A Brave New World?

Artificial Intelligence as a Hybrid Life Form.[1] On the Critique of Cybernetic Expansion

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"The number you have dialled is not in service …"
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Artificial intelligence (AI) challenges human intelligence and our humanistic self-conception. This contribution argues that this is happening for good reasons but is based on a mistaken opposition that falls short. Human beings and technology have always been intertwined in hybrid forms of life. Yet the exact nature of this hybridity is misunderstood when inadequate dichotomies of human subject and technical object are replaced by a totalizing conception of a cybernetic informational universe that reduces all that exists to this latter, single point of comparison. Representing the paradigm of digital society, AI is a bearer and expression of such a cybernetic expansion that both anchors digital analogism in society as a closed system of interpreting the world, or a cosmology, and renders it plausible at the level of knowledge. AI thus deepens and generalizes conventions and functional patterns of justification that have a long history in industrial society. The thesis proposed here is that, to counter this expansive dynamic effectively and critically, more needs to be done than evoke humanistic values. What we need is a better understanding of the ontological heterogeneity of the societal modes of existence that are assembled in hybrid forms of life.

1 This paper is a translation with minor modifications of the following German-language publication: Lamla, Jörn (2022): Künstliche Intelligenz als hybride Lebensform. Zur Kritik der kybernetischen Expansion. In: Friedewald, M./Roßnagel, A./Heesen, J./Krämer, N./Lamla, J. (eds.): Auswirkungen der Künstlichen Intelligenz auf Demokratie & Privatheit. Baden-Baden: Nomos, pp. 77–100 (open access). Many thanks go to Stephan Elkins for his profound translation services, both linguistically and sociologically. My thanks also go to Bettina Reß for her assistance with literature research. I would also like to thank the Fritz Thyssen Foundation for granting me the opportunity to devote a semester for reading, which made it possible to thoroughly review part of the literature addressed in this essay.

A. Beyond strong and weak AI

A common narrative in the current discourse on artificial intelligence (AI) begins with the distinction of strong and weak AI. By relegating the idea of an all-dominating strong AI—a singular super intelligence of computing machines that is far superior to human cognitive capacities—to the realm of science fiction or unfounded collective paranoia, a position proceeding only from the assumption of a weak AI appears to be realistic, competent, and trustworthy. In this perspective, AI then is no longer a mystery but rather a very concrete, local use of huge computing capacity, adaptive algorithms, and neural networks for performing very specific tasks. As is often the case in techno-scientistic narrations, most of the examples to explain this are drawn from the health sector. They not only illustrate how the use of AI, for instance, in medical imaging techniques increases the probability of detecting cancer but also enhances general acceptance of research and development investments in AI by exemplifying the opportunities of AI in the context of the health as a core value. What is typically not questioned is the distinction between strong and weak AI itself. This distinction is reified as the boundary that allows the implementation of AI as an ethically and legally controllable, essentially socially desirable technology, the good reasons for which can be scrutinized in each individual case and for which general legal provision can be enacted with an eye to the transparency or autonomy of algorithmic decision-making.

Astonishing from a sociological perspective are the implicit conceptions of societal change that are associated with such narratives. Images of machines that, in a belligerent act of revolution, seize control of the world are just as inadequate as the assumption that societal structures will be continuously sustained as long as it is ensured that new technologies are controlled and incrementally infused into the fabric of societal practices, institutions, and values. What this dichotomy misses is the possibility of paradigmatic transformations in the structural makeup of entire societies that have far-reaching consequences precisely because they are gradually and barely noticeably infiltrating the fabric of social practices and everyday activities. In retrospect, however, this is actually the typical case, which can indeed entail far-reaching consequences (cf., e.g., Beck 1997). Seen from this vantage point, the value-laden distinction between strong and weak AI takes on concealing and de-/legitimizing characteristics—not least owing to the fact that this schematic pattern of perception promptly relegates all those who warn about the problematic side effects of AI to the apocalyptic

science fiction of strong AI. A very different story of transformation comes into view when we look at the new in the old, at the minor paradigmatic shifts that, as local AI applications spread, initially imperceptibly, into various societal domains, and gradually change our ways but cumulatively cause substantial structural changes.

The following considerations develop such a transformation hypothesis by starting from the paradigmatic changes that can be observed in many contexts. The objective is to identify the common structural principle that, as these changes are expanding, is gradually making its imprint on the characteristic structures of society (cf. Giddens 1984). This structural principle is not in itself AI. AI, thus the assumption, is rather only one of many exemplary testing grounds for its expansion. AI along with its many local applications is in itself only one instance of applying a more general transformational dynamic, the programmatic core of which can be called *cybernetic cosmology*, that is expanding into and becoming manifest and evident in various social practices and constellations. This structural principle thus has a side that is virtual, ideological, world-interpreting, or pragmatic and another side that is material, structuring (in terms of shaping the ontology of practices in space and time), operational, or also syntagmatic. It can be identified and described in different contexts accordingly. It does not fall from the heavens but has been gradually evolving from historical predecessors that belong to and accompany the imaginary of industry and its development, which can be seen, for instance, in the harmonious conceptions of order among early utopian socialists such as Fourier (1971) or Saint-Simon (1975). This structural principle thus describes a specifiable genealogical path and at the same time appears in the form of various structurally related phenomena. These can be changes of a technological-material kind but also in pedagogy and psychotherapy, in law, in the sciences, and not least in the mode of governance (cf. Lamla 2020).

