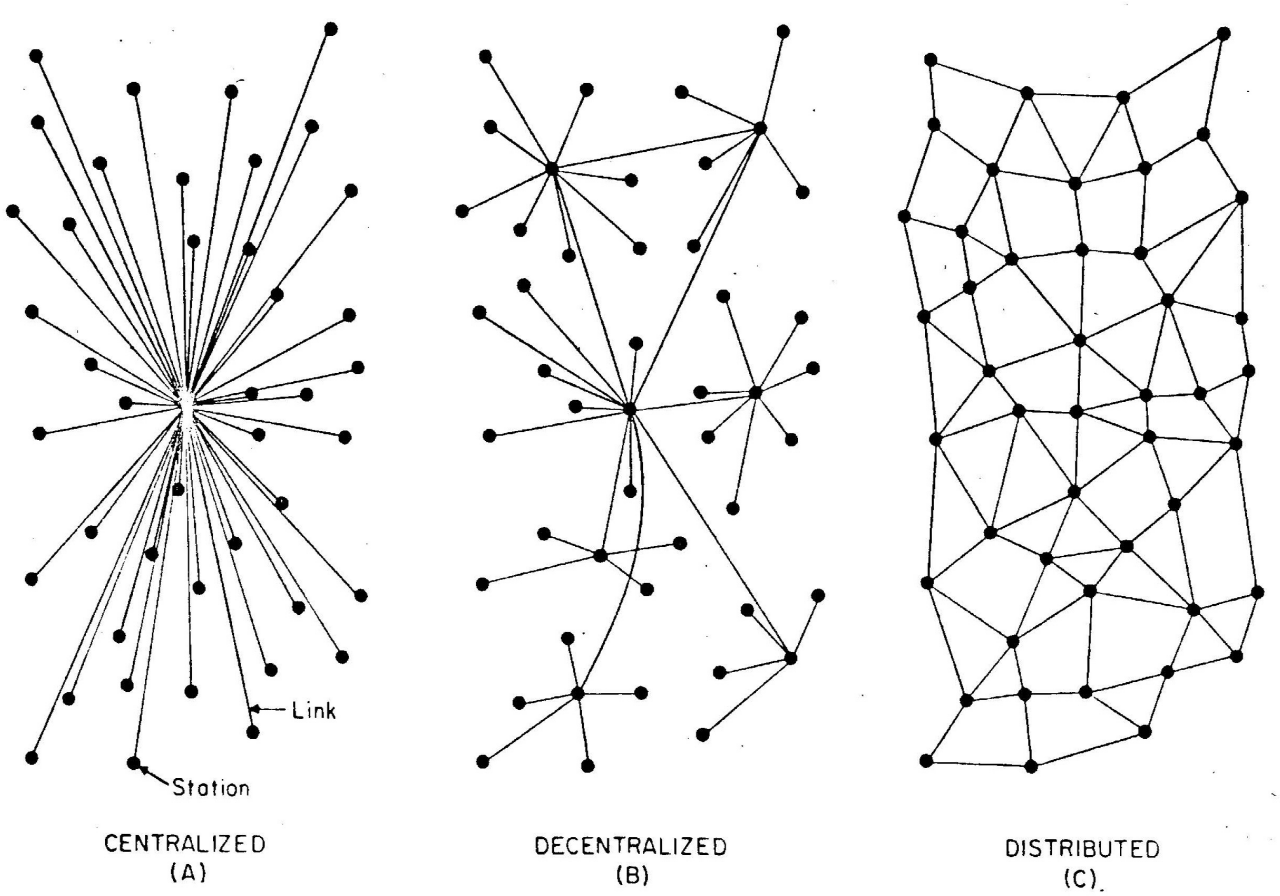
— Benjamin T. Busch

SELF-MANAGEMENT AND THE STACK

People in the tech industry frequently talk about autonomy, self-organization, and autopoiesis. But the problem is, these ideas related to self-government are commonly taken at face value, used only formally. These concepts get appropriated to advertise developments in technology that can also hypocritically reinforce existing social and economic structures, together with their inherent inequalities. Critics of cybernetics have long lamented the appropriation of socialist concepts (like autonomy) by members of an elite control sector, which exists foremost for the sake of the "need to control control."[1] Yet, at the same time, the depth of transformation brought on by computation's expansion into everyday life through technological development is often miscalculated, resulting in political responses from critics of cybernetics that sometimes exhibit ethical dissonance. Rapid system change would, for example, have infrastructural implications affecting users above all, particularly people who experience a competitive disadvantage because of their identity or special needs. Total system failure almost surely means survival of the fittest. Feminist artist Mierle Laderman Ukeles wrote, in 1969, "The sourball of every revolution: after the revolution, who's going to pick up the garbage on Monday morning?"[2] This turn of phrase can be extended to today's computational infrastructures: After the centralized networks have been shut down, who will take charge of delivering food, medical services, and other necessities to people in the sudden absence of logistics and communications infrastructures?

