ORIGINAL ARTICLE

Institutions and other things: critical hermeneutics, postphenomenology and material engagement theory

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Abstract

Don Ihde and Lambros Malafouris (Philosophy and Technology 32:195–214, 2019) have argued that "we are homo faber not just because we make things but also because we are made by them." The emphasis falls on the idea that the things that we create, use, rely on—that is, those things with which we engage—have a recursive effect on human existence. We make things, but we also make arrangements, many of which are long-standing, material, social, normative, economic, institutional, and/or political, and many of which are supported by various technologies, including AI, more and more. Critical theorists, such as Habermas, have argued that we need a "depth" or critical hermeneutics (one that combines hermeneutical understanding with scientific explanation) to provide a full account of this kind of recursivity. For Habermas, the explanatory aspect of critical hermeneutics has been modeled on neo-Marxist and neo-Freudian theories. We propose a new critical hermeneutical approach that uses the tools of embodied cognitive science, affordance theory, material engagement theory, and the concept of the socially extended mind.

Keywords Critical hermeneutics · Postphenomenology · Material engagement · Extended mind

The hand-mill gives you society with the feudal lord;
the steam-mill, society with the industrial capitalist.
(Karl Marx, *The Poverty of Philosophy*)

1 Introduction

We start by endorsing a view explicated by Ihde and Malafouris (2019): most succinctly, "we make things which in turn make us" (p. 196). As they note, this is not a new thought (see the above quotation from Marx). Ihde and Malafouris deepen the thought, however, by proposing a postphenomenological material engagement theory. The focus of material engagement theory (MET) is on the material things that we encounter and use, the material culture that shapes our lifeworld practices. MET, as they explain, is grounded in the sciences of archaeology and anthropology and takes the long-term (evolutionary) and comparative view. Postphenomenology stakes out an approach in the philosophy of contemporary technology and emphasizes the things of "modern technologies and new forms of digital culture" (p. 196). The approach they take is clearly interdisciplinary and it could be understood as engaging with such issues in either or both of two ways: as descriptive and/or as critical. As descriptive it explains how fabrication and material culture shape human life and evolution. Thus Ihde and Malafouris argue:

> More than any other animal, humans evolve by creating new materials (from wood, stone and ceramic, through to metals, alloys, glass, paper, concrete, plastics and silicon) and material forms (surfaces, boundaries, lines, containers, houses, wheels, signs, maps, images, letters, documents, machines etc.), and by developing skilled practices opening up to new sociotechnical possibilities (sometimes enabling and sometimes disabling) (p. 197).

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The last phrase signals the critical opening: the idea that we can examine these practices and processes and say whether they enable human flourishing or disable it. This is not an opening pursued by Ihde and Malafouris in their interdisciplinary project; they stay much closer to the neutral descriptive task, suggesting that "[t]echnology is at the heart of human becoming but it does not provide or in any sense predetermine a specific direction of change (progressive or other)" (p. 199). Again, however, they point to an opening for critique:

> There is nothing inherently good or bad about a new technological development, but given the importance that they have in human life and our ways of thinking, it pays to study in more detail the specific effects they might have on us. The challenge here is not how to liberate ourselves from technology: it is how to turn technology into an instrument of liberation and critical self-consciousness (p. 204).

This position shares a deep similarity to traditional Frankfurt School critical theory at least to the extent that, like the critical theorists, it places our broad-scale human practices and activities at the heart of what we call the mind and cognition, and stresses the essential connection between the historical, technological, social modes of production, and how participation in these sociomaterial practices plays a role in structuring forms of consciousness.

MET, we note, builds on embodied, extended and enactive views of cognition (Malafouris 2013). Our own materiality, our own bodies, including our brains, are shaped, over phylogenetic and ontogenetic timescales, by our material practices, our use of things, our habitual movements and our innovative actions. This approach emphasizes a relational ontology—our bodies and bodily actions are coupled to things in the environment—a view that can be modeled on Gibson's (1979) notion of affordances (understood relationally) or Dewey's (1934) notion of situation, which is never reducible to an agent-free environment, but necessarily includes the agent (see Gallagher 2017). The appeal to E-cognition (embodied, embedded, extended, enactive) allows Malafouris (2013) to develop a rich account of human agency.

