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**DATA POLITICS AND  
INFRASTRUCTURAL DESIGN:  
BETWEEN CYBERNETIC  
MEDIATION AND TERMINAL  
SUBJECTIVITY**

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Digital media technologies of Internet communication and software coupled with supporting infrastructures of storage and transmission have resulted in the production, sharing and distribution of knowledge and culture on scales previously unseen (and unsensed) in the history of human life. More recently, the rise of big data analytics associated with sensor technologies and the biometric monitoring of social, urban, industrial, and ecological systems has seen the empirical being redefined by algorithmic operations. It is no surprise that finance capital and new economies of exchange are both among the main drivers and beneficiaries of these developments. Spot rates, for example, are hedged against the delivery times of shipping containers in the maritime industries. Health and insurance industries are flourishing with the widespread adoption of consumer self-tracking devices and the scramble for standards designed to subsume life into measures optimised for the sale of medical products. The quantified (quantifying) self has become the exemplary subject around which the design and distribution of a wide array of knowledges on life and labour is organized.

Within this maelstrom of change, knowledge orientates itself across public and private institutions, unbound from the university and its attendant ecologies of knowledge production. But while users have come to play a central role in the reorganization of how knowledge is created, distributed and valorised, their influence on the infrastructures structuring and sustaining these knowledges has been deliberately limited by the very design logics that inform computational architectures. At the same time, the infrastructural dimension of digital economies is receiving increasing attention, from the shift to low-latency networks and centralized storage systems to the logistical technologies ensuring the synchronization of networked

activities. It is too soon to tell whether design thinking, reconceived in the systemic terms of a strategic aesthetics and freed from its all-too-close alliance with a narrow discourse of innovation, can facilitate a politically viable rearticulation of use. But for the time being, the possibility that such thought can help articulate claims to autonomy beyond the freedom to be creative at least offers a point of departure.

The current celebration of invisible design strategies claims to be the inevitable next iteration of a process that deliberately deemphasizes autonomous user agency to 'empower' ever-more efficient forms of interaction through natural interfaces. In the desire to become invisible, technology for design thinking loses interest in culture and sides with nature. In doing so, technology design — and the constitution of subjectivity it envisions — bypasses in its self-understanding the need to route its processes via the decelerationist dynamic of democratic decision-making. Instead of engaging the ethico-political consequences of the becoming-machinic of our philosophies of life and labour, we are asked to embrace the autonomization of technological developments that above all expect us to seek — if not employment — at least enjoyment in the grammatization of our active being in the world.

It still makes sense to move outward from the user, now situated and redefined as a node of multiple infrastructures. Yet rather than focusing on this networked self, or the urban equivalent of Saskia Sassen's global city, we instead see a critical purchase through analyses of how overlapping infrastructures constitute the user as a new kind of economic and epistemological subject. Such an undertaking is no longer a matter of making visible the invisible. Part of what needs to happen is an exploration of how the digital economy changes the way we understand

and constitute infrastructure. To effectively address such concerns, the need to develop a conceptual idiom capable of comprehending the scope of digital infrastructures and their economies becomes all the more apparent: from anonymous grassroots activists in support of independent media to hackers able to control industrial infrastructures, from the anonymity of high-frequency trading that complicates the analyses of financial crises to the anonymity of users who prefer to cooperate in their exodus from the world of corporate communications infrastructures.

This essay compiles elements of a conceptual architecture that consists of four key vectors of thought: *Experience math* explores the algorithmicization of everything from within a horizon that stretches beyond the digital society. *Mediations of labour* poses the question of freedom within a cybernetics of control. *Terminal subjectivity* consists of a broader engagement with machinic explorations of agency, the geopolitical horizon of the anthropocene and anthropological registers of self-constitution. *Actuality archives* registers the transformation of temporality as an index of 'experience collapse' in the age of zero latency, and the question of memory as it relates to subjectivity. As Mark Fisher observes, "In conditions of digital recall, loss itself is lost" (Fisher 2). Similarly, experience off-the-grid is also lost, it escapes regimes of measure without the harness of the archive or database. The ephemerality of experience beyond accountability spans the class spectrum — from the wealthy elite who insist on time offline as a social right, to the economically destitute and geographically marginalised abandoned to a life without digital connectivity.

