Necessary Entanglements: Reflections on the Role of a "Materialist Phenomenology" in Researching Deep Mediatization and Datafication

Andreas Hepp* [a]   Nick Couldry** [b]

a   ZeMKI – Centre for Media, Communication and Information Research, University of Bremen (Germany)
b   Department of Media and Communications, London School of Economics and Political Science (United Kingdom)

Abstract

This article unpacks the deep engagement of media and communication studies with questions of social construction and the material infrastructures on which media's role in social construction is based. For that reason, for communication scholars, there is no contradiction between constructivism and realism, and the notion of a materialist phenomenology seems necessary and unproblematic. We take materialist phenomenology further as a concept via the notion of entanglements, drawing on Karen Barad. Then we go on to explore two contemporary debates in media and communication studies which illustrate its broader commitment to understanding the materiality of social construction: first, the broad phenomenon of deep mediatization (Couldry & Hepp, 2016) whereby all aspects of social processes now take mediated forms, and second, the particular process of data colonialism (Couldry & Mejias, 2019) whereby life itself is increasingly the object of colonial appropriation in the form of extracted data.

Keywords: Social construction; materiality; entanglement; deep mediatization; data colonialism.

*   ✉ ahepp@uni-bremen.de

**   ✉ n.couldry@lse.ac.uk

1 Introduction

The idea of "social construction" and a preoccupation with the "materiality" of media and communication have been anything but contradictory for a long time. That is why the discussion between "constructivism" and "realism" in general, and "communicative constructivism" and "new realism" in particular, that frames this thematic Focus, has been tangential to the main themes of media and communication for quite some time.

One might ask, why then, does a contribution from the perspective of media and communications makes sense in this thematic Focus at all? From our point of view, there are two reasons, which also form the starting point of our argumentation: On the one hand, something can be learned from the specifics of media and communications that is of *general interest* for the discussion about (communicative) constructivism and (new) realism in the social sciences. Second, questions of "social" and "communicative construction" are *problematized in a new way* by recent developments in our media environment, neatly condensed by the terms "deep mediatization" and "datafication":[1] What does it mean for our theories and approaches when our social reality is not simply "created" by human practices, but when digital media and automated data processing develop their own agency alongside and through human agency? It is media and communications in particular that addressed these questions very early on — questions that now interest the social sciences and the humanities in their entirety.

Against this background — the specificity of media and communications on the one hand, and its early preoccupation with processes of mediatization and datafication on the other — we believe that an article like ours can contribute to the broader discussion in this thematic Focus. To support this assertion, we would like to address one central question: What can media and communications teach us about the re-emerging discussion around the "constructivist" and "realist" positions in social research? We approach this question from a limited perspective, namely the viewpoint we developed in our book, *The Mediated Construction of Reality* (Couldry & Hepp, 2016). However, we avoid confining ourselves to the concept of "materialist phenomenology" that we coined writing this book, but will continue to reflect on it in more broadly.

Our contribution is divided into three sections. In the following section, we reconstruct some of the basic positions on "construction" and "materiality" in media and communications and situate our own reflections within them. In the subsequent section, we will discuss the concept of "entanglement," which we want to deal with more assiduously, because it allows us to explore in greater depth the conceptual challenges of deep mediatization and datafication. This will be explained through the examples of data colonialism and communicative AI that reveal the intensification and extension of entanglement. This then leads us to a fourth section in which we want to draw some general conclusions for the discussion around our time-diagnostic understanding of societies.

2 Materialist Phenomenology

As already stated, explicit examinations of "constructivism" and "realism" in media and communications have been declining for years. One possible reason for this is that a kind of "quotid-

---

1. For the concept of "deep mediatization" see, among others, Couldry (2020a), Couldry & Hepp (2016), Hepp (2020), Hepp et al. (2018); for the concept of "datafication," Cheney-Lippold (2017), Flensburg & Lomborg (2021), Schäfer & van Es (2017), van Dijck (2014). More recently we reflected on the relation between both in this chapter: Couldry & Hepp (2022).

ian constructivism" is more prevalent in media and communication research than one might initially think. By "quotidian constructivism" we refer to an attitude, often not further reflected on by the researcher, that "media content" does not simply "portray" the world, but that communication with media is but one aspect of the construction of reality. We can find this "quotidian constructivism" in "classic" works as diverse as those of George Gerbner (1978), who, with his team, famously coined the "cultivation hypothesis," that is, the assumption that television viewing results in a different construction of reality. Yet, other classic studies such as *Policing the Crisis* (Hall et al., 1978) are concerned less with the question of whether "mugging" in Britain is "accurately portrayed" in the media, and more with the importance of the construction of "mugging" as a "moral panic" by mass media representations. These examples and many others (e.g., Ang, 1991; Brunsdon & Morley, 1978; Couldry, 2000; Keppler, 1994; Merten et al., 1994) treat media coverage as an aspect of the *construction of social reality* and break with the assumption of the portrayal of reality by media content and can be seen as the point of departure for any kind of appropriate media and communication research.

Parallel questions of media's materiality have also floated around media and communications for a long time now. An examination of the social construction of reality through mediated communication was hardly seen as anything but contradictory to an appreciation of the materiality of media. Perhaps one of the first attempts to adequately grasp this conclusion in the field is Roger Silverstone's (1994) "double articulation" of media. In essence, this says that "mediation" (Silverstone, 2005) by technology-based media must always be approached from a twofold perspective: First, a preoccupation with media as social institutions generating certain "contents" that are produced but also appropriated in a complex material process. Second, a preoccupation with media as "technologies" that also have a corresponding objecthood as receiving apparatuses, transmission towers, studios, and so on. The "double articulation" argument lifts the curtain on early perspectives that are still of interest today (Berker et al., 2006; Livingstone, 2007), such as the implications of the media's "design" (Mansell & Silverstone, 1998), a point of view particularly important for today's digital media and how they are "programmed" (Hepp, 2022).