By extending this account to a joint or collective agency we've suggested that MET must also take into account the very real factors of social interactions and institutions (Gallagher and Ransom 2016). Material engagement with tools is clearly a catalyst for the social organization (Walls 2019) and any emphasis on niche construction in the human domain needs to account for the fact that the niche is always a social one. One can expand on Ihde and Malafouris's observations about the examples of stone knapping (following Malafouris 2013) and food preparation (following Wrangham 2009), to show that these material practices are necessarily social

practices that already point to divisions of labor and instituted arrangements.

2 Socially extended cognitive institutions

Material engagements emerge from and are sustained in intersubjective interactions embedded in social and cultural practices. In this respect, the notion of a "socially extended cognitive institution" (Gallagher 2013; Gallagher et al. 2019; Slaby and Gallagher 2015) is helpful for understanding how not only tools and material things shape minds, but how larger structures (normative cultural practices and institutions), which emerge out of, expand, and transform material engagements, shape both human cognitive processes and social interactions in ways that are either enabling or disabling.

Slors (2019) defines cognitive institutions, following Gallagher (2013, p. 6): "not only as institutions with which we accomplish certain cognitive processes but also… without [which] such cognitive processes would no longer exist." A cognitive institution, succinctly, is any institution or organized social practice that serves an epistemic function in problem solving. A cognitive institution is formed by cognitive (e.g., problem solving) practices that involve multiple interacting agents pursuing multiple interrelated tasks, and reciprocally, such interactions are shaped by instituted (normative) practices that extend our cognitive processes when we engage with them (that is, when we interact with, or are enactively coupled to them in the right way).

This includes, as an example, the legal system, which "enables an array of thoughts and actions that are unintelligible without the concepts and procedural social routines associated with the law" (Slors 2019, p. 5; see Gallagher 2013).[1] The practice of law is constituted by cognitive and communicative processes instantiated in the cooperative activities of many agents who rely on conventional cognitive schemas and, for example, rules of evidence provided by the legal institution itself. Reasoned judgments made in such contexts are specified as legal judgments precisely because they are made in such contexts. They are forms of cognition that depend on the large and complex system without which they could not happen.

Slors (2019) offers a useful distinction to clarify how the notion of a socially extended cognitive institution goes beyond extended-mind approaches that focus on hand-held tools and technologies. According to Slors, the kind of extended mind analysis, as found in Clark (2008), and as

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[1] Other examples include cultural institutions, as well as economic markets (Gallagher et al. 2019), and science itself (Slaby and Gallagher 2015).

features in MET (Malafouris 2013), is based on the idea of functional integration, a form of causal (or dynamical, reciprocally causal) coupling that allows for a tool or instrument to be integrated into the overall cognitive system. In contrast, the conception of the socially extended cognitive institution is based on what Slors calls a "symbiotic" arrangement, which he defines in terms of "task dependency."

> "Task dependency" is the extent to which the intelligibility of a task depends on a larger whole of coordinated tasks. Task dependency is a notion that is connected with coordination and planning. It is a normative notion in the sense that high task dependency means that tasks play specific roles in the overall organization of a cognitive system or a cultural cognitive ecosystem; roles that can be played properly or improperly (Slors 2019, p. 18).

For example, the legal system is characterized by high task dependency since judge, prosecutor, defense attorney, clerk, and other officials are inter-defined in a holistic way, such that what an attorney does is understandable only by referring to what judges and prosecutors do. This means that there is a division of labor in a symbiotic system.

> Division of labor involves a specific type of offloading, one which is typical for symbiotic cognition but not for extended [mind]. Every participant in a symbiotic system profits from whatever the system as a whole offers (education, justice, social coordination) while contributing only a small part. The tasks, jobs and roles of others in the system co-define and enable one's own task, but one does not have to perform them or even think about them, while nevertheless benefiting from the overall outcome of the system (Slors 2019, p. 30).

We can think of a cognitive institution as a set of human interrelationships embedded in a workspace of different tasks. Each task category may be defined by norms and practices, and by less formal and imperfect social interactions that may involve a variety of biases. The concept of symbiotic arrangements clearly characterizes some forms of cognitive institutions, but, as Slors acknowledges, the contrast between functional integration and task dependency is a matter of degree. If, for example, the legal system is characterized by high task dependency and low functional integration, this doesn't necessarily generalize to all cognitive institutions. We have argued that the issue is more complex. Cognitive institutions vary in degree between task dependency and functional integration depending on where one is looking in the system, or from what perspective one examines the system (Gallagher et al. 2019). From a systems perspective one may see high task dependency, whereas from the perspective of an individual agent who engages with the system, one may find a significant degree of functional

integration. In the legal system, for example, a judge helps to enact the system but only by doing specific tasks that require material engagement with papers, law books, courtrooms, gavels, benches, supporting technologies, and many other people. In this respect, to fully explicate the notion of a socially extended cognitive institution, to think of it less abstractly and closer to lifeworld effects, one still needs to think about the details captured by the kind of analyses found in postphenomenology and MET.

