeath to subsequent generations is not exclusively through organic media, but also through specifically created backups – from images and stories to silicon memories. The quest to preserve certain experiences as a struggle to persist over time gravitates between two mutually permeable poles: the genetic and the artificial. For humankind, reliance on externalized media has been fundamental. The amount of information we want to preserve exceeds in magnitude and speed the possibilities of genes, so we invent exogenous ways of storing and communicating individual learning. Thus, the history of humankind has been punctuated by the permanent creation of second (and third) natures within (or against) which we can subsist. Without a doubt, a fundamental one is language. Starting with the Renaissance, but especially since what is referred to as the Scientific Revolution, the world began to be interpreted as a text, as a cipher that could be fully decoded. Early modern philosophy pursued the scientific ideal of being able to clarify and explain everything that exists. Then, the possibilities of philosophical speculation with language began to leave the world behind. At the same time, in the seventeenth century discourse itself began a process of liberation from things, which reached its climax roughly in the 1970s.

Art, for its part, is a perfect cipher of artificiality, insofar as it reconstructs something that is already given, which is the link between our individual life and life as a general form of existence. That is why art always has an agential edge, it always implies a certain actuation on the world as it was before the work. Art is one of the modalities or intensities that make up human life (at least in the declinations known so far) that cannot be completely captured or translated by rational discourse. Today it is particularly difficult to talk *about* art. In artistic circles people talk about capitalism, environmentalism, the Anthropocene, but not about

art. In the midst of the great epochal transformation in which we find ourselves, it has become very difficult to try to find a complete definition of art (or of almost anything else), not only due to perspectivism but also because of the enormous changes in the ways of imagining, creating, and perceiving artistic (and non-artistic) phenomena. However, far from giving up the quest to make a cutout, I am interested in engaging in a dynamic exploration that allows us to approach fruitful practices. Although today it seems absurd to propose an ultimate or universal definition of art, there is an area of our existence that affirms itself in a type of experience linked to the production and interaction with images (not only visual) and appeals to a type of enjoyment that is not identifiable or reducible to others. We cannot escape art, even if we cannot define it exhaustively. Yuk Hui argues:

> "Art can address certain aspects of the universal, but one cannot invent a universal aesthetics, which can only exist as a philosophical postulate or a marketing slogan of the culture industry. The truth of art is that there is no formal truth per se, yet to commit to truth is to unveil those truths that are closed off or remain hidden in a desolate time." (Hui 2021, 287)

What is left of art, then? The sum of what all artists do? Abandoning categorical reflection would mean that artistic practices would surrender themselves to falling solely under the logic of capital and design (which, frequently, is already the case). We live under the mandate to continually produce and express things, under a form of dominance that has managed to capture and channel creative impulse. That is why we must think about the political matrix that constitutes a type of subjectivation that precedes any division between artists and public. Nowadays, the conditions under which works of art are created have an increasingly important bearing on how they are perceived. In the past, those who attained the social status of artists were considered special beings, inspired by the muses or divinities, channels of mediation through which the cosmos was expressed, interpreters of the sublime that exists in the world. That artist architype concealed an enormous series of processes and people involved in the construction of the final pieces, which were, in the end, the central objects of the cultural universe. Conversely, a rather widespread style of artist today is that of a worldly individual who is witty and cunning (sometimes cynical) and who, in the absence of aids or tools, abuses his or her own biography to an inordinate degree. Of course there are notable exceptions to this standard, but even then the works are often surrounded by explanatory mediations and references.

As a counterpart, the exercise of art criticism no longer focuses on the works, but on their contexts. Thus, explanations about provenance (territorial, generational), belonging (to this or that collective), or the conflicts that the pieces cross and provoke are an ever-present feature in texts and professional reviews. Current criticism points more to the tensions of those who produce than of what

is produced, which is reduced to the object of an archive or a commemorative landmark, but which speaks little on its own. As Rancière pointed out, "in the aesthetic age, the critical text no longer says what the painting should be or should have been. It says what it is or what the painter has done" (2007, 78). What a remarkable difference this is compared to the value system expressed almost a century ago by Ezra Pound: "you can spot the bad critic when he starts by discussing the poet and not the poem" (1991, 84).

One of the fundamental steps on the road to this cutback to the individual was taken by the Society of Independent Artists, founded (among others) by Marcel Duchamp, who submitted his famous *Fountain* for the first exhibition in 1917 under the pseudonym Richard Mutt. When the jury rejected his work, Duchamp resigned from the association and said that what was important about the work was not whether it had been produced by the artist's hands, but that *he has chosen it* (Camfield 1987, 38). In this act, in addition to founding contemporary art (according to some readings), Duchamp centered artistic creation on the almost omnipotent figure of the author. So what is a work of art and what is it to be an artist after the death of God? Such a question is of particular relevance in this age in which it is very difficult to draw a clear boundary between artists and designers, or between art and design, because the idea of "original" becomes ungraspable, and no longer only because of the possibilities offered by the technical reproducibility that Walter Benjamin enunciated in 1936. Today, the materiality of art has changed radically, paintings are digitized and pixels are sold, tokenized, at Sotheby's. When the aura ceased to be the characteristic of artworks, the spotlight shifted to the artists. For some time now, those who dedicate themselves to contemporary art have been involved in tasks of (self-) design, a labor that robs lots of time and effort in the service of potential buyers, patrons, and subsidiaries. In that sense, design is the reverse of art, it is the form that things take on when they seek to be seductive and effective. If art's impacts cannot be calculated, design seeks to control and stabilize them.