It is worthwhile revisiting this debate which has persisted through the 1970s, 1980s, 1990s and the 2000s, because it shows us that a position which Georg Kneer (2009) has called "neutralism" was, and still is, widespread throughout media and communications. "Neutralism" refers to a type of American pragmatism which can be seen as existing in between an extreme version of "realism" and an "anti-realism" discussed mainly by postmodernist constructivist thinkers. If one follows authors such as Richard Rorty (1998) or Donald Davidson (2001), "realism" and "anti-realism" make the same mistake, albeit under different auspices: "While realism proceeds from the conception of a language-free reality, anti-realism suggests the misleading assumption of a reality-free language, i.e., of an ordering system that precedes any reality" (Kneer, 2009, p. 14). Both "dualistic" approaches, however, lead to a dead end, because it is precisely the relationalities of both that matters in scientific analysis. The binary opposition of realism and anti-realism is a "mistaken alternative [...] because it pretends that we can cite an ultimate ground, such as 'the world out there' (realism) or 'our schemata' (anti-realism), as the independent basis of our knowledge" (Kneer, 2009, p. 17). "Neutralism," then, avoids this trap by beginning with the relationalities between "the world out there" and "our schemata" — an avoidance. Kneer also sees it in Peter Berger and Thomas Luckmann's (1966) emphasis on the role of institutions and objectifications in the construction of social reality. A similar "neutralism," however, can also be seen in systems theory, which may help resolve the problem of why authors like Niklas Luhmann cannot be easily assigned to either the world of realism

or that of anti-realism (Scholl, 2012). Even in recent publications arguing for a "critical realist ontology" of mediatization research (Ansaldo, 2022), "neutralism" seems to be the common ground.

It is obvious that this "quotidian constructivism" diverged from sociology, especially the sociology of knowledge. Nevertheless, there are other connections across disciplinary boundaries when it comes to questions of a mediated construction of reality. Within the sociology of knowledge, the idea of the "social construction of reality" has been further developed into a "communicative construction of reality" which has led, in some way, to a rapprochement between sociology and media and communications. Keller et al. (2013), for example, explicitly discuss communicative constructivism as a "continuation of social constructivism" that comfortably addresses the approaches of discourse analysis, ethnography, ethnomethodology, hermeneutics, and interaction analysis. Speaking of *communicative* construction conceptually accomplishes this shift of focus.

If one delves deeper into the relevant publications, it becomes apparent that with such a focal shift concepts of media and communications have been addressed with increasing enthusiasm. Knoblauch (2013), for example, argues that we should connect communicative constructivism with mediatization research, emphasizing that "[t]he study of mediatization is [...] the study of the changing structure of communicative action" (p. 310). Later, he also deals with questions of the materiality of media and digital infrastructures, whereby his decisive argument is that infrastructures are to be understood best as a "materialized part of the social structure" (Knoblauch, 2020, p. 249). More influential voices from the communicative constructivism camp appear to have moved deeper into media and communications approaches, especially those specific to mediatization research (see for example the chapters in 2022).

These convergences and mutual inspirations were, and remain, incredibly productive for both media and communications and sociology. However, the argument we have associated with the call for a "materialist phenomenology" goes beyond questions of communicative construction and relativises them at the same time, namely the argument to deal not only with the communicative but also the *datafied* construction of reality. Or, put differently, the challenge for any analysis of today's social construction is that it has to *start out* from the fact not just of digital media, but also of the new data-driven infrastructures and communications on which today's social interfaces increasingly rely. It means understanding how the social is constructed in an age of *deep* mediatization, when the very elements and building-blocks from which even our *sense* of belonging to a social world is constructed become grounded in technologically based processes of mediation. As a result, the ways in which we phenomenologically make sense of the world become necessarily related to the constraints, power-relations, and material complexities that make up the communicative features of digital media and their infrastructures.

The crucial point is that communication in today's societies occurs, to a very large extent, through *digital media and their infrastructures*, a result of which is why every act of communication is already linked to processes of data generation and automated data processing. In addition to the *mediated* character of communication, it is therefore always necessary to take into account the *datafied* character of communication at the same time. And this is exactly what makes a *materialistic phenomenology* necessary.

The word *materialist* not only echoes the double articulation of media quoted above. It also echoes an approach called "cultural materialism," as referred to by Raymond Williams (1980). Williams' main point was to include the *material* as well as the *symbolic* aspects of everyday practices when analysing culture as a "whole way of life." Williams (1990) himself demonstrated the importance of this point of departure when he discussed television as both

(material) technology and (symbolic) cultural form. It is not a matter of positioning the material against the symbolic, but of grasping both in their interrelatedness, as part of a proper analysis of how media and communications contribute to the construction of the social world. We need, in other words, to consider media both as technologies (including infrastructures) *and* as processes of sense-making, if we want to understand how today's social worlds come into being. It is by using the term "materiality" that we attempt to emphasise this full complexity.

At the same time, we need a *phenomenology* of the social world because whatever its appearance of complexity, even of opacity, the social world remains something accessible to interpretation and understanding by human actors, a structure built up, in part, *through* those interpretations and understandings. Indeed, it must remain so if what we call "the social world" is to be liveable. Weber's (1947) definition of sociology as "the *interpretative* understanding of social action" (p. 88) has much more than definitional force, since social life, as Paul Ricoeur (1980) wrote, has its "very foundation" in "substituting signs for things" (p. 219): that is, signs that embody interpretations. Phenomenology, however, goes a step further in taking seriously the world as it appears for interpretation to *particular situated* social actors, from *their* point of view within wider relations of interdependence. There is an implicitly humanist dimension to phenomenology by which we fully stand.[2] We suggest that, even where an analysis is based on secondary literature, it should be developed from the standpoint of a *possible* phenomenology that is oriented toward empirical research.

A fully *materialist* phenomenology is able to bypass some standard and important objections to what has been associated with the "classic" tradition of social phenomenology. Take, for example, Michel Foucault's (1970) firm rejection of phenomenology for giving "absolute priority to the observing subject" (p. xiv), or Pierre Bourdieu's (1991) objection to symbolic interactionism for "reducing relations of power to relations of communication" (p. 167). With a materialist phenomenology we hope to commit neither of these sins. If the social world is built up, in part, of interpretations and communications, as phenomenology insists, our account of that world must look closely at the material infrastructures *through which, and on the basis of which*, communications take place. Phenomenology cannot *only* focus on how the world appears for interpretation by particular social actors.[3] What is needed instead is a full-blown rethinking of the social construction of everyday reality, in all its interconnectedness, for the digital age. That means reoccupying the space associated with Berger & Luckmann's (1966) well-known book, *The Social Construction of Reality*, published exactly half a century ago and one of the most read sociology texts of the 1960s and 1970s.