Before I unfold this argument in more detail, let me elaborate this other transformation narrative by addressing a specific aspect of AI. To enable algorithms to identify patterns, make suggestions, or decisions first requires *training* them on a vast pool of data (cf. Engemann 2018). These data form the probabilistic basis that enables AI to conclude with sufficient likelihood that a specific shadow in an image indicates cancer, that the choice of a music title reflects a preference for a specific style, that two profiles on a dating website indicate attraction or antipathy, and so on. Compiling data for such training belongs to the practical problems of computer science that require considerable effort and are thus costly—especially when this

must happen under the laboratory conditions of science, by hand, and in compliance with high data privacy standards. It would be easier and much more efficient if this training of algorithms could directly tap into societal practice: images from X-ray and computer tomography in medicine and their classification by practicians, for instance, or vast quantities of data from a music-streaming or data platform, or the indexing work of the image recognition industry, which occasionally, and paradoxically, depicts the monotonous training of machines as proof of being human: "I am not a robot" (reCAPTCHA). This grounding of specific developments in machine learning and AI in the contexts of societal practice itself raises the question of who is actually training whom. If robots that are supposed to learn how to interact with children to later support them in learning must first have interacted with children to predict and anticipate their reactions and patterns of attention, these children will be learning at the same time how to interact with robots, adopt them as playmates, and devote the necessary attention to them (Reimer and Flückinger 2021). In the same vein, we quickly learn to deliberately address the voice recognition software in our automobiles in ways that we can expect its responses to be halfway useful. The famous Turing test (Turing 1950) also falls into this category. It can be viewed as the paradigm of an AI whose performative intelligence is assessed in terms of perceiving no difference between the responses of people and machines. What remains unanswered, however, is whether this owes itself to the learning of the machine or the adjustments of humans (Lanier 2010, p. 32). For AI, this makes no difference. The only measure is success.

What becomes problematic here, however, is the concept of AI as a whole—no matter whether in its strong or weak version. For in both cases, as a threat or a complement, the concept tinkers with its opposition to human intelligence, which seems to be an independent entity that is contrasted with its artificial counterpart. Yet this independence does not really exist. Human and machine intelligence are indeed always already recursively coupled, so that what we are dealing with is a genuinely socio-technical intelligence the material basis of which is not a high-performance computer and computer networks but rather *hybrid life forms*. The hybrid nature of these forms of life is, however, misunderstood in two ways, thus my thesis, because the common concept of AI continues to imply a superior humanity and cherish humanism on the one hand while assuming the universal connectivity and translatability of machine language—that is, the duplication of the world in the form of data—on the other (Nassehi 2019,

p. 33f.). Yet both are not only in a relation of contradictory tension but each one in its own way also misconceives the specific nature of hybrid life forms.

To elaborate this thesis in more detail, this contribution will draw on recent anthropological theories on the hybridity of life forms. With their program of recursive linkages and couplings of everyday life and AI, they are spearheading a new digital analogism (section 2). However, a critical response to such a diagnosis must not deny the hybridity of life forms and revert to the simplistic humanistic dichotomy of human beings and machines as, for instance, the renaissance of digital sovereignty has prematurely been doing. What is required is rather to open up third spaces for thinking about setting limits to cybernetic expansion. For the redefinition of critical competencies, we can resort to, for example, environmental and sustainability discourses (section 3). Their core characteristic is an enhanced awareness of the heterogeneous in hybrid life forms and, mediated via this awareness of ontological diversity, the ability to question and reject, for good reasons, sociotechnical constraints, for instance, the ability to counter, for emancipatory purposes, the telecommunications provider's crisis response cited at the outset of this article.

B. The digital analogism of the cybernetic cosmology

Making the impact and interplay between a humanistic and cybernetic worldview visible requires comprehending them as such. Applying methods from the history of ideas, Vincent August (2021), for example, has traced how cybernetic thought evolved during the 20th century as an alternative way of thinking about control and fostered new forms of technological governance. In the process, this new, network-oriented mode of thought—aimed at capturing emergent, self-regulating feedback systems—increasingly broke away from ideas based on a sovereign subject exercising hierarchical control. Whereas the idea of sovereignty still reflects the humanistic worldview in which the human subject occupies an exceptional status on grounds of its faculty of reason, the cybernetic worldview has increasingly abandoned this idea. In the latter view, human beings appear to be nothing more than positions in emergent social networks of communication or streams of information. The digital revolution can then be considered as one more humiliation of this human subject, namely, as the fourth humiliation after the Copernican turn, Darwin's theory of evolution, and

Freud's psychoanalytical humiliation of human autonomy and centrality (Floridi 2014, pp. 87–100). Whereas the previous revolutions have banished the human being from the centre of the universe, the animal kingdom, and Cartesian self-consciousness, the infosphere now has also decentred logical thinking, our intelligence, by outsourcing and transferring it to information-processing machines. But what in this context appears to be a statement claiming veracity that can be substantiated by numerous empirically evident examples—one need only think of the use of navigation tools to get from A to B as quickly as possible—is at the same time an expression of a cybernetic worldview that gives precedence to digital information processing over all other forms of socio-material relations.