As a remedy for centralized power, "decentralization" is gaining more and more traction in the sphere of computing. Today's decentralized platforms like Ethereum have captured many programmers' imagination, but the type of decentralization they imply remains foremost at the level of communication. While certain applications, like cryptocurrencies, might offer themselves as useful tools for political organization, they also tend to ignore or homogenize difference across cultures and societies through the enforcement of standardized protocols. And the blockchain's "smart contracts," at least for now, still depend on the existence of a judicial system with the power to enforce contractual terms, as guaranteed by the modern nation state — but it is also imaginable that the already deeply privatized military operations of the state might someday become autonomous, for better or (more likely) for worse. The idea of decentralization is thus more than just a network topology or communications strategy: it is, in effect, a political strategy, and its roots are in enduring struggles against centralized power. The



Paul Baran, “Centralized, Decentralized and Distributed Networks” (1962)

practice of non-instituted self-management, as explored in Yugoslavia and France around the 1968 student and worker protests, stands out as a particularly instructive chapter in the history of decentralization — not as a topology, but, potentially, as an organizational form for all of society. However, before considering today’s relevance of self-management, I want to turn to an analysis of the present material conditions of society as defined by a growing integration of computational processes into everyday life.

It should go without saying that there is a difference between seeking to understand the role computation plays in society versus blindly valorizing it. When I talk about “computational infrastructures” below, I am referring to the tendency for classical infrastructures, like transportation, hospitals, and public utilities (electricity and water) to depend more and more on computation to serve their basic functions.[3] This observed tendency is a worldwide phenomenon that affects every locality differently, and, despite resistance on multiple fronts, it continues to accelerate in the name of “development.” I also use the term “computational infrastructures” to refer to the equally physical and abstract presence of information and communication technologies (ICTs) themselves: the material network of cables, nodes, and human interfaces *as well as* the code/information that flows through them. As such, computational infrastructures are enshrined in the so-called Internet of Things, where they amount to a blending of ICTs with classical infrastructures as a way to optimize the performance of public resources like electricity (smart grids), healthcare (smart hospitals), and transportation (smart cities). While all things “smart” represent heightened levels of surveillance, plus sometimes irreversible

transformations in classical infrastructures that may render them useless in the absence of ICTs, they can also be approached as useful elements for political struggle. The question of autonomy, under these technological conditions, requires a renewed analysis of the category of sovereignty.

INFRASTRUCTURE AND SOVEREIGNTY

In *The Stack: On Software and Sovereignty*, sociologist and design theorist Benjamin Bratton takes the "totality" of planetary-scale computation as the object of his analysis. He argues that computational processes (both abstract and material) have expanded to bear influence on all the earth's relations, creating an emergent totality that ensnares all societies under its regime. This expansion has so deeply changed the political geography that established notions of territorial sovereignty, particularly those traceable back to the Treaty of Westphalia of 1648, are no longer enough to describe the way sovereignty is constituted. As a closed territorial "loop" delineated by borders marked on a flat, horizontal map, any Westphalian state (whether democratic or authoritarian) is presumed to be endowed with the political sovereignty to determine, separately from other territories outside its domain, its own domestic authority structures.[4] Yet, this model of sovereignty no longer suffices in describing the relations produced in and by the users of today's computational platforms. Bratton identifies "platform sovereignty" as a novel combination of *political subjectivity* (produced based on legal jurisdiction) and *infrastructural sovereignty* (produced, regardless of jurisdiction, in relation to computational infrastructures).[5] Accordingly, new sovereign territories, simultaneously physical and abstract, spring up where multiple infrastructural layers intersect, crisscrossing national borders.