There is, incidentally, still much to admire about Berger & Luckmann's (1966) book, developing as it did the mid-twentieth century's tradition of phenomenological sociology into a satisfying version of the sociology of knowledge. Yet, this book seems very distant from us now. A basic reason is that Berger and Luckmann say almost nothing about technologically based media of communication. Take for example this rare passage where media are mentioned obliquely in a discussion of the lifeworld's dialectic of the near and far:

> The reality of everyday life is organized around the "here" of my body and the

---

2.   Compare to humanism in research, for example, the late British philosopher Bernard Williams (2006).

3.   Arguably it never did, which is why Ian Hacking (1999) spares from his polemic against social constructionism Berger & Luckmann's (1966) book in whose wake our book (Couldry & Hepp, 2016), in a sense, follows: paradoxically, given today's much higher standing of Latour's work over Berger and Luckmann's, it is Latour's early sociology of science that comes in for heavy criticism from Hacking for its social constructionism! This strong line of anti-Latourian critique has recently been powerfully extended by Andreas Malm (2020).

"now" of my present [...] Typically my interest in the far zones is less intense and certainly less urgent. I am intensely interested in the cluster of objects involved in my daily occupation [...] I may also be interested in what goes on at Cape Kennedy or in outer space, but this interest is a matter of private, "leisure-time" choice rather than an urgent matter of my everyday life (Berger & Luckmann, 1966, p. 36).

Media feature in passing here, but only as the window onto a distant world of fascination that helps us while away our free time. Berger and Luckmann do not even consider the importance of media-based narratives for shaping our sense of everyday reality. Was this plausible even in the 1960s? Probably not, and it had long since ceased to be plausible by the 1990s when we both became researchers, after which the embedding of media in the fabric of daily life has intensified considerably (Deuze, 2012). Not surprisingly, therefore, Berger & Luckmann's work has not had much influence on the international cross-disciplinary field of media and communications research.[4]

3   Entanglements Intensified and Extended

The approach of materialistic phenomenology, briefly outlined above, thus extends our understanding of media's "double articulation" (Silverstone, 1994) in the analysis in ways appropriate to our current times of deep mediatization and datafication. This cannot, of course, be a matter of setting a "meaning dimension" against the "materiality" of media, but, rather, of seeing both in their relationality, any more than the case for Silverstone's original concept of "double articulation."

A concept which seems to us to be particularly helpful for this is "entanglement," a term that goes back above all to the work of Karen Barad. Especially in the discussion of constructivism and realism, such a conceptual link must look like a change of sides or a mixture of incompatible approaches, since Barad characterises her own account as that of an "agentic realism," with which she wants to abolish the contradiction between realism and social constructivism. In essence, she is concerned with the idea that "[r]eality is not composed of things-in-themselves or things-behind-phenomena, but things-in-phenomena" (Barad, 1996, p. 176). Even if there is a tendency to situate her work differently (Kneer, 2009), we see in Barad's broader arguments a specific "neutralism" that attempts to argue beyond a simple binary of nature vs. culture and directs the view to relationalities from the outset. And it is precisely for this reason that the concept of "entanglements" seems so helpful to us.

"Entanglement" is not simply a metaphor for the fact that things hang together, but an analytical concept. As Scott & Orlikowski (2014) argue, "the entanglement of matter and meaning is produced in practice within specific phenomena" (p. 881). As they go on to argue, the concept of entanglement challenges the notion of narrowly exclusive categories such as "subject" and "object," "human" and "non-human" or — as we would argue — "sense-making" and the "materiality" of media, and emphasises that their differences are constituted in their relationality:

> To be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent, self-contained existence. Existence is not an individual affair. Individuals do not pre-exist their interactions; rather,

---

4.   For a rare and preliminary exploration, see Adoni & Mane (1984). In Germany, however, their influence was much more far-reaching (e.g., Keppler, 1994; Keller et al., 2013; Hepp et al., 2017).

individuals emerge through and as part of their entangled intra-relating (Barad, 2007, p. ix).

Understood in this way, the concept of entanglement is associated with a certain approach to materiality that strongly emphasises its *processual* and *relational* constitution, precisely in contrast to concepts of actor-network theory that emphasise the permanence of society in matter (e.g., Latour, 1991). That said, Barad's (2007) work, at least as we read it, involves no naïve reductionism. The very concept (and metaphor) of entanglement, however, makes no sense without attributing some ontological specificity to the various things, or types of things, that are being entangled, and so becoming ever more closely interwoven.

Although developed independently, Barad's framework relates closely to our fundamental position of a materialist phenomenology. Or, to put this more concretely, both approaches explore aspects and implications of the sort of social and economic *order* (Elias, 1978) that emerges when the very elements from which social life is constructed themselves incorporate the dynamics of media technologies and institutions. The result is certainly a fresh perspective for the sociology of communication and knowledge. But, at a deeper level, it is continuous, as just noted, with sometimes neglected figures in historical sociology like Norbert Elias. It is also much more continuous with a century of European and North American philosophy than it has become fashionable to acknowledge.

We noted at the start of this section that we interpret Barad not as a radical new direction, but as a helpful amplifier of a key strand that was already present in philosophical debates, namely neutralism between (extreme) realism and anti-realism. Indeed, to extend this point, it is, to say the least, an open question whether Barad's work is a major philosophical advance, or rather, just the *last step* in a vast philosophical detour around and finally *back* to the work of mid-twentieth century philosophy and the profound turn towards an appreciation of the *materiality of practice* that we find in Heidegger (2006) and late Wittgenstein (1953),[5] a detour that has been constituted by the apparently radical "discoveries" of poststructuralism, postmodernism, and Actor-Network Theory.

It is in that more cautious spirit, therefore, that we take up the notion of entanglement that Barad developed, taken out of the context of quantum physics, as a way of highlighting the contribution of materialist phenomenology in contemporary social science. As evidence for this. we turn in more detail to unpacking the theoretical/empirical perspectives of "data colonialism" and "communicative AI." While data colonialism shows us something we want to call "intensified entanglement," communicative AI introduces us to "extended entanglement."