Charlotte Klonk (2009) observed that, during the twentieth century, museums gradually shifted the construction of their visitors from seeing them as *citizens* to educated *consumers*. And even when institutions did not entirely cease to fulfill social functions, they introduced very perceptible changes in the way they displayed and informed their exhibitions, focusing on the individual experience of each visitor. Meanwhile, Instagram – the current mecca of engaging design – is a virtual and personalized space, where the main and almost sole purpose is to hold the attention of its users for as long as possible in an eternal scroll in order to learn more about their desires. This reduces the potential of images to their power of commodification and maximizes the possibility of exploiting the free labor (creative, cognitive, and also mechanical) of those who use this platform.

Today, artists and non-artists alike are involved in a speculative game with the gaze of others. That implies, among other things, a dramatic decline in the capacity to question abusive practices and situations in a democratic way. According

to Marcuse (1964; 1966), technological advances within the matrix of the capitalist system, far from being improvements in favor of emancipation, can, on the contrary, reinforce the bonds of domination. The low-intensity democratization of the media has provided for a regime of total surveillance and algorithmic governance of images and bodies. One of its consequences is the ease with which it is now possible to exclude what is unpleasant from view, without trying to build common ground on differences, which opens the door to enormous manipulation by the few actors who manage to set agendas and suggest behaviors.

Today's unbridled consumerism and unmitigated self-design are undoubtedly related to the abandonment of art as a transformative power. As Boris Groys (2010) summarized, the only possible manifestation of the soul begins to be appearance. The exhaustion of the model of the world as a complete and apprehensible unity had effects on the possibilities of searching for truth. No longer conceiving of an ultimate foundation, a solidly verified statement can be as valid as a prejudice based on personal experience. In this context, truth is accepted as a psychological experience (or, at most, one shared by several subjects), which art can document or record, but not necessarily produce. Thus, truth and lies have taken on a sense that is effectively extra-moral, but the opposite of what Nietzsche (2015) mentioned in 1873 in one of the most inspiring and potent texts to emerge among from critics of the modern project. Today everything is true (because it exists) and nothing is true (because it exists in language). Rouvroy and Berns (2013) explained, with regard to "algorithmic governmentality," that the automated functions that replace statistics are no longer concerned with synthesizing an average among all the data, but with accounting for the simultaneous existence of all the exemplars. This makes the possibility of lies obsolete, since everything that arises (even the false) participates to some degree in the construction of reality.

In "The Truth of Art," Boris Groys (2016) reflects on the link between art and truth in the contemporary world. There, he shows how fundamental this question is for the existence and survival of art, because if art cannot be a medium of truth, it is reduced to a matter of taste, and then the producer is subjected to the spectator (who today is ultimately an algorithm for commercial purposes) and art loses its independence or potency. Art thereby becomes identical to design, Groys claims. In contrast, if art still has any relation to truth, it can somehow modify the world. And how it attempts to do so depends, in turn, on how art is understood: as ideology or as technology (i.e., as something that can move by *persuasion* or by *accommodation*). From the first perspective, art seeks to "capture the imagination and change people's consciousness." This presupposes that there is a message and that it is possible to circulate it, which has proven to be very ineffective in aesthetic terms. Moreover, works that are widely accepted by the public are dismissed as conventional, banal, or commercial by the art establishment. From the second perspective, the aim is to change the world through the production of things under an altered use of technology, or by modifying the

sense in which the public interacts with the environment. This view also has polemical overtones. Even Heidegger, who believed that art can reveal a state of the world, understood that the works are quickly reconverted into ordinary, closed objects. Still, Groys points out that this situation has changed in recent decades, as the Internet has become the place where art production and exhibition occur simultaneously. For artists and institutions, the Internet functions as a space of self-representation. But for algorithms, it is the person *underneath* the artist that is of interest. Then, any form of *being* on the Internet is analogous. Circulating art or food pictures are part of the same scene in which cultural productions are converted into *content* and equated as such. What is crucial, from the platforms' point of view, is to capture attention for as long as possible and to be able to interpret the interests, desires, and needs of each user to sell targeted advertising. Identity thus becomes a question of power: Who defines me? And who defines the classification criteria?

In the twenty-first century, access to certain technologies that allow anyone who wishes to do so to produce images with ease has been greatly democratized. As a result, there are many more people producing and sharing images than there are people interested in looking at them. However, the results seem to be increasingly monopolized in their use. As Silvia Schwarzböck pointed out:

> (public and private) institutions that currently make up the circuit of artistic consecration control the way in which culture develops [...], even when more and more artists bet on freeing themselves from their tutelage and use Internet to replace their mediations, because Internet ironically replicates them by initiating outside the public-private-official circuit the insertion of artists in that same circuit. Today, finally, the omnipresence of the market has become more ominous (more invisible) than that of the state. (Schwarzböck 2013)

At the same time, the virtualization of the commonplace (which has been extremized, but not created, by the limitation to physical contact or *social distance* due to Covid-19) has intensified the demand to generate *content*, through forming and sharing images via digital platforms. Thus, each individual becomes a permanent content producer but also an object that seeks to attract others. With this, *artist*, *designer*, and *laborer* are practically undifferentiated. They all translate into virtual persons obliged to show themselves and be consumed. Today, in the face of the almost automatic conversion of every cultural object into digital content, the arts are subsumed to design and particularly to useless design (whose ultimate purpose is to increase capital). But regardless of how an activity, a work or its maker is (self-) denominated, it is possible to distinguish between technical and artistic operations. Of course, this is a separation that can sometimes seem forced and has a myriad of nuances, but in the end, it is worth making the effort and exploring those boundaries.