Making visible that statements of this kind are tied to social positions is not an easy task in the case of cybernetic cosmology because these statements are increasingly gaining plausibility and are becoming hegemonic with the help of evidence drawn from digital contexts of application. Showing how such tendencies toward closure have emerged and have been evolving historically requires special methodical efforts. Whereas the history of political ideas, the sociology of knowledge (e.g., Mannheim 1991), or the discourse-analytical study of historical epistemes (Foucault 1971) specialize in this, they can nevertheless remain wedded to a cybernetic shift in perspective as August (2021) has demonstrated for the theoretical schools of Luhmann and Foucault. Certain constructivist lines of analysis have themselves borrowed their theoretical and methodological toolbox from just that cosmology, the selectivities and limitations of which I intend to draw out here. In the following, this shall be demonstrated with reference to two recent examples of theory-building on (post-)digital society that can be easily associated with the theoretical schools of Luhmann and Foucault.

The first example refers to Armin Nassehi's book on patterns (2019). Nassehi starts from the thesis that modern society has essentially always been digital and that, with new technology, it has merely found a way to render its latent pattern visible and recombinable in manifest structures of socio-digital chains of operation. "We do not see digitization but rather key domains of society already observing digitally. Digitality is one of the crucial self-references of society" (ibid., p. 29).[2] The digital and digitization, thus one might interpret this reasoning, stand—and have always stood—in a functional relation to society. In this cosmos, digitality solves a problem, takes its functional place, and would not exist otherwise. For "[were] it not

2 All quotes from Nassehi's work have been translated from German.

an appropriate fit for this society, it would have never emerged or would have long since disappeared again" (ibid., p. 8). "The problem to which digital technology makes reference," Nassehi writes (ibid., p. 36), "lies in the complexity of society itself." Its contribution to solving that problem is, similar to that of sociology, to detect patterns in this inconceivably vast societal complexity and reorganize them at the level of digital media. It accomplishes this by first duplicating these patterns in the form of data and, by way of this form, portending to informationally process the whole world in its entire heterogeneity in a uniform, self-selective operational nexus: "If one wants to somehow conceptualize the digital, then it is ultimately nothing other than the *duplication of the world in the form of data*, including the technical possibility of relating the data to each other," that is to say, to make "the incommensurable at least relationable" (ibid., p. 33f.).

In this way, Nassehi, however, not only vividly traces the aspirations and measures involved in duplicating the world through digital data and technologies but rather duplicates this duplication once more to compose a consistent, inevitable story to which there is no alternative by couching it in a cybernetic narrative to which digital technology then lends empirical evidence. In this respect, his book is a prime example of an epistemological dynamic of closure of a postdigital constellation of order in a society in which the couplings of sociality and digitality are advancing and expanding. Nassehi's theory of the digital society allows us to study how scientific interpretations can contribute to such a politics of closure. The "systems theorist" finds analogies—oh, what a surprise!—between his cybernetic world of the social and the cybernetic world of the digital that enable him to posit a functional relationship between the two and then interpret the digital as being just that mirror which makes it possible for even the last old-European sceptic to recognize and accept the systemic nature of the functionally differentiated society (cf. ibid., p. 186 f.). The language and informational paradigm of cybernetics guide all of his interpretations from the outset. Competing theoretical languages and approaches to interpretation are mentioned at best but are at no point seriously discussed or considered as offering an alternative explanation. This pertains to Steffen Mau's (2017) diagnosis of a comprehensive measuring of the world, Shoshana Zuboff's (2019) analysis of the expansion of the power to control by means of the recursive formation of behavior through digital technology, Felix Stalder's (2016) "Kultur der Digitalität" (Culture of Digitality), and many others, all of whom Nassehi claims to "have failed to perceive the structural

radicality of the digital for society" (Nassehi 2019, p. 14), as well as ultimately to science and technology studies (STS) with which he seeks to maintain some sort of truce, as STS—in the line of Dominique Cardon (2016), for instance—is at least capable of seeing "that the production of algorithms is establishing a new way of thinking" (ibid., p. 15). Only Nassehi is not really interested in reconstructing this way of thinking empirically and with an openness in all directions—as is the case in research in the vein of STS; he rather determines the interpretive framework for this analysis a priori by drawing on the cybernetic terminology of systems theory.[3]

"Like hardly any other, Heidegger understood the significance of cybernetics as a challenge to philosophy in that it reduces everything to uniform information" (ibid., p. 83). At the time when Heidegger predicted the triumphant advance of cybernetics in technology *and* science, however, he was still intent on maintaining a critical distance. Not so Nassehi: Where Heidegger still had a "critical eye" on retooling scientific theorizing along the lines of cybernetic feedback and systems thinking, Nassehi believes that we must "probably describe it in affirmative terms to fully understand it. Here, the internal intertwinement of theoretical means and object is truly carried to extremes and has certainly reached its peak in sociological systems theory" (ibid., p. 93). Accordingly, Nassehi's theory represents a self-contained cosmology in which we can no longer distinguish between those observations and diagnoses of digital society that are rooted in a contingent cybernetic worldview and those that can be traced to the historical-practical restructurations that have come with the availability of digital technology. By way of their coupling, theory and practice unfold performative power. Yet the transformation of society into a cybernetic information machine in which the uniformity of information has the effect of making the incommensurable commensurable and rendering it temporally interrelatable in recursive networks can still be "taken seriously" (ibid., p. 87) as a historical-technical development even if one scientifically reckons

3 With media duplications, the "cosmos" itself takes on a "cybernetic character," he writes in one place (ibid, p. 114). And elsewhere he maintains in apodictic fashion and contrary to all theoretical controversy: "The concept of society is controversial in sociology. What we can state with certainty is that society means the totality of all communication and action. Society is the all-encompassing system. […] Such a system, in the environment of which there cannot be anything else that is social, must establish something resembling a comprehensive order within itself; it would collapse into itself otherwise" (ibid., p. 168). Without further ado, the author rephrases controversies in social theory as if they were pseudo-controversies with no implications for his own systems-theoretical language.

with alternative ontological conceptions and corresponding societal countermovements, that is to say, even if one does not conceive of cybernetic cosmology as absolute and as a mode of thinking to which there is no alternative.