3.1 Data Colonialism: Intensified Entanglement

The concept of data colonialism is the joint work of one of us and the Mexican-US scholar Ulises Ali Mejías (Couldry & Mejías, 2019a; Couldry & Mejías, 2019b). Although it is not originally formulated in terms of entanglement, or Barad's work on agential realism, it is intriguing to view it from this direction. That is because it attempts to formulate a wider and deeper perspective on what all today's myriad processes of mediatization and datafication add up to, both as a contemporary social phenomenon and as a historical development. The proposal at the heart of the data colonialism thesis is that the conversion of human life — and much

---

5. If Heidegger (2006) and late Wittgenstein (1953) seem far apart, it is worth noting that the first (and favourable) review of *Sein und Zeit* (Heidegger, 2006) in English was written by Gilbert Ryle who, in his book *The Concept of Mind* (1949), was the key populariser of the approach to practice of the late Wittgenstein.

of non-human life and countless machine processes too — *into data* is not the unproblematic expansion of information and knowledge that its corporate and governmental proponents and beneficiaries claim it to be, but, rather, is one of the most far-reaching attempts to reconfigure power relations in human history.

We can get at the sheer scale of this new data-driven power grab (or *Landnahme*, in the German term: Rosa et al., 2015) precisely from the perspective of entanglement. For today, almost every institutional and interactional process out of which we understand as society is being datafied, that is, enmeshed in elaborate practices of data collection and analysis and even more elaborate processes of data-driven evaluation. A short list of increasingly datafied sectors of contemporary societies would include: agriculture, education, government, health, leisure, logistics, tourism and work of all sorts. As a result, in each domain, but with specific conditions and dynamics, the configuration of who does what to whom, for what purposes, and with what authority and power, is being renegotiated. Information itself and its flows are being reconfigured, which necessarily changes the constitution of power relations (Zuboff, 1988), resulting in new articulations of the entanglement of everyday life in data relations.

The "datafication of education" (Jarke & Breiter, 2019) provides a particularly clear example of this, even if it is one that is not yet sufficiently appreciated. The very nature of schooling — what happens in the classroom, what expertise is valued in the teacher, the role of the parent, and the agency and privacy of the educated child — are all being transformed by external institutions (EdTech corporations, often supported and sponsored by governments), that extract data continuously not just about isolated processes or assignments, but about every action in school, and then process it at a distance (e.g., Williamson, 2017; Mascheroni & Siibak, 2022). The management and accountability of schools is, in turn, being transformed. The consequences for the rights and privacy of children and young adults are potentially alarming (Hooper et al., 2022). But those consequences all derive from an intensifying entanglement of the actions of all actors in the education process in the far-flung nets of data-extracting technologies.

The broader thesis of data colonialism is that these multiple transformations can only be fully grasped if they are seen not just through the lens of developing capitalism (in particular, surveillance capitalism, as in Zuboff, 2019), but also through the larger historical lens of colonialism. At the core of colonialism, when it began roughly five centuries ago, was brutal violence and racialized conflict for which it is justly remembered, but also something else: a core act of appropriation which constituted the world-historical act by certain colonizing nations of claiming for themselves and their exclusive benefit the resources of the whole world, or at least those parts of it on which they could lay their hands. This historic *Landnahme* is the deep precedent, Couldry and Mejias argue, for a new digital and data-driven *Landnahme* today, whereby human life itself, in its totality and not just in particular exploited formations, becomes directly accessible to corporate and governmental powers of value extraction. We can understand this as a particular moment of intensified entanglement: as noted earlier, human beings are becoming ever more entangled in what Couldry and Mejias (2019b) call "data relations." The result, astonishingly, is that particular institutions, dominated by some very large corporations, are able to reconstruct social life as a whole, so that it generates a direct stream of data for their benefit.

The data colonialism thesis seeks to grasp this transformation through a double theory of both colonialism and capitalism, sharing a particular pattern of intensified entanglement. It proposes both a new stage of colonialism — comprised of the massive expansion of datafication across human life and more — and a crucial development of capitalism made possible *through* this expansion, which may, in due course, generate a new mode of production within

capitalism. Data extraction, from this perspective, does not just work as an external force *on* human social life; it in effect transforms it from within, through the work of digital platforms that are configured precisely around the production and extraction of data "to produce 'the social' for capital" (Couldry & Mejías, 2019b, p. 26). No greater entanglement of human life with the forces of capital can be imagined, when what *counts as* action, interaction, and their absence, is itself, from the start, already captured as data *for* capital. Only the historical frame of colonialism's generation of, and long continuing entanglement with, capitalism can grasp this transformation of the very conditions of human life and social order.

3.2   Communicative AI: Extended Entanglement

Communicative AI including, but not limited to, artificial companions, chat bots, social bots and auto-journalistic work bots, illustrate the necessity of approaching the conceptualisation of media in terms of entanglements. Guzman and Seth Lewis (2020), who originally coined the term, define communicative AI as "technologies designed to carry out specific tasks within the communication processes that were formerly associated with humans" (p. 3), a definition that is shared by notable researcher, such as Stenbom et al., (2021), Dehnert & Mongeau (2022), and Schäfer & Wessler (2020).

These kinds of definitions emphasise the communicative dimension of AI systems but remain "generic" in that they outline a particular genre of media and communication technologies without analytically capturing both their commonality and distinction from others. For example, Guzman and Lewis' (2020) definition raises the question of whether all automation in the communication process — for example, editing videos or automated translations — should also be called communicative AI. However, we should keep in mind that the dynamics of communicative AI go far beyond the interaction setting with "automated media" (Andrejevic, 2020) in that they aim at societal communication: social media bots, for example, do not simply serve to establish interaction relations between individual humans and machines, but, among other things, to generate "trending topics" and thus attention from journalists via bot networks — which, in turn, influences their coverage in legacy media (Fürst, 2017; Muhle, 2022). We can speak here of an extended entanglement. This extended entanglement perpetuates on the multidimensionality of communicative AI (Hepp & Loosen, 2022; Hepp et al., 2022): communicative AI is based on various forms of automation the purpose of which is communication, is embedded in digital infrastructures, and is constituted in its entanglement with human practices — not simply in the human-machine interaction itself, but across multidimensional and extended "chains of interdependence" (Elias, 1978).