Design has indisputably changed the conditions of our lives. And, in fact, that is always its purpose (Axel et al. 2018). Because it serves external causes, design has finality, but it is never final and can always be used to modify the existing to create new things. Indeed, as Jussi Parikka (2015) demonstrated, the ordered use of matter makes design a function that can unite incredibly distant temporalities and geographies. Why, then, would one speak of *useless design* if what defines design is precisely that it serves a purpose? Firstly, because, alongside the great advances in many fields, from medicine to alternative energies, there are entire branches of contemporary design and technology that are devoted exclusively to exercising some degree of manipulation for the benefit of a small elite and not for the betterment of life in general. During the twentieth century, design achieved unprecedented centrality and refinement and aided great advances in issues that are very sensitive to the lives we are living. The conflict is that, nevertheless, this progress was carried out from a matrix that responds to an intensive quantification and commodification will. In other words, there are techniques, such as telemarketing, that may "serve a purpose," but are still harmful and, contrary to any theory of technology, they do not modulate the environment in order to inhabit it collectively.

Moreover, as Bratton argues:

> from the Vitruvian Man to Facebook profiles, centuries of 'human-centered design' (HCD) have brought more usable tools, but in many important domains design is far too psychologizing, individuating, and anthropocentric without being nearly humane enough. When raised to a universal principle, HCD also brought landfills of consumer goods, social media sophistry, and an inability to articulate futures beyond narrow clichés. (2019, 43)

Every technology and every design emerges in a productive matrix that leaves its traces beyond the concrete wills involved in each use.

Design can certainly not be reduced to its use for merchandise styling. It has also brought about remarkable improvements ranging from replacing organs and restoring limbs to economic planning. Let us not forget that the Bauhaus and similar movements were part of one of the most real and impactful avant-garde programs of the twentieth century, with ideas of design that sought to improve the lives of majorities. Today, however, we find a widespread use of design to the detriment of its recipients, as well as a virtual dependence on self-design as a method of appearing in the eyes of others. Also, as a counterbalance, there is an army of artists permanently subjected to design-for-the-market, agreeing (either willingly or out of necessity) to contribute to the exploitation of the planet and its inhabitants. So, while the arts were characterized by somehow transcending techniques (by freeing themselves from immediate utility and by the possibility of making non-predefined use of the material with which they operated), today they tend to subsume themselves to the logic of the neoliberal matrix. Complemen-

tarily, there are views that seek to highlight the creative angle of design as a possibility for new imaginations and practices. There are design proposals from political perspectives that seek to go beyond the imperative of value centered on the capitalist commodity. Damian White (2015), for example, highlights the planetary risks (both social and environmental) facing us in the current design based on a hyper-consumer economy that operates under absolutely short-term imperatives of valorization. However, he also highlights some efforts that aim to reorient design practices towards collaborative, cooperative, and vital formats, using free software and democratic rules.

Be that as it may, and beyond the positive view of a type of design that enhances creativity, imagination, and openness to new forms of life, design is ontologically limited by its programming and by its purpose, which is to obtain a useful result for some previously determined end, while art is not. From the point of view of design, physical or symbolic materials are thought of as the potential of (and resistance to) that which is to be carried out. Whereas in art, even this resistance can be viewed as something favorable to the works.

Hal Foster (2002) made an important contribution to this question. It is worth taking a close look at his arguments. His starting point is a debate that is more than a century old. Foster gives a contemporary reading of the sayings of Adolf Loos, an advocate of the staunch separation between utility and decoration. In 1900, Loos allegorically mocked "a poor little rich man" who asked a representative of Art Nouveau to design his house by putting "art into each and every thing" (Loos 1900, in Sarnitz 2003, 18–9), convinced that he would succeed in infusing his personality into every detail, expressing himself as an individual through objects, that is, objectifying himself. Loos's major complaint was that this subject-object seemed to be complete and finished, that is to say, it pursued (like its designer) a kind of extinction of life, which paradoxically banished any allusion to death. This foreclosure of finitude was, for Loos, a veritable catastrophe. Foster also revisited the arguments of *Ornament and Crime*, a 1908 book in which Loos unleashed his irritation against ornamental design, denouncing it as a kind of civilizational involution and an anti-sublimation act (long before the criticisms that, in a similar vein, some Frankfurters would deploy against the technification of life). All that Loos and his anti-decorative puritanism stood for was long condemned when modernism revealed itself to be monstrous and deadly. However, Foster argues that, without necessarily adopting Loos' ideas to their full extent, it is useful to revisit them today: "maybe times have changed again; maybe we are in a moment when distinctions between practices might be reclaimed or remade without the ideological baggage of purity and propriety attached" (Foster 2002, 14).