Nassehi, however, sidelines such alternative conceptions and countermovements. One does have to give the author credit for at least marking the ontological-political gateway for this dynamic of closure. Yet he addresses this only in an excursus that remains neatly separated from his theory of digital society (ibid., pp. 188–195). There, Nassehi raises questions concerning the practical and material mediation of the digital that meets with the obdurateness of habitualized practices or the finiteness of environmental resources and energy supply. Things like the energetic substructure, rare earths, the digital information infrastructure, their materiality and the waste problems that this entails, but also their historicity and the necessity of continuous translation and mediation at the "points of intersection" (ibid., p. 34) between the digital and the "analogue" world represent a logic of practice that have ushered in problems of a very different nature for a digital society than the ones that Nassehi has in mind: "The shift toward supposedly immaterial digital value-added by no means implies the vanishing of the turnover in material goods and energy. This is not necessarily relevant to a theory of the digital but certainly for its practice—for that matter also with regard to what it means for the inclusion of working people. But that is not the issue here" (ibid., p. 192). These passages are symptomatic of the theoretical speechlessness and lack of mediation between different worldviews or cosmologies that are also characteristic of the coexistence of the discourses and strategies of digital and sustainable transformation. The counterthesis is that a theory of digital society must indeed account for, and consider in a prominent position, these different kinds of problems.

Turning to the second example, I will now directly address, take seriously as a phenomenon, and attempt to systematically illuminate the complex of problems involving materially induced disruptions, acts of partial opt-out (e.g., digital detox), and other crises of postdigital life practice. Urs Stäheli's book on the sociology of de-networking (2021) takes a comprehensive look at various problematizations of excessive networking, ranging from information overload and apophenia—the same passion for patterns that Nassehi too indulges in—through forced pauses in the wake of buffering or burnout, all the way to phenomena such as non-sellers or the social figure of the shy one, complemented by various theoretical conceptualizations

from Latour's notion of dissociation to Simmel's concept of indifference. In the process, he associates de-networking, in analogy to cell biology, with Deleuze's "vacuoles of non-communication" (Stäheli 2021, p. 154 ff.),[4] which, as refuges, are partially withdrawn from the directing control of processes of communication and exchange but nevertheless remain functionally related to the cellular organism as a whole: "Vacuoles are […] not merely holes or empty positions in a network, but rather complex infrastructures of storage and withdrawal; indeed, what we are dealing with here is a bio-logistics of temporary withdrawal with the aid of which cells create the preconditions for their own processing" (ibid., p. 157).

Here, too, theoretical affirmation of the network metaphor, which demarcates the field of criticism, remains central—less so from the standpoint of cybernetics, rather from the perspective of a relational network sociology. Yet the result is similar. In Stäheli's work, de-networking paradoxically does not refer to an outside of the network but to a part of the network that is incorporated into the network itself. Although he takes a critical look at and sheds light on the now extremely far-reaching and dispersed effects of the power of (digital) networks and their discursive duplications, this ultimately does not go beyond cybernetic self-corrections by expanding the logic of [cybernetic] connectivity via theoretically also incorporating that which remains unconnected. When it comes to opting out, Stäheli says explicitly that he is not interested in radical but only in partial opt-out: "The issue is therefore not to think of de-networking as an opt-out option but rather as a bundle of socio-technical practices, as something that operates against networking from within networking" (ibid., p. 84). In this way, the key question, which Stäheli also points out as such, thus remains unanswered, namely, the one that asks about "the mode of existence of the de-networked" (ibid., p. 383). In his perspective, this mode of existence can be defined only negatively, as the absence of the normality of networking in a world of informational networks but not in terms of a heterogeneity of ontological registers.

Stäheli and Nassehi thus both confirm the cybernetic congeniality of ideas between Foucault and Luhmann. Hinting at the power effects of epistemological orders of knowledge and discourses alone does not direct attention away from these but merely demands of them a greater degree of critical self-reflection. By contrast, greater power to unsettle such orders

4 All quotes from Stäheli's book have been translated from German.

and discourses would require a sociology that is capable of taking a broader approach and relativizing cybernetic cosmology as a whole. This is possible with the aid of anthropological theories such as the ones pursued by Philippe Descola (2013) or Eduardo Viveiros de Castro (2014). These theories typically revolve around the contrast between modern Western naturalist cosmologies and the ontological schemata and modes of relationships associated with the animistic cosmologies identified in the Amazon Basin, but not only there. Naturalism and animism stand for diametrically different socio-ecological arrangements and contrasting them helps to question the dichotomy of nature and culture in their own Western relation to nature.[5]