The extended entanglement directs us toward Esposito's (2017) suggestion that, in contrast to the ever-pervading Turing Test discourse, artificial communication's central feature is not "that the machine is able to think but that it is able to communicate" (p. 250). The decisive factor is, therefore, not a discussion into the intelligence of such systems, but their success in communicating with people and, in turn, which social processes take place (Bareis & Katzenbach, 2021; Natale, 2021). However, to a further degree, this is not simply interaction between an individual human and the machine, but societal communication in the sense that there are wider "chains of interdependencies," including those based on prior data and communication practices. This relates closely to the embedding of communicative AI in technical infrastructures, highlighting the fact that none of these systems could work without being part of the internet's "deep structures" that contain and carry ever-flowing streams of data. Crawford and Joler (2018) have attempted to visualise this information supply chain using Amazon's *Alexa*

as their case study (for a more in-depth discussion, see Crawford, 2021). We can see similar processes play out in other implementations of communicative AI, such as social bots or chat bots, which cannot work beyond the platforms they are a part of (Gehl & Bakardjieva, 2016).

Overall, such forms of extended entanglement make apparent two fundamental levels of entanglement that are intimately related: entanglement can be approached at the individual as well as at the collective level. An element of entanglement at the *individual level* arises solely from the fact that the agency of these systems only unfolds in the action(s) of a human being (a query posed to *Siri* or *Alexa*, for example). These machines do not communicate "on their own" but within a framework set by human practices. And this is where the intensified entanglement of data colonialism in people's everyday lives takes hold. Besides that, there is the extended entanglement at the *collective level*. But this encompasses more than the dynamics as triggered by interaction with communicative AI in societal communication. Again, we see datafication at work as one aspect of deep mediatization: what characterises many of the systems of communicative AI is not that a human would interact with the material vis-à-vis a machine, but with systems that generate their communication based on a variety of human digital traces. Siri's responses, or Alexa's, for example, are based on gigantic repositories of online data generated by humans; automated translation occurs not on the basis of semantic, syntactic, and pragmatic "decoding" of existing text, but through the processing of correlations based on accumulated existing human translations. The same can be said for CBT-3 and ChatGBT. What constitutes systems of communicative AI as such is much more closely entangled with collective human practice than might appear at first glance. We are dealing here with an entanglement with a multiplicity of collective practices.

Both examples — data colonialism and communicative AI — could and should be considered further if we want to arrive at an appropriate analysis of their role in today's social construction of reality and its profoundly material evolution. However, this would go beyond the scope of this article. Nevertheless, we hope that these two examples make apparent how an appreciation of the new forms of entanglement to which our relations with data and AI commit us helps to extend further the "materialist phenomenology" we have outlined in concrete terms. We notice an intensification and extension of entanglement with digital media and their infrastructures that is characteristic of deep mediatization. And, as the two examples show, intensification and extension are closely interwoven, since communicative AI refers to the engagement of corporations in data colonialism.

The point is to grasp how the materiality of digital media and infrastructures is intimately interwoven with meaning-making human practices. A critical analysis presupposes that we are able to grasp precisely this evolving interconnectedness. And this is where the concept of entanglement — developed here for media and communication research and freed from its original natural-scientific context — seems to be an appropriate tool from our point of view.

4   Conclusion: Deeply Mediatized Societies

So far in this article, we have made a broad set of arguments. Our starting point was the juxtaposition of (communicative) "constructivism" and (new) "realism" set by this thematic issue, into which, from our point of view, our priorities in developing the concept of the "mediated construction of reality" do not fit seamlessly. This is due — as we have tried to show — to several reasons. On the one hand, these are related to the history of media and communications research, in which a "quotidian constructivism" became dominant early on, based in intense interest in the materiality of media. On the other hand, they are also related to cur-

rent issues, namely the contemporary construction of reality with and through digital media and infrastructures, and the resulting challenges of addressing the ontological implications of the dynamics of automated data processing. This requires us to build different concepts from those available, for example, in the sociology of knowledge.

From our point of view, these arguments also have far-reaching conclusions for a "diagnosis" of the current development of society. If one follows communicative constructivism, and Hubert Knoblauch in particular, the decisive term for such a "diagnosis" is that of the "communication society." In his own words, Knoblauch (2020) states, "[w]e use the phrase communication society because these social changes cannot be understood without what we have described as the mediatization of communicative action." He continues, "The more recent forms of mediatization […] demonstrate that communication contributes to material economic production and creates social structures" (p. 234).

Fundamentally, as our examples of data colonialism and communicative AI have also shown, we agree with his assertions. We can barely grasp the dynamics and developments of contemporary societies without focusing on the role of digital media and their infrastructures. But we should demonstrate caution, especially as scholars of media and communications, in centring everything on communication, as the time-diagnostic concept of the "communication society" attempts to do. This is not only borne by the general experience with media and communication research, which from the perspective of a "non-media centric approach" has repeatedly taught us not to generally assume media-mediated communication as decisive for all social changes, but to question more openly *when* this has *which* relevance for *what* kind of changes (Couldry, 2004; Morley, 2009; Hepp, 2010). Our argument is also analytically borne: either one understands — as Luhmann (1997) did — communication as constitutive to any dimension of society (emphasizing, in our view, what we have called the meaning dimension of material phenomenology). From this point of view, however, *any* human society is a "communication society" because it cannot exist apart from communication, and the term loses its time-diagnostic value. Or one focuses — as is suggested in the Knoblauch quote above — on recent changes to communication. In this case, however, the continuous, increasingly automated generation of data, the automation of communication, and the social processes based on it have become an integral part of the social construction of societies. So, it is no longer simply about communication, but about its new interweaving with data processing and an increasingly close infiltration of all of this into our everyday practices. This datafication (see the example of data colonialism) and the automation of communication based on it (see the example of communicative AI) are, from our point of view, the reason why we have entered a new stage of mediatization which we prefer to call, because of the intensified and extended entanglement of human practices and material technologies, *deep mediatization*. For this reason, we would, *time-diagnostically* speaking, always refer to a variety of distinct, *deeply mediatized societies*.