## Experience math

If, as Heidegger proposed, cybernetics now takes the place of philosophy, then we might inquire into how the body and brain are enmeshed into circuits of data mediated by infrastructures of communication (Heidegger). Concept production becomes integrated with algorithmic architectures and politics is played out, in part, on the horizon of parameters, protocols and standards. The 'management cybernetics' of Stafford Beer in the late 1950s is today manifest in logistical systems of coordination, communication and control.[1] A 'numerical imaginary' is required for the workings of the brain to be tied to infrastructures of mediation (Martin). The 'foundational indeterminacies of counting' provide technocratic reason with a parametric logic that makes both matter and experience calculable entities. Despite the determining architecture of algorithmic capitalism, there is, as Reinhold Martin notes, also a variational scope to numbers grafted to matter. Numbers don't always stick. In the case of the logistical fantasy of seamless interoperability across global supply chains, numerous conflicts emerge at the level of protocols, sabotage, labour disputes, excess inventory, and so forth.

Such variables comprise the properties special to what Keller Easterling defines as the *disposition* — a 'tendency', 'capacity' or 'propensity' — of infrastructure space (Easterling 71-93). The mathematical grammar that underlies algorithmic architectures, in other words, should not be seen as totalizing in force, even if it does hold a determining capacity to shape outcomes, including how experience is modulated and made productive within digital economies. Rather than assuming at the outset that forms of agency that cannot be folded into a politics of representation lie beyond the scope of the

political, part of the question of a data politics is how we engage the disposition of these new technical systems in ways that acknowledge the actuality of machinic agency.

Alexander Galloway has suggested that “[t]he economy today is not only driven by software (symbolic machines); in many cases the economy is software, in that it consists of the extraction of value based on the encoding and processing of mathematical information” (Galloway 358). When “software is math” and “calculations, math, algorithms, and programming are precisely coterminous with quotidian experience”, the question of the computational is a question of agency: “one cannot be *neutral* on the question of math’s ability to discourse about reality, precisely because in the era of computerized capitalism math itself, as algorithm, has become a historical actor” (358, 360, 362). Since the critique that the informatization of cultural processes occurs at the expense of our capacity to experience has been with us since what used to be called the ‘scientific revolution’, current concern regarding the algorithmicization of everything is perhaps best explored from within a horizon that stretches beyond familiar accounts detailing the emergence of the digital society (Roux). To comprehend algorithmicization as mathematization is to reframe the question of math’s agency in terms of cultural technique rather than the more limited horizon of the digital society.[2] Today, the mathematization of culture is registered in the new metrics of our communicative practices and our modes of relation in which data is produced, extracted and accorded the potential of exchange value.

## Mediations of labour

To couple freedom with and against cybernetic systems of control is both a technical-conceptual tautology and anathema to those opposed to one of the key tenets of liberalism. The dream of cybernetics is to free capital from the burden of labour-power, not to establish workers as prototypical users positioned to co-determine the disposition of semi-autonomous technical systems. The cybernetic socialism of Allende’s Cybersyn in Chile, designed by a team led by Beer in the early seventies, was implemented on IBM 360 mainframe architecture over a three to four month period. The intention was to liberate workers from the strictures of Taylorism, bringing labour into the process of economic governance (albeit in the form of cybernetic feedback).[3] Yet we learn in the notable study of Eden Medina, along with the omissions in Evgeny Morozov’s now notorious review of that study, that the ‘viable systems model’ underpinning Project Cyberstride – in which real-time updates of production data from the factory floor to management and government decision makers — did not give workers any say in designing the economy (Medina 70-71).[4] For all the good intentions of technologists to ‘incorporate mechanisms for worker participation and ways to preserve factory autonomy within a context of top-down government control’, the history of Project Cybersyn indexes the black box politics of infrastructural systems as they intersect with prevailing ideologies of sovereign power (Medina 212, 215). It also illustrates that the desire to embed ethico-political principles in system design cannot but remain enmeshed with the political struggles of the day.[5]

Access to data flows of cybernetic systems is one key issue related to the collective design of data infrastructures. How to invent infrastructure decoupled from ideology is to

suppose an ontological design that speaks to the ‘purity’ of the technical object itself, as though that is ever independent of the epistemological conditions from which the object arises. The digital object (apparatus) may foreground itself as a device through which communication, economy, subjectivity and labour is enabled and thus evoking a *proximity of distance* (Kittler 302). But its mediating force is predominantly numerical and thus abstracted vis-à-vis the design of algorithms that calibrate, store and extract value from the work of experience.