These supposedly new territories refer to a history of colonialist expansion and extraction, which is still going on under a new aesthetic regime. Yet, planetary-scale computation does not overturn the hegemony of the state: instead it demands a reconceptualization of the state in relation to platform sovereignty and computational infrastructures. Bratton's reading of German legal theorist Carl Schmitt illustrates the shift from sovereignty based on territorial subdivisions to one found at the fleeting intersection of subject and information, which reshuffles the pre-computational "*nomos* of the earth." Schmitt writes, "the Greek word for the first measure of all subsequent measures, for the first land appropriation understood as the first partition and classification of space, for the primeval division and distribution, is *nomos*."[6] In 1950, he used this concept to theorize a global *nomos*, organized around the nation state. While Schmitt's unsympathetic worldview included the concept of an "empty American continent," his tracing of the origins of the European *nomos* to the continental encounter with a territorial outside (the supposedly unpartitioned New World with its "free soil") could remain instructive.[7] This break from a hitherto "normal" European politics, grounded in territorial defense, challenged continental sovereigns to give order to the supposedly "unwritten" land abroad — an invitation to genocide.

Bratton argues that planetary-scale computation, a cross-territorial web of machines outside the control of any one sovereign, causes a similar break in today's *nomos*. For Bratton, the Cloud presents itself as a new continent to be colonized, going beyond Schmitt's territorial distinction between subdivided ground and autonomous sea as the two essential poles of geopolitical space. However, the colonization of the Cloud has less to do with claiming existing territory (although this is certainly a component) and more to do with carving sovereign territories out of virtual space (or the space of information, the space of representations). With the "*nomos* of the cloud," sovereignty has no longer to do with judging an enemy who might invade a cordoned off physical territory; instead, it has to do with designing boundaries around yet unclaimed *virtual* territories through computational forms

of representation. The sovereign decision over inclusion and exclusion, over friend and enemy in Schmitt's analysis, finds itself represented at the edge of any computational system: the boundary must always be controlled, and, as a normalized exception, it is always reversible.[8] The inside can just as easily become outside as the outside can become inside; the sovereign decision over interiority/exteriority can furthermore be automated. The "unwritten" space of the Cloud becomes a site for the construction of new devices for exclusion, expulsion, and extraction.

By drawing partitions around new territories (which consist of spatial representations *as well as* their physical and subjective components) the "platform" emerges not only as a technical model, but also as an institutional model capable of creating political entities. Bratton offers a working definition of *platform*: "a standards-based technical-economic system [constitutive of] a third institutional form, along with states and markets," where "the 'political program' is not only to be found in the legal consensus (or dissensus) and policy admonitions of traditional 'politics' but also in machines directly."[9] In other words, the political ideology baked into any platform exists as a realization of a unique organizational strategy realized both on the level of discourse and representation as well as directly within the platform's computational infrastructures, from their determined protocols to the physical devices that produce and convey information. Compared to bureaucracies, platforms are not established to realize pre-modeled institutional outcomes: instead, they serve as a starting point for undetermined outcomes delimited by a bandwidth of possibility. Rather than claiming citizens (as biopolitical subjects), platforms produce user identities or personas that differently circumscribe biopolitical subjects in computational realms of representation.

THE STACK

We need an operative model to think about computational infrastructures not only as an object of critique, but more importantly as a site for political struggle and intervention. Bratton offers "The Stack." Like "the Internet," a model for understanding the amorphous planetary web of devices connected through the TCP/IP protocol suite, "The Stack" gives aesthetic form to the voracious global agglomeration of objects and subjects brought together by the informational logic