This all has two consequences for the general discussion of "constructivism" and "realism." First, from our point of view, there are many arguments in favour of the position of "neutralism" outlined above, which tries to neither fall into the trap of extreme "realism" nor into the trap of constructivist "anti-realism." If one takes seriously the original ideas of Berger and Luckmann's (1966) *Social Construction of Reality*, a concern with social processes of construction is not simply about abstract ontological questions, but about concrete and historical analyses of processes of construction, which are always also based in underlying infrastructures of the material world. Simple dualisms hardly help at this point, especially if we want to analyse the complexities of deeply mediatized societies.

As a consequence, we should be aware that ongoing deep mediatization is accompanied by a comprehensive change in how social reality is constituted and we have to discuss openly whether the "classical toolbox" of social constructivism is sufficient. From our point of view — and this was for us the starting point of the book *The Mediated Construction of Reality* (2016) — we would answer this question with a resounding "no." To go forward, we need concepts beyond those of Berger and Luckmann. We are also not sure whether the formal step from "social constructivism" into "communicative constructivism" is in itself sufficient to articulate the additional tools we need. At any rate, it can only be so if the latter also develops appropriate terms to capture processes of automated data processing as a partial aspect of the construction of reality. As one of many concepts, which are important for this kind of theory development, we have introduced that of entanglement and, on that basis, we have taken a closer look at our own more recent work on data colonialism and communicative AI as a demonstration of intensified and extended entanglement. However, as we live in the midst of the ongoing transformations of deep mediatization and datafication, further concepts will no doubt arise.

In our view, the focus should therefore be on analysing the social processes that surround us all in a critical and methodologically appropriate way — and for this purpose, an appropriate form of theory development is always necessary as well (Hepp, 2017; Kelle, 2019). It is important that such theory avoids the sort of philosophical grandstanding that has, for example, characterized some of the work in Actor-Network Theory (Couldry, 2020b). The quality of theory development is measured by the extent to which it provides us with tools for critically questioning the material transformations we all struggle with in our everyday lives. Our debates in scientific theory must always be set against this exacting measure.

References

Adoni, H., & Mane, A. (1984). Media and the Social Construction of Reality. *Communication Research*, *11*(3), 323–340. https://doi.org/10.1177/009365084011003001

Andrejevic, M. (2020). *Automated Media*. London: Routledge.

Ang, I. (1991). *Disperately Seeking the Audience*. London/New York, NY: Routledge.

Ansaldo, S. (2022). Mediatization Research and Causality: Toward a Critical Realist Ontology. *International Journal of Communication*, *16*, 4008–4028. https://ijoc.org/index.php/ijoc/article/viewFile/18695/3867

Barad, K. (1996). Meeting the Universe Halfway: Realism and Social Constructivism without Contradiction. In L.H. Nelson & J. Nelson (Eds.), *Feminism, Science, and the Philosophy of Science* (pp. 161–194). Dordrecht: Springer. https://doi.org/10.1007/978-94-009-1742-2_9

Barad, K. (2007). *Meeting the University Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.

Bareis, J., & Katzenbach, C. (2021). Talking AI into Being: The Narratives and Imaginaries of National AI Strategies and Their Performative Politics. *Science, Technology & Human Values*, *47*(5), 855–881. https://doi.org/10.1177/01622439211030007

Berger, P.L., & Luckmann, T. (1966). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. London: Penguin.

Berker, T., Hartmann, M., Punie, Y., & Ward, K. (Eds.). (2006). *Domestication of Media and Technology*. London: Open University Press.

Bourdieu, P. (1991). *Language and Symbolic Power* (G. Raymond, Trans.). Cambridge: Polity. (Original work published 1982).

Brunsdon, C., & Morley, D. (1978). *Everyday Television: Nationwide*. London: BFI.

Cheney-Lippold, J. (2017). *We Are Data. Algorithms and the Making of Our Digital Selves*. New York, NY: New York University Press.

Couldry, N. (Ed.). (2000). *Inside Culture. Re-Imagining the Method of Cultural Studies*. London: Sage.

Couldry, N. (2004). Theorising Media as Practice. *Social Semiotics*, *14*(2), 115–132. https://doi.org/10.1080/1035033042000238295

Couldry, N. (2020a). Deep Mediatization: Media Institutions' Changing Relations to the Social. In L.A. Lievrouw & B.D. Loader (Eds.), *Routledge Handbook of Digital Media and Communication*. New York, NY: Routledge.

Couldry, N. (2020b). Recovering Critique in an Age of Datafication. *New Media & Society*, *22*(7), 1135–1151. https://doi.org/10.1177/1461444820912536

Couldry, N., & Hepp, A. (2016). *The Mediated Construction of Reality*. Cambridge: Polity.

Couldry, N., & Hepp, A. (2022). Media and the Social Construction of Reality. In D.A. Rohlinger & S. Sobieraj (Eds.), *Oxford Handbook of Sociology and Digital Media* (pp. 27–39). Cambridge: Oxford University Press. https://doi.org/10.1177/009365084011003001

Couldry, N., & Mejías, U.A. (2019a). Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject. *Television & New Media*, *20*(4), 336–349. https://doi.org/10.1177/1527476418796632

Couldry, N., & Mejías, U.A. (2019b). *The Costs of Connection. How Data Is Colonizing Human Life and Appropriating It for Capitalism*. Stanford, CA: Stanford University Press.

Crawford, K. (2021). *The Atlas of AI*. New Haven, CT: Yale University Press.

Crawford, K., & Joler, V. (2018). Anatomy of an AI System. The Amazon Echo as an Anatomical Map of Human Labor, Data and Planetary Resources. https://anatomyof.ai

Davidson, D. (2001). *Subjective, Intersubjective, Objective*. Cambridge: Oxford University Press.

Dehnert, M., & Mongeau, P.A. (2022). Persuasion in the Age of Artificial Intelligence (AI): Theories and Complications of AI-based Persuasion. *Human Communication Research*, *48*(3), 386–403. https://doi.org/10.1093/hcr/hqac006

Deuze, M. (2012). *Media Life*. Cambridge: Polity.