As we can see, the confusion or blurring distinction between use value and artistic value is not a new topic. However, the debate around this issue acquires a new resonance in this era in which:

> the aesthetic and the utilitarian are not only conflated but all but subsumed in the commercial, and everything – not only architectural pro-

> jects and art exhibitions but everything from jeans to genes – seems to be regarded as so much design […]. [Therefore] when you thought the consumerist loop could get no tighter in its narcissistic logic, it did: design abets a near-perfect circuit of production and consumption, without much 'running-room' for anything else. (Foster 2002, 17–18)

As a result, design seems to have colonized creativity in all areas of life (from make-up to procreation, drugs, or food), all cultural strata (generations, socio-economic classes, geographies), and all scales (from the self to the governance and control of populations and biomes on a planetary level).

Hand in hand with the expansion of advertising, commodity fetishism became the prevailing logic, the universal *lingua franca*, through the mysterious combination of an apparent constant innovation and a simplification of communication (associated with a permanent exploitation of attention, which always ends up being deficient). In this process, the breakdown of the dualism between the "producing subject" and the "produced object" was fundamental. Today, the capacity for adaptation and customization of mass products both erases and affirms the individuality of those who consume. It also, however, affirms the individuality of those who produce, under the reduction of human activity to what is referred to as "prosumption" (Lang et al., 2020), a consumption that produces value for others. Recall that not only companies, but also academic and artistic institutions have begun to look to graphic design for their "brand identities," which ultimately equate them with marketable products. The image of prosumption is very useful to understand the structure of this era in which the consumption of immaterial goods is increasingly overwhelming. Indeed, while the industrial *haute bourgeoisie* had an interest in forming the taste of populations, contemporary powers prefer to encourage the realist-capitalist imagination by infinitely modifying, editing, and redesigning products that can respond to the instantaneous desires of those who simultaneously consume and produce value. For even if social creativity is limitless, the possibilities of individual imagination collide with bodies (starting with one's own) and their contours delineated by the social matrix in which they are immersed.

Returning to Foster, contemporary design's fantasy is to integrate by erasing, it is to deterritorialize image and space by detaching them from their references and structural principles. In this way, design advances more quickly and efficiently towards transdisciplinarity than any university or artistic collective, through the path of capital. It replaces sublimation lines with precarious narcissistic fixations devoid of interiority, resulting in a society that wearily treads a narrow path between anxiety and frustration, mania and depression.

Having reached this point, one might wonder whether there is not a hint of utility in all artistic expressions, from the abstract to the figurative, from the most lucrative to the most unseen, from the most impenetrable to the most popular: all of them. For that, it is necessary to dive into the less historical characteristics of humans and ask ourselves what differentiates us from other forms of life. Perhaps

the question lies not so much in the specific qualitative difference (which is what has tended to be done: "rational animal," "political being," "moral creature," "creative being," etc.) as in the magnitude: we are not the only animal that exercises reason, we are not the only being with aesthetic inclinations, we are not the only entity that modifies its environment as a form of existence, but the one that does these things together and quantitatively more. As I suggested earlier, these characteristics result in a sense of discomfort with reality as it is immediately presented to us. If there were a degree zero of inhabiting the world (which would be a situation of total comfort with the environment), it would probably be linked to the simplest and most automatic conformations of existence. As life forms become more complex, they also become more uncomfortable, reaching, in the human case, a life that is inseparable from the need to artificially modify its circumstances.

If we are an animal that has to transform its immediate conditions in order to inhabit the world, art is part of that need and therefore it is also useful, then it is also something that is done for a purpose, it is part of the orthopedics that we naturally apply to our environment. The Anthropocene (Crutzen and Stoermer 2000) would be then nothing but a misstep in that history ("misstep" because it transformed the environment to a point where our very subsistence is at risk), but not an entirely disruptive event. In other words, it would be a lousy way of doing what is invariable and inevitable for our species. Yet, the above should not cloud the fact that commodified art, along with biopolitics and modern scientific paradigm which emerged several centuries ago, is not a necessary part of what has characterized humanity for as long as it has existed, but the specific layer that resulted from mathematicizing and commodifying everything that exists. The drive to accumulate and increase money, which is behind all commodification, makes profit the end of all actions.

Nevertheless, there are those who, like Adorno, have seen in modern art emancipatory potentialities; who have seen in the very existence of works of art the possibility of rediscovering the critical gesture, the question that seeks to transform as a necessity in order to inhabit. The artwork, then, is a chance of remitting to that lost world, covered by capital and data, in which the conversion of everything that exists into a resource for the profit that capitalism produces. Artworks' counterpart is the withdrawal or inhibition of the world of art as a transformer of the vital experience. If the political is, as Chantal Mouffe (2006) says, the dimension of antagonism and hostility that exists in human relations, and politics is the arena in which such tensions are institutionalized, ordered, and organized, is it possible to have art that allows itself to be traversed by the political without submitting to politics?