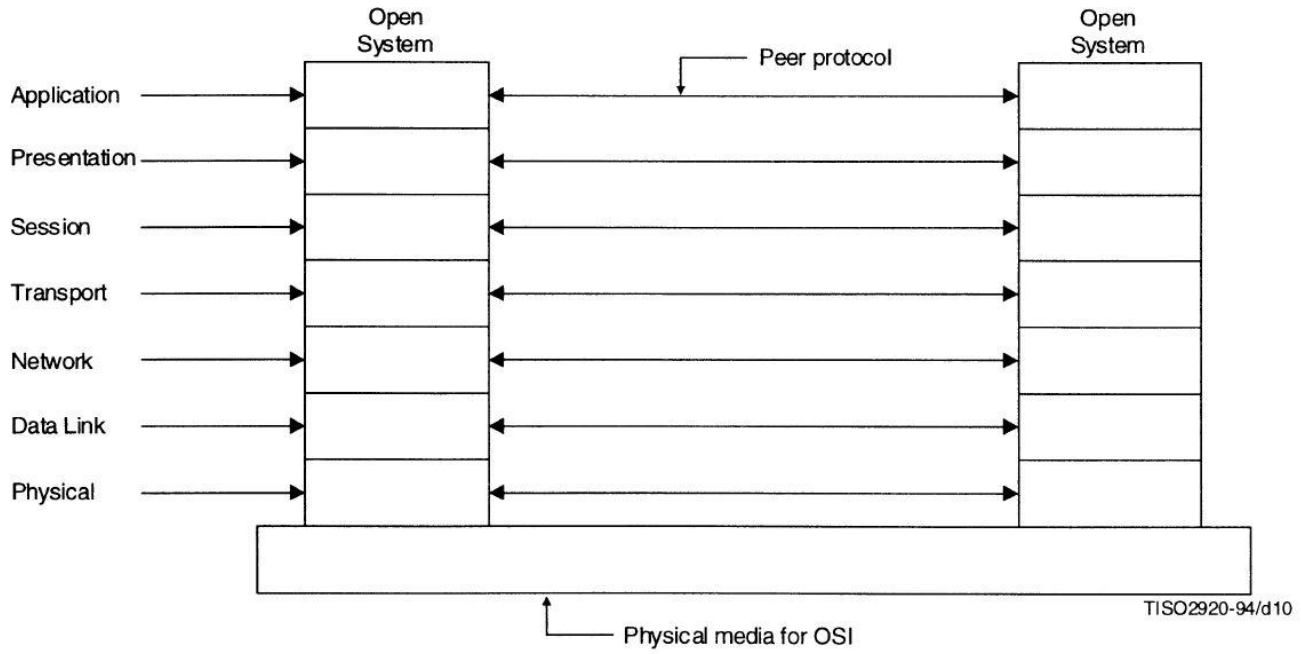


Diagram of ISO's Open Systems Interconnection (OSI) standard for computer networking (based on stack architecture).

of connection. Generically speaking, a "stack" is a linear data structure with separate layers that allows data to flow up and down its layers. Each layer of a stack is discrete, requiring information to go through a moment of transition/translation when moving from one layer to the next. Things on the same layer of a stack can communicate horizontally, but these activities are opaque to other layers: they reach the other layers only as outputs specifically formatted for the next layer. So, a stack is a vertical structure that also facilitates horizontal processes that can remain opaque to other layers in the hierarchy, and what binds them together is information/communication.

Bratton expands the "stack" metaphor to consolidate all the various virtual and physical forms of planetary-scale computation into one diagrammatic totality: The Stack (capitalized). From bottom to top, The Stack has six modular layers, each with its own unique logic: Earth, Cloud, City, Address, Interface, and User. Whenever a User activates The Stack from the top layer, it sets off a chain reaction, initiating an "column" of information that travels down to Earth and back up again, either to the same User or to another one, anywhere on the planet. This U-shaped trajectory tunnels through all the layers, starting with the User's active or passive input, which travels down to Earth and back up again to affect the User layer once again, anywhere on the geopolitical map. According to artist and theorist Patricia Reed, The Stack is a useful scaffold from which to represent what she calls "generic situatedness," or a "concept of what we are and, perhaps more importantly, *where* we stand as humans within reality."[10] Approaching The Stack as a scaffold, it becomes possible to see many everyday activities as always already mediated through it, potentially to figure an emancipatory politics commensurate with humanity's historic situation. After all, even something as simple as sending a WhatsApp message or an email has geopolitical consequences: as the saying goes, "We are all carrying a piece of the Congo in our pockets."

Atop the Earth layer — the physical first layer where The Stack's material resources are extracted — rises a scaffold that verticalizes the territorial order. The Cloud layer consists of the infrastructural web of hardware and software devices that ubiquitous platforms like Google, Amazon, Facebook, and Apple run on. The City layer above comprises a global composite urbanism, where any one city is considered to be "a localized instance of global economies defined by mobilization and partition."[11] The Address layer combines all addressing systems that enable communication between people or things (for example, the postal addressing system or the Internet's IPv4 addressing system). The Interface layer is where The Stack addresses and is addressed by its Users, with Interfaces that govern the conditions of exchange. Reed states that today we are witnessing a shift in layer dynamics, from the User-as-subject as the paramount political vehicle "to the second order of 'the Interface' as site *of* and *for* subjectivation."[12] The Interfaces themselves become devices for political subjectivation, leading to a series of questions. Which, out of the immeasurable amount of activities taking place below the Interface layer, are the ones are made visible to Users via the Interface? How are Interfaces designed differently for different Users? Which Users have more access to the full functionality of The Stack, and how are they selected? These are ultimately political questions.