Elias, N. (1978). *What Is Sociology?* London: Hutchinson.

Esposito, E. (2017). Artificial Communication? The Production of Contingency by Algorithms. *Zeitschrift für Soziologie*, *46*(4), 249–265. https://doi.org/10.1515/zfsoz-2017-1014

Flensburg, S., & Lomborg, S. (2021). Datafication Research: Mapping the Field for a Future Agenda. *New Media & Society*, *25*(6), 1451–1469. https://doi.org/10.1177/14614448211046616

Foucault, M. (1970). *The Order of Things: An Archaeology of the Human Science*. New York, NY: Pantheon. (Original work published 1966).

Fürst, S. (2017). Öffentlichkeitsresonanz als Nachrichtenfaktor – Zum Wandel der Nachrichtenselektion. *MedienJournal*, *37*(2), 4–15. https://doi.org/10.24989/medienjournal.v37i2.122

Gehl, R.W., & Bakardjieva, M. (Eds.). (2016). *Socialbots and Their Friends: Digital Media and the Automation of Sociality*. London: Routledge.

Gerbner, G. (1978). Cultural Indicators: TV Violence Profile No. 9. *Journal of Communication*, *28*(3), 176–207. https://doi.org/10.1111/j.1460-2466.1978.tb01646.x

Guzman, A.L., & Lewis, S.C. (2020). Artificial Intelligence and Communication: A Human-Machine Communication Research Agenda. *New Media & Society*, *22*(1), 70–86. https://doi.org/10.1177/1461444819858691

Hacking, I. (1999). *The Social Construction of What?* Cambridge, MA: Harvard University Press.

Hall, S., Critcher, C., Jefferson, T., Clarke, J., & Roberts, B. (1978). *Policing the Crisis. Mugging, the State, and Law and Order*. London: Macmillan.

Heidegger, M. (2006). *Sein und Zeit* (19th ed.). Niemeyer: Tübingen. (Original work published 1927).

Hepp, A. (2010). Researching "Mediatized Worlds": Non-media-centric Media and Communication Research as a Challenge. In N. Carpentier, I. Tomanic Trivundza, P. Pruulmann-Vengerfeldt, E. Sundin, T. Olsson, R. Kilborn, & B. Cammaerts (Eds.), *Media and Communication Studies. Interventions and Intersections* (pp. 37–48). Tartu: Tartu University Press. https://doi.org/10.1057/9781137300355_1

Hepp, A. (2017). Theory and Empirically Based Theory Development. In J. Matthes (Ed.), *International Encyclopedia of Communication Research Methods*. Malden: Wiley-Blackwell. https://doi.org/10.1002/9781118901731.iecrm0251

Hepp, A. (2020). *Deep Mediatization*. London: Routledge.

Hepp, A. (2022). Agency, Social Relations and Order: Media Sociology's Shift into the Digital. *Communications. The European Journal of Communication Research*, *47*(3), 470–493. https://doi.org/10.1515/commun-2020-0079

Hepp, A., Breiter, A., & Hasebrink, U. (Eds.). (2018). *Communicative Figurations: Transforming Communications in Times of Deep Mediatization*. London: Palgrave Macmillan.

Hepp, A., & Loosen, W. (2022). The Interdisciplinarity of HMC: Rethinking Communication, Media and Agency. In A.L. Guzman, R. McEwen, & S. Jones (Eds.), *The Sage Handbook of Human-Machine Communication*. London: Sage. https://doi.org/10.4135/9781529782783.n4

Hepp, A., Loosen, W., Dreyer, S., Jarke, J., Kannengießer, S., Katzenbach, C., & Schulz, W. (2022). Von der Mensch-Maschine-Interaktion zur kommunikativen KI. Automatisierung von Kommunikation als Gegenstand der Kommunikations- und Medienforschung. *Publizistik*, *67*(4), 449–474. https://doi.org/10.1007/s11616-022-00758-4

Hepp, A., Loosen, W., Hasebrink, U., & Reichertz, J. (2017). Konstruktivismus in der Kommunikationswissenschaft. Über die Notwendigkeit einer (erneuten) Debatte. *Medien & Kommunikationswissenschaft*, *65*(2), 181–206. https://doi.org/10.5771/1615-634X-2017-2-181

Hooper, L., Livingstone, S., & Pothong, K. (2022). Problems with Data Governance in UK Schools: The Cases of Google Classroom and ClassDojo. *Digital Futures Commission, 5Rights Foundation*. https://digitalfuturescommission.org.uk/wp-content/uploads/2022/08/Problems-with-data-governance-in-UK-schools.pdf

Jarke, J., & Breiter, A. (2019). The Datafication of Education. *Learning, Media and Technology*, *44*(1), 1–6. https://doi.org/10.1080/17439884.2019.1573833

Kelle, U. (2019). The Status of Theories and Models in Grounded Theory. In A. Bryant & K. Charmaz (Eds.), *The Sage Handbook of Current Developments in Grounded Theory* (pp. 68–88). London: Sage. https://doi.org/10.4135/9781526485656

Keller, R., Knoblauch, H., & Reichertz, J. (Eds.). (2013). *Kommunikativer Konstruktivismus. Theoretische und empirische Konturen eines neuen wissenssoziologischen Ansatzes*. Wiesbaden: VS.

Keppler, A. (1994). *Wirklicher als die Wirklichkeit? Das neue Realitätsprinzip der Fernsehunterhaltung*. Frankfurt am Main: Fischer.

Kneer, G. (2009). Jenseits von Realismus und Antirealismus. Eine Verteidigung des Sozialkonstruktivismus gegenüber seinen postkonstruktivistischen Kritikern/Beyond Realism and Anti-Realism: A Defense of Social Constructivism Against Its Post-Constructivist Critics. *Zeitschrift für Soziologie*, *38*(1), 5–25. https://doi.org/10.1515/zfsoz-2009-0101

Knoblauch, H. (2013). Communicative Constructivism and Mediatization. *Communication Theory*, *23*(3), 297–315. https://doi.org/10.1111/comt.12018

Knoblauch, H. (2020). *The Communicative Construction of Reality*. London: Routledge.