3 Revisiting critical depth hermeneutics

One can rightly ask whether we need a specific approach that will allow us to gain a critical perspective on both the material practices and the institutional arrangements that shape the ways we think and live together. Here we think it is fruitful to revisit the concept of critical hermeneutics as Jürgen Habermas conceives of it. Habermas (1971a) proposes the notion of a critical "depth" hermeneutics that brings into play Dilthey's distinction between understanding (Verstehen) and explanation (Erklärung). Dilthey distinguished hermeneutics as a methodology of the human and social sciences that involves understanding the meaning of individual and social expressions (including behaviors, texts, etc.). In contrast, he took the natural sciences to be offering causal explanations concerned to tell us how underlying mechanisms work. Habermas' critique of hermeneutics [not only of Dilthey but also of Gadamer in their famous debate (see Habermas 1971b)] turned on the limitations of understanding since to simply understand what someone means doesn't really tell us why they think the way they do. To put it in Ricoeur's terms, Gadamer's satisfaction with the understanding of meaning constituted a hermeneutics of trust, whereas Habermas's critical hermeneutics starts with suspicion—that is, suspicion that something deeper is going on. Thus, Habermas proposes what he calls a 'depth' hermeneutics—one that adds a causal explanation of a specific kind to the task of fully comprehending the other person, their expressions and behaviors—"a hermeneutics that cannot be confined to the procedures of philology, but rather unite linguistic analysis with the psychological investigation of causal connections" (1971a, p. 217). The result is an "explanatory understanding" that emphasizes context and that could be captured in narrative (1971a, pp. 272–273).

Habermas conceives of depth hermeneutics as incorporating what critical theorists call the critical sciences. Specifically, Habermas proposes Marx's (economic) critique of ideology and Freud's psychoanalysis as models of critical science. What makes them critical is that both of them take the real action to be happening beneath the manifestations of ideology and consciousness—that is, in the mechanisms of capitalist economics and the meta-psychological workings

of the unconscious, respectively. For example, to really comprehend why people or social groups think the way they do or behave the way they do, we need to explain how processes and arrangements in institutional structures or economic substructures impose constraints on us and produce systematically distorted communications or specific kinds of social arrangements and ideological justifications for them. It's not enough to know what someone means when they express their preference for a particular brand of mobile phone, for example; one needs to ask whether their preference has been shaped by advertising practices organized by specific information technology firms driven primarily by the profit motive.

Habermas's (1987) later distinction between system and lifeworld introduces further nuances into his analysis. Simply put, however, we need to explain how systems (e.g., bureaucratic, corporate, institutional structures) shape, constrain, or "colonize" our everyday lifeworld and our intersubjective relations.

If Marx and Freud offer good models for critical sciences, it's not clear that a critical hermeneutics is limited to their particular approaches. The question is whether other sciences can operate on this critical side. True to the methodological orientation of depth hermeneutics, there are good reasons to be suspicious of a critical hermeneutics that draws on resources from natural and human sciences without critically evaluating the ideological implications of that science itself. There is, as Adorno and Horkheimer argue, a particular Enlightenment understanding of scientific knowledge, which is inseparable from control or domination:

> Enlightenment stands in the same relationship to things as the dictator to human beings. He knows them to the extent that he can manipulate them. The man of science knows things to the extent that he can make them. Their "in-itself" becomes "for him." In their transformation the essence of things is revealed as always the same, a substrate of domination (1947, p. 6).

Accordingly, it is incumbent to demonstrate that the particular approach within cognitive science that we are using in the service of a depth hermeneutics does not uncritically reproduce the very same ideological understandings of the individual, the social, the political, and knowledge in general, that a critical approach is meant to unsettle or call into question.