To acknowledge the structural transformation of the technical object — its dispersal into technical networks — shifts attention from media to mediation:

*The concept of the technical object has itself become, because of its fundamental environmentalization, problematic, if not obsolete [...] In contrast to the ever-repeated refrain of a new immediacy, into which we (re)enter in the age of ubiquitous computing, ubiquitous media, intelligent environments, and so on, we are in fact now dealing with the absolute prioritization of mediation. (Hörl, 124)*

It is no accident that the thought of mediation continues to draw on the catholic visions of Marshall McLuhan. While “Kittler believed that media *determine* our situation, McLuhan thought that media are our situation,” observes W. J. T. Mitchell in a recent journal issue dedicated to the 50th publication anniversary of McLuhan’s *Understanding Media: The Extensions of Man* (Mitchell 90). As Mitchell and Mark B. N. Hansen note elsewhere, “Before it becomes available to designate any technically specific form of mediation, linked to a concrete medium, *media* names an ontological condition of humanization — the constitutive operation

of exteriorization and invention” (Mitchell and Hansen xii). Which is why “media studies can and should designate the study of our fundamental relationality, of the irreducible role of mediation in the history of human being” (xiii). Moreover, “One of the key implications of thinking of media (tools, artifacts, code, etc.) rather than language as constitutive of human life is that the assumption that the human is metaphysically distinct from other forms of life is called into question” (xiv). A focus on mediation both implies that individual user experience comes into view as (human) species experience and calls the distinctiveness of that experience into question.

As in the analysis of cultural techniques that shift the focus from signification to the performative, pragmatic, and processual registers of semiosis, the focus on mediation shifts attention from the production of meaning to the processes of material constitution. Such an approach makes clear the ways in which data emerges from the ‘work of the soul’ in which value is extracted from the surplus of the common (Berardi 358). But it also points to the agency of math to generate data and value independent of the human subject. The materiality of numbers takes us back to the mediating power of infrastructure. When algorithms and the materiality of server farms become primary in the generation of value we can assume the efficiencies of the human have obtained a threshold upon which no further — or at least minimal, if not insufficient — value can be exploited. But does this mark an end to the living labour in soul work or its utopian liberation thanks to the automation of the machine? For the immediate future, capital remains on course to mine value from the datafication of human activity, organic and inorganic life. And even if such economies are still limited in terms of the exchange and profit generated directly, they have already redefined the way we talk about the infrastructures of life and labour.

## Terminal subjectivity

The ontology of data subsists in the link between the machinic semiosis of capitalism analyzed by Maurizio Lazzarato and an anxiously Stieglerian focus on the structural transformation of memory as that which anchors subjectivity as we know it. Following Deleuze and Guattari's antisociological stance, Lazzarato suggests that the distinction between 'dead' and 'living' labour "is appropriate only from the point of view of social subjection" because "[m]achinic enslavement (or processes) precedes the subject and the object and surpasses the personological distinctions of social subjection" (Lazzarato 120). Living labour can no longer be assumed to serve as horizon of emancipation: "Self-realization, identity formation, and social recognition through work have always been at the heart of the capitalist – and socialist – project itself" (121). What remains is the reorganization of the 'logic of existentialization' (Guattari), including these non-human vectors of subjectivation, through a parametric politics that engages new sites of struggle within the horizon of algorithmic capitalism. Cybernetics no longer looms as sublime horizon of freedom but lurks as an anonymous apparatus of capture within Lazzarato's analysis of 'machinic enslavement'.<sup>[6]</sup>

For Bernard Stiegler, the exteriorisation of memory — its spatial properties and technical qualities — operates as "an interface between the psychic and the social" (Stiegler). The crisis of subjectivity and knowledge Stiegler attributes to the force of digital technology on the collective individuation of memory, cognition and the constitution of sociality is troubled by an *ur*-subject that has been unravelling since the time of the ancient Greeks. Rather than lament the passing of pre-Socratic thought, we find

greater urgency in discerning how designing infrastructure rates as a core issue in the politics of data.<sup>[7]</sup>

Mark Andrejevic is correct to note that: "It will not be enough, however, to gain control over the infrastructure of our communicative lives" (164). The social-political capacity for such a reversal of infrastructural power is highly unlikely to scale in a way that challenges the combined state and commercial interests that dominate the ownership and development of communications infrastructure. Yet to identify and critique the organization of power coincident with algorithmic capitalism is to register an instance of social and disciplinary transformation. This also holds implications for the production of subjectivity. At stake for Andrejevic is not just a reimagination "of infrastructural arrangements, but also the knowledge practices with which they are associated" (165). The work of knowledge production requires both technical and conceptual-imaginary resources that intersect with, and indeed constitute, the experience of labour and life.

## Archiving actuality

In the real-time archive of our everyday communication practices, it is not the past which is forgotten, but the present. The Chilean experiment in cybernetic governance, as discussed by Medina, returns us to the question of the political design of infrastructure. We propose a practice of machinic making, of a making that acknowledges the centrality of design as an upstream rather than downstream activity, and that explores the growing significance of machinic modes of communication in the mediation of work. Design, or a reclaimed and repoliticized vision of design thinking as a strategic aesthetics, is above all a research method, a



form of analysis that takes 'making' beyond its nostalgic embrace of manual labour into a form of comprehension that acknowledges (and takes advantage of) the actuality of subjective constitution.