Yet this is not the only way to render Descola's heuristic distinctions fruitful for analysis. Although there can be no doubt that, since the onset of modernity, modern naturalism and the instrumental, productivist, or also capitalist social forms that come with it have spread all over the globe (Descola 2013, p. 173; cf. also Latour 2018, pp. 70–77). In the course of the cybernetic expansion, however, which is advancing rapidly with digitization and in which the coalescence of digitality and sociality and other socio-technical feedback loops are taking shape in practice, naturalism is being overlayed by cosmological schemata of a different kind, which Descola calls *analogism*. By contrasting animism and naturalism, Descola

5 In the cosmos of *animism*, it is possible that subjects of the most different types and forms encounter one another in symmetrical fashion (which may include not only exchange and gift[s] but indeed also predatory encounters). Here, animals and plants are part of the collective of species just as people are. The Achuar, among whom Descola conducted several years of fieldwork, attribute *a soul* to animals or also to plants and thus integrate them into their society in a very human way. To the hunter, for instance, "[t]he animals that he encounters […] are […] not wild beasts but beings that are almost human and that he must seduce and cajole in order to draw them out of the grasp of the spirits that protect them" (Descola 2013, p. 41). Relationships of mutual respect and recognition, but also of cannibalistic appropriation, based on taking the perspective of the other across species, form the basis of coexistence between them. By comparison, *naturalism* has great difficulty incorporating the diversity of the world within a stable framework. Since human beings, with their autonomous volition, their culture, and their pronounced self-consciousness, time and again exempt themselves from the schemata of order of the one nature, this cosmology fails to agree on an overarching principle. Within the naturalist framework, morality has no clear place and can therefore bridge neither the heterogeneity of plural cultures nor the "radical otherness" of the most diverse non-humans (Descola 2013, pp. 289–291). Modernity is consequently characterized by turbulence and restlessness. Its most important relationship schema is *production*, which comes with a strict hierarchy between humans and non-humans and a clear-cut distribution of positions between subjects and objects.

derives criteria for differentiation that he fleshes out toward a typology of ontologies that includes totemism and analogism as well (Descola 2013, p. 121): Whereas animism broadly extends the interiorities of the human (e.g., to include the soul, consciousness, or volition)—while indeed emphasizing differences in the make-up of species, that is, in the outer forms or physicality of beings in the process—modern *naturalism*, according to Descola, operates the other way around in this respect. In terms of its physicality, the naturalist ontology sees nature as based on general principles that apply to all bodies equally, whereas cultural characteristics and abilities of cultural expression are reserved for humans. However, cases that deviate from this in which both interiorities and physicalities provide a continuous connection between humans and non-humans, as in the cosmology of the Australian aborigines, correspond with the third type, which is totemism.[6] And the maximum contrast to this, one in which ruptures and differences between all existing beings pertain to both interiorities and physicalities, points to cosmologies of the analogism type.

For Descola, naturalisms' asymmetric relation to nature largely makes it "impossible to set up between all existing beings a schema of interaction with the synthesizing power and simplicity of expression of the relations that structure nonmodern collectives" (ibid., p. 397). Under these ruptured conditions, people in modernity forget their dependence on the other, their *alteri*, be it biological diversity or the alien, and tend to exploit or even destroy those others—or, conversely, to engage in hopelessly romantic attempts "to recover the lost innocence of a world in which plants, animals, and objects were fellow citizens" (ibid., p. 398). The inability of modernity to establish stable relationships between heterogeneous beings undergirds the renewed attractiveness of analogism: Its ontologies and belief systems "offer a universalist alternative that is more complete than the truncated universalism of the Moderns" (ibid., p. 300), which with the disruption of heterogeneity had emerged from analogism and the temporal dependencies

6 In the cosmological fabric of *totemism* with its collectives as a source of identity, the "coexistence between heterogeneous collectives is [...] a necessary condition of survival [...] for all those involved" (ibid., p. 297) and leads to "a remarkable case of rational cohabitation between 'ontological races' that, despite considering themselves as utterly different with regard to their essence, substance, and the places to which they are attached, nevertheless adhere to values and norms that render them complementary. Indeed, they make use of the grid of otherness on which they find themselves placed in relation to others in order to produce an organic solidarity out of taxonomic heterogeneity" (ibid.).

of which on the past, on ancestors, and on tradition were initially believed to have been overcome. This attractive alternative, however, comes in the form of a "spiritual universalism" as advocated in the "Eastern wisdoms" of Zen, Buddhism, and Daoism (ibid.).[7] What then characterizes this spiritual universalism of analogist cosmologies? And why is the worldview of cybernetics an example of this?

The language alone that Descola uses to describe analogism reminds one to a considerable degree of the rhetorical figures of cybernetic theories and the theory of autopoietic systems specifically as it makes reference to assumptions of difference, operational interlinkages of elements, proof of worth through practical effectiveness, the contingent selectivity of boundary-drawing, precedence of functionality of the whole over its parts, and many more. Thus, relations "depend less on ontological properties," which are organized into an analogical collective, "than on an imperative need to integrate them all into a single functional whole" (ibid., pp. 400–401). And he goes on to argue that "the ideology of a collective of this type is bound to be functionalism" (ibid., p. 401). Analogism does not assume robust collective identities that subsequently enter into a relation with each other along their differential distances to one another as totemism does but rather differences that separate all existing beings, which must then be woven, in an act of creative comparison, into a complex web of relations: "[T]he ordinary state of the world is one of differences infinitely multiplied, while resemblance is the hoped-for means of making that world intelligible and bearable" (ibid., p. 202). We see the respective attempts of establishing order in the "chains of being" in the ancient philosophy of Aristotle and in medieval Christianity as well as in Chinese cosmology (e.g., geomancy or feng shui), the Indian caste system, in Mexico among the Nahuas, or also in West Africa (ibid., p. 202 ff.).