As long as we continue to discuss ownership and authorship in modern, capitalist terms, there will not really be a space for thinking about art outside that framework. Faced with the commercial convenience of some things being sold as *works of art*, with what operations, with what mediations can one intervene? The

question about art is relevant (it helps, among other things, to think about what can be asked of it). Differentiating it from design is also relevant. The difficulty in distinguishing art and design today is clear and has to do with the fact that both activities are imbricated within a matrix that means that sooner or later everything ends up as merchandise. Faced with the current indistinction between art and design that *delegitimizes* art and a culture that needs to make everything equivalent in order to be interchangeable, what art can enable ways of relating to the equivalizing standard that help us to live better? How can we escape the logic of critique of critique? How can we rehabilitate a dissent that is not reabsorbed by the algorithmic effectiveness of financial capitalism?

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ABSTRACTS

CORNELIA BOGEN: OVERCOMING MODERNITY? HOW CHINA'S SPLINTERNET REINFORCES THE IMPACT OF GEOGRAPHY IN GLOBAL INTERNET GOVERNANCE

According to the Chinese philosopher and information scientist Yuk Hui, China's rapid modernization within the last decades put China on equal footing with the West not only regarding its technological level, but also concerning people's technological unconsciousness (i.e., ignorance of the fact that our existence is conditioned by technology), belief in progress, and destructive relation to nature. At the same time, with the emergence of the Anthropocene, humankind has gradually come to realize that our modern ontological interpretations of the cosmos have distanced us from our environment. The ongoing platformization of societies and datafication follows the rule of natural laws in every area of life and poses the risk that humans are losing control over new technologies.

Against that backdrop, this paper seeks to explore whether China's past and present policy approach to domestic and global internet governance has enabled it to "adopt the global time axis as [its] own" to overcome modernity, without relapsing into a modern dualism between human beings and nature (cf. Hui 2020). First, I will show that China's national digital policy and cyber sovereignty approach to internet development has led to a "splinternet" that a) shifts the burden of social governance from state authorities to other stakeholders, b) introduces market economy principles to digital capitalism and c) instills socialist values into internet regulation. However, none of these measures have helped to cultivate a technological consciousness that resists the pressures of technological modernization and worldwide military and economic competition. Second, while reconstructing the Chinese perspective on global internet governance, I will demonstrate how China currently aims at reforming the internet through its expansion of high-tech products and infrastructure abroad, and active participation in international cyberspace regulation. Third, I depict what a splinternet divided along geographic, political and economic boundaries might look like, if China and the US continue to instrumentalize global internet governance as a technological and ideological competition between two different political systems.

Hence, while Hui considers modernity and de-modernization from the perspective of a global axis of time, I argue that it is also a question of space: the two cyber powers seek to return geography to the global cyberspace, which may risk further splintering the internet. To create a genuine community and shared future in both physical and cyber space, further development of digital technologies must overcome the ideological contest, address the most urgent questions of the twenty-first century, and consider different cosmotechnics to ensure a morally and ethically sound technology governance.

HERNÁN BORISONIK: ART AND DESIGN VIS-À-VIS. THE DIGITIZATION OF VITAL EXPERIENCE

This article explores how boundaries between art and design have become increasingly blurred in the digital age, the changing materiality of art, how artists are increasingly involved in tasks of self-design in the service of potential buyers, patrons, and subsidiaries or even taken as free labor on social media platforms. These topics are connected through the consideration of the exhaustion of the model of the world as a complete and apprehensible unity and the purpose of human activity world that entails human beings. The text also maintains that exploitation of cognitive labour is linked to the enormous manipulation by the few actors who manage to set agendas and suggest behaviours. The text has a pendulum-like shape and winds its way through polarities until it finally suggests that there is a hint of utility in all artistic expressions by reconciling the idea of art with utility.

MARTIN DOLL: THE SPECTERS OF (SOCIOTECHNICAL) IMAGINARIES. OPPRESSED FUTURES OF THE PAST

In my article I want to argue for a shift in focus in Media Studies when thinking about sociotechnical imaginaries, a concept prominently developed by Sheila Jasanoff and Sang-Hyun Kim. Whereas this concept is often used to think in rather sociological large scales—a society, a culture as a whole—I would like to provide a more humanities-specific small-scale approach with a strong emphasis on heterogeneities and ambivalences and with a focus on sociotechnical imaginaries from the past. First, I will elaborate on the (political) blind spots of thinking in rather large-scales (even if this is sometimes only implicitly articulated in the key sources). Second, I will develop a sketch of a methodology for analyzing sociotechnical imaginaries on a smaller scale by reference to the concept of »memory cultures«, and particularly to »storage memory» and »functional memories« founded by Aleida Assmann and further developed in terms of pluralities by Astrid Erll. And, third, I will outline the political implications of this media archaeology of sociotechnical imaginaries in the present. Can we understand these imaginaries with Derrida as specters that haunt us, as specters of past political futures connected to media technologies that remind us of what is no longer and what is not yet?

CHRISTOPH ERNST: ON (TECHNO)-IMAGINATION, SCHEMATA AND MEDIA – PRELIMINARY REMARKS

The text deals with the connection between imagination and media by focusing on the notion of 'techno-imagination'. The problem of the 'schema' is identified as the connecting element between classical theories of imagination and media theory. In an essayistic passage through arguments by Immanuel Kant, Charles S. Peirce, and Cornelius Castoriadis, three different approaches to the relationship between imagination and schema are discussed and then related to Vilém Flusser's notion of techno-imagination. The text concludes with an exposition of further research questions. It is argued that for a contemporary theory of 'media imagination', the relationship between the constitution of semiotic representation and computer-based media-synthetization needs to be analyzed.