The meaning of individuality, as well as the phenomenological character of concrete immediate experience, is structured by its position within a sociomaterial ensemble, much like Slors' understanding of task dependency, where an action is given meaning in the context of a broader scope of activity. This has the potential to critically challenge a particular liberal understanding of the meaning of the individual

that emerges out of the sociohistorical and material relations of late western capitalism—something that Sartre also interrogates in *The Critique of Dialectical Reason*. In a patently Hegelian tone, he claims "Immediate experience reveals being at its most concrete, but it takes it at its most superficial level and remains in the realm of abstractions" (1960, p. 95). The individual viewpoint remains abstract in its concreteness precisely because the individual is not its own foundation—we make history, while at the same time we are made by history. As Sartre points out, to experience one's self as a mere member of a series—to be isolated among a plurality of isolations—is still a kind of reciprocal form of being with others (p. 256). That is, even to experience one's self as an atomistic individual is a condition borne out of a sociomaterial, historical situation, and is always given meaning in relation to others.

The social practices and material transactions that emerge out of capitalist exchange relations produce what Sohn-Rethel (1978) calls a social attitude of practical solipsism. This is different from the strong solipsistic metaphysical position that the self is the only thing that really exists; rather, it describes the sort of implicit attitude that emerges for individuals in commodity exchange relations where each agent's interests and property are supposed to exist in complete independence of one another. The agents who are engaged in these interactions engage with others as if from a position in which they, themselves—their feelings, interests, needs and desires, in addition to their sphere of private property—are socially and economically instituted as an isolated unity set apart from the social structure in which these trade interactions take place. Interaction is structured by the practice of reciprocal exchange of economic value, and, for communities that are set up this way, the relationships among individuals in public life come to resemble the instituted economic relationships among the things that they exchange.

From the perspective of social institutions, it is not simply that the practical structure of exchange relations operates as a form of cognitive institution, helping people with the task of exchanging and consuming commodities (see Gallagher et al. 2019), but also there is a particular understanding of what it means to be an individual that is instituted within these sociomaterial practices of economic exchange. Sohn-Rethel states further, "[The agents] consider themselves to have acted in self-interest although they have merely obeyed the law of the exchange nexus [within which their interaction is situated]" (p. 42).

Developing this idea of an ideologically and materially motivated institution of the individual as an atomized particular, Mészáros (2010) describes the way in which this understanding of individuality has become formalized and methodologically reified in the practices of the human sciences, including psychology and the cognitive sciences. He

argues that the monolithic imperative to investigate cognitive phenomena solely through the lens of a methodological individualism prescribes an untenable separation of the social from the individual. The idea that the individual as entangled in the social world—a view that is required for any perspective that is critical of sociohistorical institutions, practices, and attitudes—is constitutively occluded by approaches to cognition that make the individual the sole putative locus of everything involved in thought, meaning, and agency. In the framework of methodological individualism ideological tendencies can only be interpreted as an aggregate co-incidence of individual doxastic states. On this view, 'society' or 'history' is posited as either the static objective stimulus of these individual mental states, or as if these beliefs all emanated from a common, discrete source.

We think that this is precisely where MET and postphenomenology, along with embodied, extended, and enactive cognitive science and the analysis of socially extended cognitive institutions have the potential to contribute to a deeper and more comprehensive hermeneutics, especially insofar as these approaches to cognition are not theoretically bound to methodological individualism in the ways that cognitivist, internalist, and neuro-centric models are. Enactive and ecological approaches emphasize the sense-making engagements and patterns of the transaction between the organism and its environment—that is, like MET, they do not establish, a priori, a single substantial unit of analysis prior to the investigation of some particular phenomenon or situation (Malafouris 2019). In the archeology and anthropology of MET, we can define the details of how material practices and the things themselves shape individual and collective agencies; in postphenomenology we can orient the analysis to consider the role of contemporary information technologies in enabling and constraining our communicative practices; using the E-approaches we can map out the landscape of affordances (Rietveld and Kiverstein 2014) and the roadblocks of disaffordances that define our possibilities or get in the way of human flourishing. Likewise, by analyzing the specific arrangements of cognitive institutions such as legal, educational, health-care, military, market, etc. systems, we can ask how such arrangements support or undermine intersubjective recognition and individual autonomy, conceived in terms of relational autonomy, thereby giving us a way to ask critical questions about how they might be adjusted or transformed with a view to addressing and reducing institutionally generated distortions in intersubjective interactions.

We are not claiming, however, that these approaches already express an explicit critical stance in their methodological foundations. Rather, if a critical depth hermeneutics seeks to make connections with approaches within disciplines that deal with the mind and the structure of cognition, these aforementioned theoretical orientations appear to be the best-suited fellow travelers for such a project. Indeed,

there are already some studies that put these e-approaches to use in the context of a critical theory perspective. Brancazio (2019), for example, gives an account of culturally produced gender norms and their influence on minimal forms of embodied agency; De Jaegher (2013) shows how enactivism can address questions of patriarchy; Slaby and Gallagher (2015; also see Choudhury and Slaby 2012; Slaby 2010) address the culture of neuroscience research from a critical perspective; and Gallagher (in press) explores the implications of embodied intersubjectivity for critical perspectives on concepts of reification and autonomy.