However, the analogical concatenation of singular events is contingent—that is, it could always be otherwise—as this can take place according to a number of different criteria and systematics. It thus runs the risk of being permanently called into question by differences and other possible criteria of order and is therefore "constantly threatened with collapse on account of the bewildering plurality" of its elements (ibid., pp. 216–217). The taxonomy of cosmic order can hence not gradually evolve from the

7 In this context, Descola points out that the neurobiologist Francisco Varela, to whom Luhmann makes reference in his theory of autopoietic systems, was "a convinced Buddhist" (Descola 2013, p. 424).

interactions of heterogeneous and ontologically autonomous entities, as in totemism, but must rather be installed from above—as divine will—and rigorously held onto to avert uncertainties. A characteristic feature of analogism is thus a "holism" of its ontological schemata (ibid., p. 228) that borders on a forcible or "totalitarian order" because, and to the extent that, it is basically "always possible to find several possible avenues or chains of correspondences that link two entities" (ibid., p. 238). According to Descola, the Inca Empire is a typical case of such an analogical collective (ibid., p. 272). In analogism, it is necessary to offer a sacrifice to the cosmic powers of order: "Sacrifice could thus be interpreted as a means of action developed within the context of analogical ontologies in order to set up an operational continuity between intrinsically different singularities [...] a means of action that, to this end, makes use of a serial mechanism of connections and disconnections that functions either as an attractor or as a separator" (ibid., p. 231). The existential heterogeneity of the world can hence be converted into cooperation only by way of comprehensively assimilating it to an (all-)encompassing schema of classification. Whoever or whatever fails to comply with this schema is banished: "[B]eyond the limits of the home, which are usually marked out in a quite literal fashion, there lies an 'outworld' populated by outsiders, the indistinct mass of barbarians, savages, and marginal peoples, which is a constant source of threats and a potential breeding ground for co-citizens who can be domesticated" (ibid., p. 303).

It does not take much to again recognize the rigid operational boundary-drawing of binarily coded systems or the universalization of the informational principle as the cybernetic link connecting the most diverse sciences, from biology to sociology. Moreover, the schema of analogism lends plausibility to Lanier's (2010, p. 24) pointed claim that cybernetics is a universalist doctrine that tends toward totalitarianism, whose "first tenet [...] is that all of reality, including humans, is one big information system" (ibid., p. 27). By extending it and anchoring it in society via digital technologies, this analogism becomes a *digital* analogism that is rooted less in specific religious belief systems than in the belief in the all-encompassing power of the digital itself to create and maintain order and integration. To this end, cybernetic alliances are forged that promise to implement digital analogism's political project of ordering. They comprise, for example, computer science and the behavioural sciences, where the latter, with its behaviouristic tradition, has deeply committed to thinking in terms of control loops and systemic self-organization and has recently been

reinvigorated through the concept of nudging from behavioural economics (Thaler and Sunstein 2008). MIT scholars such as Alex Pentland (2014) have emphasized the formative potential of using a combination of such cybernetic technologies by means of which ideas could be deliberately disseminated through social media and socio-physically anchored in society. Furthermore, in the context of AI research, neuroscientific approaches and the biology of the brain are becoming more important in combination with the behavioural sciences inasmuch as they promise to capture the connecting points and mental-material peculiarities of hybrid life forms by means of a cybernetic vocabulary. Whether this does justice to the heterogeneity of these life forms is a whole different matter (Ehrenberg 2020, pp. 184, 240).

Critics of this cybernetic expansion, such as Shoshana Zuboff (2019, pp. 416–444), have vehemently warned of the consequences of total behavioural surveillance looming in digital capitalism. In doing so, however, those critics are operating in the context of a cosmological belief system that reproduces the paradoxes of modern naturalism: The human subject, conceived as the centre of ethical action and moral responsibility, remains the normative focus (similarly also Nida-Rümelin and Weidenfeld 2018). This humanism, however, clashes with the empirically observable patterns of production and order of the digital world and thus becomes the target of cybernetic counter-criticism. Reconstructing this argument, as a perpetuation of the old controversy between sovereignty thinking and cybernetics or between a naturalistic and an analogical worldview, can make the paradoxes between both cosmologies visible and demonstrate how and where they result in futile disputes or flawed compromises. Yet the ontological heuristics can furthermore also unearth hidden potential that is more appropriate to a heterogeneously composed, hybrid life form.[8] Now, making such narrow conceptions as well as potentials visible is of great importance for assessing the opportunities and risks of AI for democracy and privacy, as the concluding section of the contribution shall illustrate.

8 The fact that neither a critique of cybernetic expansion from within nor one based on a humanistic appeal to human exceptionalism can be successful is nicely illustrated by the problematizations of Norbert Wiener (1954), one of the founding fathers of cybernetics. Wiener fails to reconcile the linguistic registers so that the cybernetic one ultimately predominates, even if it comes with a warning about unfolding a momentum of its own.