BENJAMIN HEIDERSBERGER AND JAN CLAAS VAN TREECK: THE ENDS OF THE INTERNETS. A DISCUSSION

In their discussion, Benjamin Heidersberger and Jan Claas van Treeck critically engage with the historical and ideological trajectory of the internet. They foreground three geopolitical spheres of influence shaping today's internet: the US, Europe, and China, each manifesting distinct socio-cultural values, technological infrastructures, and regulatory attitudes. Central to their discussion is the concept of 'territorialization' and 'anti-territorialization', illustrated through the national and international censorship cases vis-a-vis border-transcending aspirations of the internet founders-generation and currently Starlink. Anticipating a contested future, they posit a metaphorical arms race between control and resistance within the digital sphere, a splintering of the internet into a cyber-balkan of internets - considering the implications of these shifts for wider academic discourses on resistance, commoning, and decolonization.

FELIX HÜTTEMANN: TECHNO-NOMOS, ONTOLOGY, AND THE IMAGINARY. FROM CCRU TO LUCIANA PARISI

This article deals with a perspective of software- and algorithm-theory that implies a techimaginary, which is characterized by disputes about technological sovereignty, and is focused on a *nomos* of technology. The problem is, on the one hand, the origin of this theory from decisionist topoi and, on the other hand, its inherent apocalypticism and cultural critique. In this context, an engagement with technology in terms of a pessimistic futurity is imagined, which is applied to a posthuman autonomy of technology. This, I would like to discuss here as techno-*nomos*. In the following, a brief classification of the term will be used in order to

try to approach the further topoi in the following sections, in Benjamin Bratton's *nomos of the cloud*, in the *teleoplexy* and *cyberpositivity* of the *Cybernetic Culture Research Unit* (CCRU), and in Luciana Parisi's examinations of *algorithmic architecture* and instrumentality.

ÖZGÜN EYLÜL İŞCEN AND SHINTARO MIYAZAKI: COUNTER-FUTURING THE INTERNET. A CONVERSATION

This paper is not as structured as a conventional paper but a meandering conversation on the topic "The Futures of the Internet" that builds upon the authors' ongoing collaboration for the project Counter-N, web-based publishing, exchange, and research collection on alternative modes of computing. Our project highlights the entangled trajectories of computing and futuring in the forms of financial speculations, predictive algorithms, or apocalyptic narratives. In opposition, we invite other scholars and practitioners to dig into their potential histories and speculative presents to envision and enact alternative futures of the Internet. Ultimately, our conversation reveals the significance of a spatially and temporally expansive approach for grasping the future trajectory of networked society in its totality as much as within its frictions.

AGNIESZKA JELEWSKA AND MICHAŁ KRAWCZAK: TECHNO-IMAGINATIONS OF A NUCLEAR REGIME. HOW A POWER PLANT BECAME A PROXY BOMB

The article analyzes the techno-imaginations of the nuclear regime as interdependencies between nuclear and media infrastructures (Parks and Starosielski), the policies, and forms of cultural mutations generated by them (Derrida, Kerckhove, Masco). The article discusses the actions of the destruction of nuclear infrastructure by the Russian army in 2022-2023 during the war in Ukraine, which led to the use of the Zaporizhzhia Nuclear Power Plant as a proxy bomb. At the same time, it shows how media are designed under the nuclear regime and produce visions of the future as tools to neutralize critical discourse. The text indicates cultural and media activities – such as narratives produced around the 75th anniversary of the nuclear industry in Russia – which were used to generate nuclear visions of the future and to remediate resentment towards past nuclear imperialism. We put forward the thesis that one of the most important cultural consequences of the entanglement of the nuclear industry with the media and the narratives generated by it are new forms of weaponization of civilian nuclear infrastructure and a new topological figure of time in which the present is minimized to strengthen the future and the past. This onto-technological dependence generates new forms of atomized memory in which the past is justified by the

pursuit of a sustainable nuclear future, the facts of the present are displaced, and the negative aspects of nuclear accelerationism are neutralized.

JENS SCHRÖTER: AN EARLY FUTURE OF THE INTERNET

The essay on "early Internet futures" reconstructs an episode from the early history of what later would be called "the Internet". It shows which socio-technical imaginations in the early developments at the (D)ARPA Information Processing Techniques Office existed. Two of the most influential ideas will be focused: Firstly, J.C.R. Lickliders early concept of an "intergalactic network" which evolved into, secondly, into his (and Robert Taylor's) famous paper on the computer as a communication device. This shows how new technological developments are connected to socio-technical imaginaries from the very beginning.

CHRISTIAN SCHULZ: FROM MENTAL MODELS TO ALGORITHMIC IMAGINARIES TO CO-CONSTRUCTIVE MENTAL MODELS

Not only in the course of technological advancements in the fields of machine learning and artificial neural networks in recent years, but also due to an increasingly widespread public debate regarding the regulation and transparency of so-called artificial intelligence, as recently demonstrated by the debates around generative AIs such as ChatGPT or Dall-E, there are increasing demands for the explainability of AI. But almost all work in the field of Explainable AI (XAI) is aimed solely at the perspective of researchers and developers and their intuitions of what constitutes a good explanation. This problematic perspective is also reflected in theoretical concepts important for the development of AI systems, such as the concept of mental models originating from cognitive science. As part of a co-constructive XAI research, and based on two central texts by Kenneth Craik and Donald Norman, this paper aims to argue for a reconceptualization of such models, widely received in computer science and human-computer interaction, using the media cultural studies concept of algorithmic imaginaries, and to point out future lines of research.