To think Stiegler (and Simondon) in relation to data is to shift our attention to database design. And if the *Gestell* is morphing into a data fabric, we need to start thinking about how it implicates us in hybrid becomings, comprehending the processuality of its own constitution and the computational topologies of the space of experience. We can say that, somewhat ironically, the enormous visibility of idioms both of design thinking and making is itself in need of explanation rather than simply of affirmation: it is time to no longer celebrate such practices as a renaissance of a new critical manualism and reawakening of a political procedurality, but rather to look at the way they reconfigure the idea of participation, of use, of active being in the world beyond anti-political visions of solutionisms and social innovation. As Trebor Scholz reminds us of sharing economies, "Today, nothing remains outside of labor." For all the valorisation of artisan localism in much maker culture, the functioning of maker economies is frequently underpinned and made possible by the algorithmic apparatuses that coordinate global supply chains. A politics of data could begin with making visible the labour dimension that underscores the production of value, which is no less the case in the archive-based automation of social and economic life.

Whether through an opening of the techno-governmental archives of big data, or through the design of experimental institutions like archives of political dissent, we already mobilize our new aesthetico-algorithmic literacies in the work of collaborative constitution and the mediation of memory for social-political movements.[8] The weight of these archives may not decelerate real-time

flows to the extent that they can easily be subjected to new forms of collaborative self-determination, but that is perhaps less important than we have assumed. At least we can, taking further our interest in the infrastructural registers of our ways of being in the world, rearticulate our will to connect from within a horizon that acknowledges the specificity of the computational conjuncture. Needless to say, we see an urgency to do so, at least as long as the subjective economy is fuelled by the data exhaust of semiotic machines. Without such collective undertakings and encounters with the computational conjuncture, the politics of privacy derived from rights to expression and informational self-determination will not even begin to be able to comprehend the stakes of a politics of data.

## Notes

[1] On 'management cybernetics', see Pickering (9). See also Medina (24-29).

[2] In his survey of the (re)emergence of *Kulturtechnik* as a media-theoretical concern, Bernard Dionysius Geoghegan concludes that "media genealogists must ask how, and under what conditions, cultural techniques strategically and temporarily consolidate these forces into coherent technologies" (Geoghegan, 79). See also Parikka, and Winthrop-Young.

[3] As Claus Pias notes: "[...] the charts of happiness were to be broadcasted live to the Opsroom, and that similar feedback loops were to be installed in factories, in order for the workers to be able to observe themselves, the bosses to observe the workers, the workers to observe the bosses, and the bosses to observe the bosses. For the eudaemonist Beer, this mirror maze of observation, this uninterrupted relationship controlling, which elsewhere (though at the same time) has been called 'societies of control' (Deleuze 1993), was a promise of happiness. Freedom, according to Beer, is not a normative question, but 'a computable function of effectiveness [...] the science of effective organisation, which we call cybernetics, joins hands with the pursuit of elective freedom, which we call politics' (Beer 1973: 16, 23)." See Pias.

[4] See also Morozov.

[5] On the gendered design of control room interfaces and its relation to state power, see Medina (217).

[6] Siegert makes clear the conceptual implication of thinking cybernetics in relation to media and the human subject: "Within the framework of cybernetics, the notion of 'becoming human' had as its point of departure an anthropologically stable humanity of the human that endured until increasing feedback systems subjected the 'human' to increasing hybridizations, in the course of which the 'human' turned either into a servomechanism attached to machines and networks, or into a machine programmed by alien software (see Hayles). By contrast, French (and German) posthumanism signalled that the humanities had awakened from their 'anthropological slumber'. This awakening, in turn, called for an anti-hermeneutic posthumanism able to deconstruct humanism as an occidental transcendental system of meaning production. For the Germans, the means to achieve this goal were 'media'. The guiding question for German media theory, therefore, was not *How did we become posthuman?* but *How was the human always already historically mixed with the non-human?*" (Siegert, 53).

[7] Friedrich Kittler famously revisited the Sirens only to find that Odysseys had (of course) lied (at least to his wife). To hear what they say (and sense what they desire), one actually had to steer the boat of *Dasein* a little closer to the beach of being. Kittler still sought in this gesture a profound source of inspiration to think the futurity of contemporary Europe. So if we wanted to engage this Heideggerian lament in its relationship to contemporary configurations of the political, at least let's do so by way of a substantial detour through the current 'scandal' following the publication of Heidegger's *Black Notebooks*.

[8] See, for example, the collective archive of MayDay Rooms, <<http://maydayrooms.org/>>.



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