Finally, the User layer at the top of The Stack flattens all Users — human and nonhuman — onto the same operative plane. Whether inhabited by a human, animal, or machine, the User position — an informational representation that refers to a discrete object within a system — exists solely for that object to be able to address and to be addressed by The Stack. This flattening of subjectivity onto the same plane as inanimate objects forces a decentering of the human User's perspective, constituting a "Copernican trauma" that effectively removes the human from the center of historical action, exemplified by developments in artificial

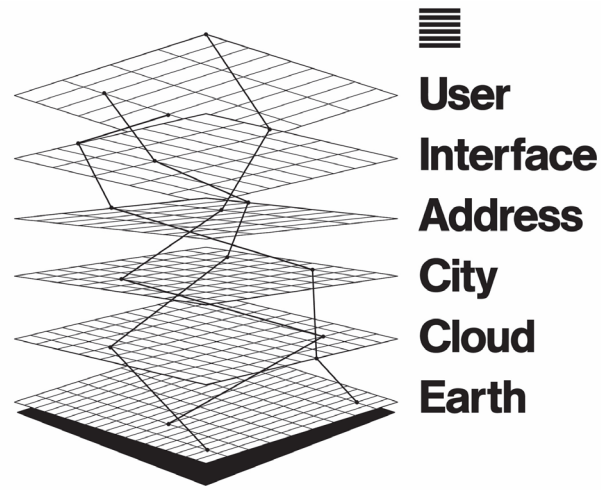


Diagram of The Stack with a U-shaped User-initiated "column" connecting its six layers.
Graphic design by Metahaven.

intelligence that establish computational machines as technical objects with nascent forms of agency sometimes outside human control. This computational trauma is allegedly on par with the "trauma" inflicted by the scientific discoveries of the Copernican Revolution in the 15th century.[13] So, for a politics of the user, it is necessary to differentiate user-subjects (human Users of The Stack) from generic Users, but also to see the User position as a unique form of representation with an own afforded agency. A politics of the user-subject should then recognize ways in which Users are already generated by (and subordinated to) The Stack, and how they can be utilized or abandoned, as a site of political struggle.

SELF-MANAGEMENT

The question of autonomy, as I want to approach it here, is not something that can be addressed by any technical solution alone. To regard autonomy as a problem that demands a solution is to presuppose autonomy as something that can be planned, managed, or enforced. Implicit in this understanding is the need for a hegemonic class of problem-solvers, whose technical necessity is indeed antithetical to the idea of autonomy/self-government. The ones who "control control" establish protocols for participation delimited by their own imagination (conditioned by their standing in society) and/or the demands of their managers (ideologically chained to a specific politico-economic system). These limitations shape the way Users are designed through the activity of giving aesthetic form to the Interfaces they use. At the end of the day, autonomy (as a social process) can only be lived out by user-subjects who make use of the tools available to them. From the context of the squatters' movement in Europe, Stevphen Shukaitis writes, "Autonomy is not something that is possessed by an individual subject so much as a relation created between subjects; that is, it is a form of sociality and openness to the other created through cooperative relations."[14] In occupied houses and squatted factories, self-organization establishes cooperative *ownership* and *use* of the cultural and material means of production. These conditions are a necessary basis for self-management, a social practice whose goal is the generalization of self-management throughout society.

Self-management owes its theoretical and practical elaboration to an array of fertile debates and experiments going back to the 1871 Paris Commune. It has been practiced differently in various locales throughout history, but the theory of self-management was perhaps most vigorously developed in Yugoslavia and France in the second half of the 20th century. Socialist Yugoslavia, led by Josip Broz Tito, was the first sovereign state to officially institute self-management (Serbo-Croatian: *samoupravljanje*) both as an official form of industrial organization and as an integral part of its politico-economic system, tied to a spectrum of political ideas associated with labor movements.[15] The concept of workers' self-management, developed by journalist and political leader Edvard Kardelj and introduced into law in 1950, was an answer to the centralist state socialism of the USSR, from which Yugoslavia broke two years before.[16] Originally conceived as an industrial paradigm, where workers were granted ownership over and collectively managed the factories in which they worked, self-management was officially reiterated in the 1960s as the organizational

form for all of society. Yet, while Yugoslav leaders tried to legislate political and economic emancipation through the mechanism of self-management from above, thinkers on the French left called for the implementation of self-management (French: *autogestion*) from below.[17] Similarly, the 1968 students movements in Yugoslavia called for generalized self-management (yet an unrealized constitutional ideal) as a primary form of governance and decision making.[18] The student protesters self-managed into work groups and, anticipating the consequences of revolution evoked in Mierle Laderman Ukeles's manifesto, cleaned up after themselves during the protests. For them, self-management meant the perpetual realization of direct democracy as part of a *continuously renewed* movement whose organizational capacities would be derived from within itself, not through representation.