GALIT WELLNER: FUTURES OF REALITY. VIRTUAL, AUGMENTED, SYNTHETIC

This article starts with Nozick's thought experiment of the experience machine and examines how the negative stance towards such a machine has changed so that virtual reality (VR) technologies and the recently announced metaverse are considered as positive developments. Three genealogical steps are identified:

postmodernism through Baudrillard's notion of simulacra; posthumanism as defined by Hayles and her observations regarding the move from the presence/absence dichotomy to pattern/noise dialectic; and Ihde's postphenomenology, including later theoretical developments that assign intentionality to technologies, especially augmented reality (AR) and artificial intelligence (AI). This analysis suggests that the metaverse cannot be classified as VR or AR but instead can be framed as "reverse AR" in which real people meet in an imagined space. The genealogy can help us frame metaverse's challenges from deep fake to free will. Nozik's critique regarding the lack of free will in the experience machine returns today as relevant and acute.

BIOS

Cornelia Bogen, Dr., is a media and communication scholar and has been working as an academic staff member at the Department of Culture and Media Education at the Ludwigsburg University of Education since June 2022.

After completing her doctorate on a media-historical topic in the field of health communication ("The Enlightened Patient," 2010), she began a ten-year research and teaching career in China. Her research interests include intercultural aspects of modernization processes, transformation processes of health communication in the cultural context of China and Europe, and the media use of older people.

In the context of her current work in the BMFSFJ-funded joint project "Digital Germany", she is interested in people of older age, especially their subjective attitudes towards digital technologies, the public discussion of their digital participation opportunities and the conception of educational offers to reach people in different life situations within this heterogeneous age group.

Contact via: cornelia.bogen@ph-ludwigsburg.de.

Hernán Borisonik holds a PhD in Social Science from the University of Buenos Aires and is a researcher at the Argentinean National Scientific and Technical Research Council (CONICET). He is adjunct professor at the School of Humanities of the National University of San Martín (UNSAM), where he coordinates the Centro Ciencia y Pensamiento. He obtained second place in the National Prize for Philosophical Essays in 2020. His field of exploration involves problems related to money, sacredness, politics and the arts. He directs and takes part in diverse projects related to philosophy and political theory. Intermittently, he works as curator, performer and arts critic. He has edited several academic and popular volumes and has written the books *Dinero sagrado* [Sacred Money] (2013), *Support. Money as Material in Visual Arts* (2017) and *Persistencia de la pregunta por el arte* [Persistence of the Question about Art] (2022).

Martin Doll, Dr., is Jun.-Prof. at the Institute for Media and Cultural Studies at the University of Düsseldorf.

Main research interests: politics and (digital) media, particularly technicization of politics/politicization of technology from the 19th century on, media theory (of the digital), audiovisual historiography, global media studies, mediality of architecture, forgeries and hoaxes. Most recent publications: Utopias of Flow and Circulation in the 19th Century. A Media Archeology on the »Pile of Debris« of History, in: Mathias Denecke, Holger Kuhn a. Milan Stürmer (ed.): Liquidity, Flows, Circulation. The Cultural Logic of Environmentalization, Zürich: diaphanes 2022, pp. 99–118; Pour une historiographie audiovisuelle. La situation coloniale entre le Cameroun et l'Allemagne, in: Albert Gouaffo, Colbert Akieudji a. Diderot Djiala

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Christoph Ernst, PD Dr., is Assistant Professor at the Department of Media Studies of the University of Bonn. Main research interests: Diagrammatic reasoning & media aesthetics of information visualization; theory of tacit knowledge & digital media, esp. interface theory and artificial intelligence; media theory & media philosophy, esp. media and imagination. Selected publications: *Diagramme zwischen Metapher und Explikation – Studien zur Medien- und Filmästhetik der Diagrammatik* (transcript 2021); *Media Futures. An Introduction* (Palgrave McMillan 2021). Further information: www.christoph-ernst.com.

Benjamin Heidersberger, born 1957, background in physics, biology, computer science (dropout). Cofounder of the artist group Head Resonance Company in Wolfsburg in 1978, of Ponton-Lab in Hamburg in 1989 and since then its director in Berlin, Germany, from 1994 on. Founder of Kulturserver in 2000 and of the Institute Heidersberger in 2002. Various large scale media projects (Van Gogh TV, Ars Electronica, documenta) in Europe, USA and Japan. Publications on computers, media and society as well as lectures on interactive media.

Felix Hüttemann, Dr. phil., is a post-doctoral researcher and research associate in the DFG project: "Institutions of the Computer" at the Chair of Television and Digital Media at the University of Paderborn. Previously, he was a post-doc and research associate at the Chair of "Virtual Humanities" at the Institute of Media Studies and a post-doc and research associate at the DFG Research Training Group "The Documentary. Excess and Deprivation" at the Ruhr University Bochum. A graduate in German studies and philosophy, he was a fellow of the Mercator Research Group "Spaces of Anthropological Knowledge" in the WG "Media and Anthropological Knowledge".