4 Discussion: from postphenomenology to a critical theory of institutions

To conclude we'll discuss some examples that show a range of critical perspectives from postphenomenology, to MET, to a critical theory of institutions. A first example involves discussions of media and technology in the postphenomenology context. Hayler (2015) shows how a certain photographic grammar comes along with techniques, such as tilt shift photography (the use of camera movements that change the orientation and/or position of the lens) in a way that can manipulate our perspectives. Photographic techniques can change the way that we see things; in some cases it can make visible what had previously been invisible. Hayler shows that the use of cultural media—photography, cinema, and video cameras—continues to have reflexive (looping) effects on how we see and understand things, and even on how we move. Our over-exposure to certain media forms a grammar, "rules that we know, but don't know that we know" (Hayler 2015)—that is, rules that we follow without knowing that we do so. Such an evolved grammar structures our expectations shows us different possibilities, and in effect, creates new affordances for action.

What one can say of media and technology, one can also say of certain material designs that are closer to our bodies and constraining of our movement—namely bodily decorations and manners of dress. Beyond the proverb, clothes really do make men and women; clothes impact most immediately how we move, and then how we act and what roles we can play, helping to construct specific social structures that again loop around to reinforce the customs and costumes that we don. McCarroll (2015) builds on the distinction between body image and body schema (see Gallagher 2005), and shows that the clothes that we wear are not simply a matter of dressing up our body images, but can actually take hold of our body-schematic processes and, within specific social settings, operate to colonize our movements and actions. Clothes can impose a specific behavioral pattern on our actions by defining (delimiting) movement.

The acquisition of [such patterns] as a largely invisible process as strictures of polite behavior, structures of clothing, and saturation of visual imagery act upon the consciously adopted habits of dress and behavior related to body image, and permeate the preconscious body schema (McCarroll 2015).

Clothes can have real physical and social effects and can actually support the norms of institutions. McCarroll demonstrates her point with the example of the corset, a piece of technology that acted as something of a straight-jacket on the bodies of Victorian women and supported their defined role in society. The evidence for this she finds in J. M. Barrie's play *The Admirable Crichton* (1902). As portrayed in this play, young women in Victorian London required intensive attention from their individual maids simply in order to dress. Dresses were buttoned from the back; corsets prevented the women from bending to tie their own shoes, which required stylish and complex lacing up. The corset and everything that goes with it—all the invisible and unmentionable garments—rob them of free movement and prevent them from engaging in certain types of action. The daughters are in effect dressed to be dependent and help-less and are pushed into a very restrictive, corseted social structure.

Clothes, and more generally, fashions, are like technologies or institutions that we wear. They can impose rigid limitations on movement and on daily practices and seriously shape our social customs. We may think that today we've been liberated from these types of clothes—although, of course this is not the case in all cultures, and particularly there continue to exist strictures on women's dress in the name of modesty, decency, God, or business acumen. Even liberating fashions continue to be imposed since a woman is still expected to dress like a woman and man like a man—especially in specific settings.

As John Dewey noted in his own time, clothes, fashions, and the design of the immediate material world continue to operate as institutions—aesthetic institutions. Fashion, for example, is an object of intense admiration which "intensi-fies the sense of immediate living."

Bodily scarification, waving feathers, gaudy robes, shining ornaments of gold and silver, of emerald and jade, formed the contents of esthetic arts…. Domestic utensils, furnishings of tent and house, rugs, mats, jars, pots, bows, spears, were wrought with such delighted care that today we hunt them out and give them places of honor in our art museums. Yet in their own time and place, such things were enhancements of the processes of everyday life (Dewey 1934, p. 6).

Whether they were enhancements or impositions may be open to question. The larger point here is that materials, designs, media, cultural preferences and practices, and institutions continue to be what they are. We often find ourselves in good ones, like loose and comfortable clothes that permit a lot of free movement, or in bad ones that tie us up in tight and constrictive processes that discour-age innovative actions. Institutions, like clothes, and even more clearly like tools and instruments, can enhance or delimit an affordance space (Brincker 2014)—a set of possible actions across a range of physical and social settings.