What connects virtually all theories and practices of self-management is the idea that self-management is simultaneously the means of struggle and the goal of said struggle. According to the French urban sociologist and philosopher Henri Lefebvre, self-management "must be studied in two different ways: as a means of struggle, which clears the way; and as a means for the reorganization of society, which transforms it from bottom to top, from everyday life to the State."[19] Furthermore, for Lefebvre, one of the foremost theorists of *autogestion*, self-management is a fundamentally anti-statist tendency, not a system that can be established juridically or function without clashes and contradictions — instead, it reveals the contradictions in the state precisely because it is the trigger of those emergent contradictions.[20] In Lefebvre's definition, self-management never presents itself with the clarity of a purely rational, technical operation, and it cannot be enforced, only stimulated under optimal circumstances.[21] Still, it can serve as a collective means. Today's struggles against the centralization of information and infrastructural power should accordingly recognize self-management less as a technical strategy and more as a social pedagogy.

Decentralization therefore should not be fetishized as an abstract topology, but instead understood as a strategy enacted by people as part of a struggle against bureaucracy and centralized management, which unfolds at the level of everyday life.

The *platform* presents itself as both a threat and opportunity. On the one hand, centralized Cloud platforms like Google, Amazon, Facebook, and Microsoft, regardless their intrinsic value for user-subjects, have been designed around the concept of an infinitely exploitable User. This User's only afforded agency depends on circumventing their Interfaces' "dark patterns," which are deliberately misleading (but technically legal) Interface aesthetics that trick Users into sharing sensitive information or buying unwanted products without being aware of their "choice" to do so. Higher paying or more powerful customers (like corporations and government agencies) obtain completely different User profiles and Interfaces, allowing them to peer into the private lives of citizens, gathering personal information and exploiting desires, among other enhanced capabilities. On the other hand, decentralized Cloud platforms like Ethereum could potentially serve as the basis for cooperative information exchange within and between communities, which extends beyond the Cloud into the world of user-subjects through the democratic design of Interfaces and therefore Users. But if computational infrastructures remain privately owned, or even owned by the state, decentralized platforms will also have to answer to the managerial class. Experimental non-ownership or self-ownership of objects like undersea cables or electrical grids could be interesting to speculate about, but the issue with smart contracts remains: so long as they require, in the final analysis, the state for contractual enforcement, the objects addressed in smart contracts cannot escape the commodity form — they will remain something that must be claimed as property. Bratton's notion of platform sovereignty (political subjectivity combined with infrastructural sovereignty) could serve as a means for

user-subjects to experiment with new practices of self-management, meanwhile developing, from below, new sets of social relations to enable generalized collective ownership and use.

With an almost uncanny anticipation of today's discussions about technology, Lefebvre made, in 1969, the following speculation about the overall management of society:

Automation at the base of the productive forces, the utilization of electronic devices such as computers capable of providing decentralized management with a continuous flow of information — these new technologies create new possibilities. But on condition that they be used to promote the withering of the state and bureaucracy, and not to strengthen institutions technocratically.[22]

As researcher Uroš Pajović has noted, Lefebvre writes elsewhere about "the emergence of a network of self-managed agencies that 'would ensure the expression of social needs and the social control of production.'"[23] Put simply, new technologies could be used for good, but only as part of a strategy dictated at the base, not one controlled by managers or bureaucrats at the top. However, Lefebvre, a self-declared Utopian, may have been overly optimistic about the historical development of computation, whose unique forms of alienation demand a renewed approach to struggle. More than just humanity's technical servants, computational machines have, through the decentering of the human User (the user-subject), caused a generalized trauma that demands confrontation on both mental and emotional levels. Lefebvre writes that self-management is at work whenever a social group refuses to passively accept its conditions of existence or subsistence and forces itself to understand and master its own conditions of life.[24] Today, that understanding should include the shifts in sovereignty from states to platforms, the deep embeddedness of computation in many aspects of everyday life, the pitfalls of dark patterns and media manipulation, the political importance of Interface and User design, and countless other threats and opportunities brought on by computation.

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