Özgün Eylül İşcen is an affiliated research fellow at the ICI Berlin Institute for Cultural Inquiry. Her recent research focuses on counter-futuring at the intersections of digital media and arts, urban studies, and decolonial politics. She earned her PhD in the Program of Computational Media, Arts and Cultures at Duke University in 2020. Her dissertation examines the geopolitical aesthetic of computational media as an imperial apparatus within the context of the Middle East. Eylül has published in a variety of edited books, art catalogs, and academic journals such as Ethnic and Racial Studies and Organised Sound. She currently teaches at Hum-

boldt-Universität zu Berlin and collaborates with Shintaro Miyazaki the Counter-N, web-based publishing and research collection supported by Humboldt.

Agnieszka Jelewska, Prof. Dr. Hab. at the Adam Mickiewicz University in Poznań, Poland and director of Humanities/Art/Technology Research Center AMU. She examines the transdisciplinary relations between science, art, culture, and technology in the 20th and 21st centuries and media practices against violence. Jelewska has authored the books *Sensorium. Essays on Art and Technology* (2012 in Polish), *Ecotopias. The Expansion of Technoculture* (2013 in Polish), *Art and Technology in Poland. From Cybercommunism to the Culture of Makers* (2014, as editor); and a number of articles. She is also a curator and co-creator of art and science projects: *Transnature is Here* (2013); *Post-Apocalypsis* (2015), *Anaesthesia* (2016); *PostHuman Data* (2019).

Michał Krawczak, PhD, assistant professor at Anthropology and Cultural Studies Department (Adam Mickiewicz University in Poznan, Poland), co-founder and program director of Humanities / Art /Technology Research Center. Author of texts about media arts, editor of book *Post-technological experiences. Art-Science-Culture* (2019). Researcher, designer, and curator of art and science projects, such as *Transnature is Here* (2013), *Post-Apocalypsis* (2015), *Anaesthesia* (2016), *Artropocene* (2017), *Solastalgia* (2021). His main research fields are modern forms of media violence and cultural consequences of climate change from the perspective of postdigital studies and media ecologies.

Shintaro Miyazaki is since October 2020 a (junior)-professor in "Digital Media and Computation" (with tenure track) at the Faculty of Humanities and Social Sciences, Department of Musicology and Media Studies, Humboldt-Universität zu Berlin. From 2014–2021 he has been a senior researcher at Institute of Experimental Design and Media Cultures of the Academy of Art and Design, University of Applied Sciences and Arts Northwestern Switzerland. He received his PhD in Media Studies under supervision of Wolfgang Ernst, Media Theory, Humboldt-Universität zu Berlin. He is born in Berlin, but grew up in Switzerland.

Jens Schröter, Prof. Dr., is chair for media studies at the University of Bonn since 2015. Director (together with Prof. Dr. Anna Echterhölter; PD Dr. Sudmann and Prof. Dr. Alexander Waibel) of the VW-Main Grant "How is Artificial Intelligence Changing Science?" (Start: 1.8.2022, 4 Years); Senior-fellowship IFK Vienna, Austria. Winter 2018: Senior-fellowship IKKM Weimar. Winter 2021/22: Fellowship, Center of Advanced Internet Studies. Recent publications: *Medien und*

Ökonomie, Wiesbaden: Springer 2019; (together with Christoph Ernst): *Media Futures. Theory and Aesthetics*, Basingstoke: Palgrave 2021.

Christian Schulz, Dr., is a research associate at the collaborative research center TRR 318 *Constructing Explainability* and a member of the Digital Cultures team at the department of media studies at Paderborn University. His research interests are social media and its media theories, data practices, theories of the subject and digital photography. Recent publications: *Infrastrukturen der Anerkennung. Eine Theorie sozialer Medienplattformen* (2023), Frankfurt a.M./NewYork: Campus; A new algorithmic imaginary (2023), in: *Media, Culture & Society* 45(3), 646-655; Reziproziät und das alteritäre Dritte – über die wechselseitigen Verflechtungen von PageRank und sozialen Medien (2022), in: *Behemoth – A Journal on Civilisation 15(2)*.

Jan Claas van Treeck is Professor of Digital Transformation and Media in the Media School of Hochschule Fresenius Hamburg. His research focusses on human-machine-interaction, the post-human condition, cyborgs, cybernetics, artificial intelligence, and media philosophy. He studied at Ruhr-Universität Bochum and Yale University where he also received his PhD. He works (and still works) as a strategy consultant for corporations and public institutions and has held academic appointments at Yale University, Humboldt Universität zu Berlin and Martin-Luther-Universität Halle-Wittenberg.

Galit Wellner, PhD., is a senior lecturer at Holon Institute of technology (HIT) and an adjunct professor at Tel Aviv University. Galit studies digital technologies and their inter-relations with humans. She is an active member of the Postphenomenology Community that studies philosophy of technology. She published several peer-reviewed articles and book chapters. Her book *A Postphenomenological Inquiry of Cellphones: Genealogies, Meanings and Becoming* was published in 2015 in Lexington Books. She translated to Hebrew Don Ihde's book *Postphenomenology and Technoscience* (Resling 2016). Further to her increased interest in AI, she is consulting on AI regulation in Israel and in the EU.

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