C. Heterogeneous existence and AI in the hybrid life forms of democracy and privacy

Expanding the anthropological perspective on the digital transformation pursues the goal of analysing more comprehensively the resulting postdigital constellation of society with an eye to this transformation's diverse connections and interactions between sociality and digitality and their deep impact. This implies neither denying cybernetic realities nor abandoning the humanistic values of autonomy and self-determination. What is being refuted is merely academic and political cosmologies' quest for hegemony, as, for instance, in the case of cybernetics' spiritual universalism or the frantic clinging to and invoking of subject–object dichotomies, which are constantly undermined by practice. Behavioural feedback, supported by algorithms and appropriate to the situation, can be useful in many areas of everyday life just as autonomy and self-determination as key values of democratic societies continue to be well founded and to claim validity. However, both must be grasped as hybrid, composite life forms, and we must learn to take into account the heterogeneity of their constitutive parts. In this respect, the ontologies of analogism and naturalism fall short, and remedying one through the other leads us only deeper down the path into the aporias and self-misconceptions of (post-)modernity. The latter finds good fortune neither in the techno-scientific promises of digital self-optimization by means of AI and similar forms of computational reason nor in the quest for a heroic subject who establishes the digital society according to clear-cut preferences and plans, whether focused on market-liberal distribution or centred on the state. It is precisely such modes of control, either conceived as an abstract-anonymous system of rule or as personalized sovereignty, that nevertheless make their imprint on our conception of and the debates within digital society. And the more the cybernetic chains of operation gain relevance to the whole edifice—via extending their digital reach and testing them in practice, from optimized flows of traffic, through predictive policing and smart energy grids, to an ecological circular economy—the louder the call for channelling this expansion into responsible paths. Yet the democratic power to exert control has strongly diminished and must to some extent be content with moral appeals and legal amendments addressed at authoritative regimes or those in the private sector who work the levers of corporate control.

Such contradictory dynamics of the postdigital constellation pervade private life as well as democratic opinion and will formation (Lamla et al.

2022). The call for an individual capable of self-determination becomes ever louder in practice and is normatively presupposed the more the individual is gauged via data traces and probabilistically underpinned predictions of behavior. But to develop these abilities, this individual is dependent on the socio-technical infrastructures of self-exploration and mutual recognition via social media that it is supposed to rein in sovereignly (Lamla and Ochs 2019). A way out of this can only be found both at the individual and collective level when this hybridity of life forms is taken seriously and considered in a broader perspective. To this end, theories of plural modes of existence (Latour 2013) as well as the misconceived cosmologies of totemism and animism provide good analytical tools. Totemism, for instance, shows ways toward peaceful coexistence and organic solidarity among heterogeneous groups that have always already been constituted as hybrid—that is, whose identity is rooted in arrangements that are shaped by specific technical infrastructures, semantics, and objects. The conception of such a cosmos consisting of plural and heterogeneous social worlds relativizes the role, but also the burden of responsibility, of the individual person and can at the same time more realistically work toward negotiating value systems in an associative democracy insofar as the collectives in such a social arrangement can resort to methods of collective representation and the demonstration of mutual dependencies and interdependencies. However, such a democracy cannot be conceived as a uniform cybernetic informational space as such a conception would prematurely reduce its constitutive heterogeneity again. An intelligent assembly of heterogeneous collectives cannot rely on digital analogism's inside–outside differentiation, which labels as barbaric all that fails to conform to its informational logic, but must assume elements and also consider those life forms that find their postdigital identity by distancing themselves from the predominant conventions and cybernetic constraints of connectivity.

Such a plurality of social worlds, involving diverse conventions and socio-material practices, is also important to enable and provide a foundation for the development of critical competences that is constitutive for individual self-determination (cf. Lamla 2021). For, from a pragmatic theory perspective, critical competences surely do not develop from the private self-sufficiency of an atomistic mind but rather require encounters with competing conventions and justifications in the social practice of life (Boltanski and Thévenot 2006, pp. 235–236). It is not until situations emerge in which well-established routines of action and justification no

longer work and different languages and registers of evaluation vie for dominion instead that critical competences are pragmatically called for and are formed in order to mediate between them in ways that are self-determined and appropriate to the situation. Experiencing crises of this kind is essential for cultivating civil coexistence in the postdigital age, and such experiences should be enabled, and not inhibited, by the digital architecture of a democratic public sphere. Yet the structural logic of cybernetic technologies and AI applications fail to ensure this because they are geared toward the formation, support, and shielding of (everyday) routines.[9] AI and machine learning do not possess the abilities necessary for abductive and autonomous learning. Those abilities emerge only in hybrid constellations of life where heterogeneous experiences encounter one another and call for hypothetical mediation through new knowledge. AI can indeed contribute to this by (unintentionally?) unsettling the taken-for-granted, but it cannot in itself serve as a model for learning since experiencing a crisis and the autonomy of everyday life that can result from this experience only arises where algorithmic routines of problem-solving no longer work. Intelligence emerges where—in modification of Jean Piaget's (1953) theory of development—opportunities exist, in addition to repetitive assimilation to algorithmic schemata of the digital, for the practical accommodation of such schemata in everyday life, that is, opportunities for the redefinition and re-evaluation of such schemata in an expanded realm of association that holds cognitive potentials for the solution of structurally new problems. It is thus not AI that is intelligent but rather what creative thinking and action in heterogeneously constituted practices do with and make out of it.