Latour, B. (1991). Technology Is Society Made Durable. In J. Law (Ed.), *A Sociology of Monsters. Essays on Power, Technology and Domination* (pp. 103–131). London: Routledge.

Livingstone, S.M. (2007). On the Material and the Symbolic: Silverstone's Double Articulation of Research Traditions in Media Studies. *New Media & Society*, *9*(1), 16–24. https://doi.org/10.1177/1461444807075200

Luhmann, N. (1997). *Die Gesellschaft der Gesellschaft*. Frankfurt am Main: Suhrkamp.

Malm, A. (2020). *The Progress of This Storm. Nature and Society in a Warming World*. London: Verso.

Mansell, R., & Silverstone, R. (Eds.). (1998). *Communication by Design: The Politics of Information and Communication Technologies*. Milton Keynes: Oxford University Press.

Mascheroni, G., & Siibak, A. (2022). *Datafied Childhoods*. New York, NY: Peter Lang.

Merten, K., Schmidt, S.J., & Weischenberg, S. (Eds.). (1994). *Die Wirklichkeit der Medien. Eine Einführung in die Kommunikationswissenschaft*. Opladen: Westdeutscher Verlag.

Morley, D. (2009). For a Materialist, Non-media-centric Media Studies. *Television & New Media*, *10*(1), 114–116. https://doi.org/10.1177/1527476408327173

Muhle, F. (2022). Socialbots at the Gates. Plädoyer für eine holistische Perspektive auf automatisierte Akteure in der Umwelt des Journalismus. *Medien & Kommunikationswissenschaft*, *70*(1-2), 40–59. https://doi.org/10.5771/1615-634X-2022-1-2-40

Natale, S. (2021). *Deceitful Media*. Oxford: Oxford University Press.

Ricoeur, P. (1980). The Model of the Text. In P. Ricoeur & J.B. Thompson (Eds.), *Hermeneutics and the Human Sciences* (pp. 197–221). Cambridge: Cambridge University Press.

Rorty, R. (1998). *Truth and Progress: Philosophical Papers*, Vol. 3. Cambridge: Cambridge University Press.

Rosa, H., Lessenich, S., & Dörre, K. (2015). *Sociology, Capitalism, Critique*. London: Verso.

Ryle, G. (1949). *The Concept of Mind*. Chicago, IL: University of Chicago Press.

Schäfer, M.S., & Wessler, H. (2020). Öffentliche Kommunikation in Zeiten künstlicher Intelligenz. *Publizistik*, *65*(3), 307–331. https://doi.org/10.1007/s11616-020-00592-6

Schäfer, M.T., & van Es, K. (Eds.). (2017). *The Datafied Society. Studying Culture through Data*. Amsterdam: Amsterdam University Press.

Scholl, A. (2012). Between Realism and Constructivism? Luhmann's Ambivalent Epistemological Standpoint. *Constructivist Foundations*, *8*(1), 5–12. http://constructivist.info/8/1/005

Scott, S.V., & Orlikowski, W.J. (2014). Entanglements in Practice: Performing Anonymity through Social Media. *MIS Quarterly*, *38*(3), 873–893. https://doi.org/10.25300/MISQ/2014/38.3.11

Silverstone, R. (1994). *Television and Everyday Life*. London/New York, NY: Routledge.

Silverstone, R. (2005). The Sociology of Mediation and Communication. In C. Calhoun, C. Rojek, & B. Turner (Eds.), *Sage Handbook of Sociology* (pp. 188–207). London: Sage. https://doi.org/10.4135/9781848608115

Stenbom, A., Wiggberg, M., & Norlund, T. (2021). Exploring Communicative AI: Reflections from a Swedish Newsroom. *Digital Journalism*. https://doi.org/10.1080/21670811.2021.2007781

van Dijck, J. (2014). Datafication, Dataism and Dataveillance: Big Data between Scientific Paradigm and Ideology. *Surveillance & Society*, *12*(2), 197–208. https://doi.org/10.24908/ss.v12i2.4776

Weber, M. (1947). *The Theory of Social and Economic Organization*. New York, NY: Free Press.

Williams, B. (2006). Philosophy as a Humanistic Discipline. In A.W. Moore (Ed.), *Philosophy as a Humanistic Discipline* (pp. 180–199). Princeton, NJ: Princeton University Press.

Williams, R. (1980). *Problems in Materialism and Culture*. London: Verso.

Williams, R. (1990). *Television: Technology and Cultural Form*. London/New York, NY: Routledge.

Williamson, B. (2017). *Big Data in Education*. London: Sage.

Wittgenstein, L. (1953). *Philosophical Investigations*. Oxford: Blackwell.

Zuboff, S. (1988). *In the Age of the Smart Machine*. New York, NY: Basic Books.

Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for the Future at the New Frontier of Power*. London: Profile.

Andreas Hepp – ZeMKI – Centre for Media, Communication and Information Research, University of Bremen (Germany)

🆔 https://orcid.org/0000-0001-7292-4147

✉ ahepp@uni-bremen.de; ⧉ http://www.andreas-hepp.name

Andreas Hepp is Professor of Media and Communication Studies with the Special Areas Media Culture and Communication Theory at the ZeMKI (Centre for Media, Communication and Information Research), University of Bremen (Germany). He holds a PhD from the University of Trier (Germany). He is involved the research network "Communicative Figurations" as "Creative Unit" of the University of Bremen, funded by the German Excellence Initiative 2013–2016). His main research areas are media and communication theory, media sociology, mediatization research, datafication of social practices, transnational and transcultural communication, and cross-media research.

Nick Couldry – Department of Media and Communications, London School of Economics and Political Science (United Kingdom)

🆔 https://orcid.org/0000-0001-8233-3287

✉ n.couldry@lse.ac.uk; ⧉ http://www.nickcouldry.org

Nick Couldry is a sociologist working at the Department of Media and Communications of the London School of Economics and Political Science (United Kingdom). His main interests are media and communications, culture and power, and social theory. Most of all, he is interested in the consequences for everyday reality of symbolic power's concentration in particular institutions. His latest project has developed the framework of data colonialism: *The Costs of Connection* (Stanford University Press, 2019, with Ulises Mejias).