A postphenomenological analysis may show that spe-cific technologies in our digital culture can reorganize human intentionality (Verbeek 2008, 2011), or our com-municative practices, and in a critical fashion it can ask about the gains or losses that such reorganization brings with it (Ihde 2009; Rosenberger and Verbeek 2015). Such an investigation can ask how digital technologies impact our cognitive processes and our social relations. Certain types of technologies may lead to behavioral addictions, or to social isolation, or, as we have seen in recent times, they can certainly promote misinformation and political polarization. The aim of high-tech product design, for example, is not always to enhance individual autonomy. The intention is not just to make the design stand out and attract, but to shape the practices of the end user so that the product is used in an almost automatic way (Eyal 2014). Likewise, some theorists argue that the ubiquity of digital technologies can impair the user's ability to attend to those things that might otherwise matter (e.g., Wu 2017). Wil-liams (2018, p. 7) (a former Google employee) describes how designers aim to maximize the time a user spends on a particular platform; he suggests that the technology indus-try doesn't design products; it designs users. This shifts the focus from the pieces of technology that make us who we are to the social and cognitive institutions which may be either solving problems or creating them.

The postphenomenological orientation of MET, which incorporates enactive-ecological-and embodied concep-tions of the mind, has, as part of a depth hermeneutics, the potential to add both theoretical and ethical gravity to existing critiques. We can see this, for example, in Har-vey's (2012) discussion of 'the right to the city':

The right to the city is … far more than a right of indi-vidual or group access to the resources that the city embodies: it is the right to change and reinvent the city more after our hearts desire. It is, moreover, a collec-tive rather than an individual right, since reinventing the city inevitably depends upon the exercise of col-lective power over the processes of urbanization…To claim the right to the city in the sense I mean it here is to claim some kind of shaping power…over the ways in which our cities are made and remade, and to do so in a fundamental and radical way (pp. 4–5).

In this account, this right is not describable in terms of any one particular form of codified social activity, or something guaranteed through any one particular type of static legal or social institution. Instead it refers to a more global right for collective democratic control of materially shaping the city as an endogenously-motivated process by the very people who produce the labor that makes this shaping possible in the first place. That is, there is something about the right to the city that, if it is the expression of a genuine right, should necessarily be expressed in sociomaterial terms: a socially instituted process that is indistinguishable from the power expressed in the artifactual layout of the city, and its transformations over time.

5 Conclusion

The artifactual, technological, residential, locomotive, industrial, etc., layout of the city produces forms of life and specific ways of moving around; it produces a sociomaterial landscape of affordances and produces and sediments social habits of engagement and interaction. It patterns the flow of people, things, and goods in the processes of interaction, transaction, and engagement. Taking seriously the claim that mind, habits, forms of thought, etc. emerge out of the ongoing dialectical engagements with the artifactual environment (Ransom 2019) entails that the only way for people to maintain autonomous control over their forms of life, community, and general welfare is to ensure that there exist democratic institutions that actually secure the power to effect these material conditions themselves. This might involve access to public transportation, housing, jobs, the right to freely gather in public spaces, among other things. In effect, a depth or critical hermeneutics based on postphenomenological, enactive approaches argues that social institutions can express the democratic will of the people only to the extent that they afford the possibility of exercising control over the material transformations of their surrounding shared environment, as Harvey (2012) suggests. Certainly, the artifactual composition of the city does not determine the way that people engage with the environment. The intended function of an artifact and the affordances that it is designed to provide do not anticipate all of the possible uses that we may put it to, and such innovations in use sometimes reveal unexpected horizons of the artifact's prescribed use or function. However, the possibilities for democratic control, in the critical sense that we suggest, are better supported not just by the "ad hoc affordances" (Cosentino 2019) of creative, lateral forms of manipulation and public engagement, but also through forms of democratic influence over the artifactual layout of those spaces themselves.

Without the actual possibility of exercising democratic control on the sociomaterial landscape, democratic institutions lack, so to speak, substance. If, in fact, homo faber is defined as an animal who is both creating and created by the sociomaterial world, then democratic autonomy consists in a notion of rights that are necessarily sociomaterial in character. This is a conception of rights opposed to many of the insutitions that already play a primary role in structuring the unfolding of urbanization in the 21st Century—namely the institutions of private development of the urban landscape and the monolithic structuring role of capital accumulation, which often shape the sociomaterial landscapes in ways that are inimical to the interests of the people who live in them.

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