9 Nassehi's (2019, p. 198) concept of technology confirms this: "Technology in this sense is […] a schema, one that is even more restricted: a fixed schema. The thrust of such an understanding is clear: Technology is separated from utensils and tools and instead associated with practices and chains of action. Such a broad notion of technology then conceives of human actions also as technology to the extent that they occur in a schematic fashion. In this sense, most of our everyday actions are indeed trapped in a kind of prereflexive repetitiousness, whereas intelligent phases, to put it somewhat pointedly, appear only as *lucida intervalla*—at least that is the consequence of this notion of technology." Problematic here is not the notion of technology itself but the last sentence because it assimilates a priori the conduct of everyday life to a cybernetic understanding of technology. This analogism, however, obscures the possibility that it might only be the historical expansion of—especially digital—technology that leads to such a one-sided routinization of everyday action and ideologically obstructs and distorts everyday action of a heterogeneous and intelligent kind that is capable of coming to terms with crises (Oevermann 1995).

This is where we see the importance of additional sources of unsettling and disrupting the given that originates from the ontological heterogeneity of hybrid life forms. Life forms enable access to an existential form of critique that extends beyond the critical interplay of plural conventions and orders of justification (Boltanski 2011, p. 107). They do so less at the level of the different collective forms that various social worlds or group identities take but rather via their heterogeneous compositions themselves. If we look at hybrid life forms from the angle of how they practically interweave different "modes of existence" (Latour 2013), we see, analytically, different and very heterogeneous realms of experience that can more or less come into their own, each in terms of its own existential and "felicity conditions," as Latour puts it, borrowing from speech act theory (ibid., p. 18). Interestingly enough, he calls the villain among the modes of existence in modernity the "double click" (ibid., p. 93), thus identifying a mode that is tightly intertwined with the role of digitality in society. This mode is problematic because it spans—yet again totalizing and analogizing—across all other modes of existence and suggests that they can be simply translated and (readily) made available digitally. Double click denotes a modern schema that neutralizes ontological heterogeneity. By contrast, an anthropological perspective on modernity exposes the peculiarities of different modes of existence, for instance, of the physical-material reproduction of beings, of scientific lecturing, the political assembly of collectives, the psychic metamorphosis of identities, the courting and bonding of passion, and so on. The objective of such a perspective is precisely not to confirm the systems-theoretical schema of functional differentiation, which is then set a priori as a rigid system of reference for comparison, but rather to develop, by means of an exploratory, successive understanding of the case and by comparing cases, a more accurate understanding of the diversity and heterogeneity of modernity, which can be critically directed against the rigid forms of differentiation underlying its institutionalization, in particular against institutional efforts to expand individual modes of existence, which are indeed typical of modernity.

A strength of animism is that it provides schemata for interpretation, experience, and action for the ontological heterogeneity of the world and for the realities of people's lives, schemata that help develop and cultivate symmetrical transitions, connections, and modes of relations between different modes of existence. They combine reciprocal recognition with sensitivity toward otherness. This involves, for example, experiencing and recognizing animals in their animal mode of existence by adopting a reciprocal stance

in approaching them. Attributing to them a soul and the status of a human-like subject is not at all to equate all that exists according to this criterion but rather involves a methodical sensitivity that is necessary for opening up to other modes of existence in encounters with them, to understand them and, as a result, to learn from such encounters, for instance, to learn how and where the animal mode of existence, the wild, also pervades one's own life (for an impressive account of this, see Martin 2021). In postdigital society, differences in ontological schemata and cosmologies are important, for example, when it comes to the question of how such a society intends and is able to adapt to ecological self-endangerment: Should this adaptation be by means of more technology and even more intelligent algorithms that analogize all acts of life and integrate them into a global circular economy or by learning, both privately and democratically, to appreciate the interdependence of heterogeneous beings and entities that co-constitute life in society, an interdependence whose relations must be reconfigured in the face of the crisis of modernity?

This is not about a simple either/or but rather raises questions concerning relations of dominance or primacy. In this respect, digital analogism—or the double click—structurally has difficulty being content in itself and imposing rules that could act as a stop mechanism upon its own mode of existence. Such an awareness of limits also remains problematic when the legitimacy of such bounds are derived, with humanistic arrogance, from the principles of abstract reason or seemingly universal morality. Instead, the experience of ontological uncertainty with regard to one's own, hybrid existence could be used as a source of critique and to mobilize new solutions for furnishing one's habitat. Yet this would require that this source of experience be granted space in postdigital society and definitely also a lead role in sounding out ontological heterogeneity. In this case, AI and digital technology would remain means among others, which, in view of their power to change the qualities of action and experience, would have to be equipped with institutional correctives. This means that balancing the benefits of connectivity against the losses in terms of resonance (Rosa 2019) would have to be assessed not only in the currency of the recursive stabilization of behavior or the recursive synchronization of cadence but rather in that of a hybrid life practice that, in learning new forms, principles, techniques, and schemata, becomes (and remains) aware of its crisis-prone, heterogeneous existence. This would require institutionally establishing a relation between AI and practice that moves the obdurate materiality and heterogeneity of postdigital life forms—for example, their manifestations of

physical exhaustion or the finite nature of their resources—to the centre of attention, not least in sociology. Were we to conceive of a weak AI in terms of an AI that is subordinate to the private exploration and collective re-assembly of the ontological heterogeneity of hybrid life forms and not one that, by positing a cybernetic cosmology, already precedes or is superordinate to them, much would be gained.

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