

# The Cybernetic Hypothesis & Architecture

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### ABSTRACT

*Whatever happened to cybernetics in architecture? Cybernetics swaggered from day one. Its original mission, to predict the evasive manoeuvres of bomber pilots, soon evolved into making predictions in social systems and game theory, as well reconfiguring architecture as a system. Then, one day, the moment passed, and cybernetics vanished without fanfare. Or so the story goes.*

*What if, on the contrary, cybernetics disappeared in name only, and its principles still thrive in architectural practices? Tiqqun's "L'Hypothèse cybernétique" (2001) argues that the cybernetic hypothesis replaces the liberal hypothesis of sovereignty with one of control. The article traces cybernetics in architecture with the aim of articulating how cybernetics remains in the "post-critical" turn.*

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### KEYWORDS

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## Introduction

If the seventeenth and early eighteenth centuries are the age of clocks and the later eighteenth and the nineteenth centuries constitute the age of steam engines, the present time is the age of communication and control.<sup>1</sup>

*L'hypothèse cybernétique* est donc une hypothèse politique, une fable nouvelle qui, à partir de la Seconde guerre mondiale, a définitivement supplante l'hypothèse libérale. A l'opposé de cette dernière, elle propose de concevoir les comportements biologiques, physiques, sociaux comme intégralement programmés et re-programmables. Plus précisément elle se représente chaque comportement comme «pilote» en dernière instance par la nécessité de survie d'un «système» qui le rend possible et auquel il doit contribuer.<sup>2</sup>

The history of cybernetics is wild and multifaceted, carrying itself with utopian swagger until, suddenly, it vanished – or so they say. To document the presence of cybernetics is itself a task far larger than the scope of this article; what I strive to do here is something different: I am searching for what we could call the *virtual agency* of cybernetics. How does cybernetics affect *how we think* beyond those instances of architectural practice that explicitly reference a cybernetic discourse? I am interested in the aspects of cybernetic thought that have become habits of mind without being recognized as cybernetic as such. This issue will be discussed with an eye on architectural theory and practice focused on architecture since the turn of the millennium and the “post-critical” moment in architecture. More specifically, my purpose is to open up a discussion on the relationship between architecture and the cybernetic notion of control. Control can in this context be said to be double-sided: on the one hand, there are technological aspects of control (surveillance, tracking, access cards, etc.); and, on the other hand, there is a social aspect that I will argue is far more insidious, forming not only how we understand the world, but arguably also how we believe the world to be configured.

Cybernetics allegedly vanished as a defined discourse in the early 1970s, but this non-presence does not equal absence.<sup>3</sup> If we instead follow the French collective Tiquun's 2001 “L'Hypothèse cybernétique,” the very opposite is true. Tiquun postulate that since the end of WWII, the world left the “liberal hypothesis” – here defined in terms “‘private vices’ to be guarantees of the ‘common good’” – in favor of a *cybernetic hypothesis*.<sup>4</sup> This latter operates under the flag of liberalism, and what we are living in is a world of *cybernetic capitalism* rather than any version of liberalism.<sup>5</sup> The cybernetic hypothesis argues that cybernetics disappeared in name only, and that its principles dominate how we think the world works.

Architectural discussions on cybernetics tend to focus primarily on architects who consider themselves to be approaching architecture

1. Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine* (Cambridge: MIT Press, 1985 [1948]), 39.

2. The *Cybernetic Hypothesis* is thus a political hypothesis, a new fable that after the second world war [sic] has definitively supplanted the liberal hypothesis. Contrary to the latter, it proposes to conceive biological, physical, and social behaviors as something integrally programmed and reprogrammable. More precisely, it conceives of each individual behavior as something “piloted,” in the last analysis, by the need for the survival of a “system” that makes it possible, and which it must contribute to.’ Tiquun, “The Cybernetic Hypothesis,” 42. All English translations in this document are from “The Cybernetic Hypothesis,” <https://theanarchistlibrary.org/library/tiquun-the-cybernetic-hypothesis.pdf>. This translation is uncredited.

3. With many notable exceptions, such as the continued presence of Gordon Pask at the Architectural Association in London.

4. Tiquun, “The Cybernetic Hypothesis,” 41.

5. Since neoliberalism and cybernetics both emerged out of the post-war context, the two can certainly be considered related. In an analogous argument, Douglas Spencer in a recent book considers cybernetics as neoliberal science, whereas Tiquun consider neoliberalism a cybernetic ideology. Douglas Spencer, *The Architecture of Neoliberalism: How Contemporary Architecture Became an Instrument of Control and Compliance* (London: Bloomsbury, 2016).

through cybernetics, explicitly referencing cybernetic theory and architectural undertakings. Such an approach may fail to detect or understand a wider cybernetic influence, one that can be traced through other disciplines as much as through architecture.<sup>6</sup> This article will follow Tiqqun's hypothesis to move beyond such restraints, and it will explore the non-absence of cybernetics in the contemporary architectural discourse with an emphasis on the notion of "control."

The article's contribution to the broader field of cybernetic architecture is a broadening of this discussion beyond the explicit cybernetic tradition. In the more general field of architectural theory, a discussion on cybernetic presuppositions and control cybernetics appears timely in the post-critical discussion of criticality and critical spatial practices.

The text is divided into two main parts. Part 1 discusses very briefly the development and concepts of cybernetics as they emerged, as well as the explicit presence of cybernetics in architecture. Part 2 brings the discussion to the present and analyses how the concepts and presuppositions of cybernetics remain present and relevant in the contemporary architectural discourse in everything but name, and problematizes this situation. Following these two main parts, the final part contains a conclusion and is an overture for further research and discussion.

### Part 1: A Brief Account of Cybernetics

Cybernetics exploded with Norbert Wiener's publication of *Cybernetics: On Control and Communication in the Animal and the Machine* in 1948 and the publication of Claude Shannon's "A Mathematical Theory of Communication" that set out the principles for the related field of study information theory in the same year.<sup>7</sup> Cybernetics, once the word caught on, promised to unite all sciences, to a universal system of understanding everything as one system by – as Tiqqun dramatically put it – making living things into machines and making machines out of living things.<sup>8</sup> Although the velocity with which cybernetics and information theory caught both academic discourses and public imagination suggests that this was a sudden appearance, there is a much longer history behind the principles that came to be claimed as cybernetic.

The most common reference backwards, also prominent in *Cybernetics*, is an article from 1943, co-written by Wiener, that attempted to predict evasive manoeuvres of enemy aircraft pilots in order to shoot them down.<sup>9</sup> However, depending on how far back one wants to trace the legacy of cybernetics, one encounters a variety of different precedents. Media theorist Seb Franklin traces the heritage of cybernetics back to Herman Hollerith's principles for machine tabulation in the 1890s;<sup>10</sup> and Wiener himself refers back to Clerk Maxwell, who wrote of feedback mechanisms and "governors" concerning James Watt's steam engine in 1868, but

6. See, for example, the discussion on cybernetics and counterculture in Hugh Dubberly and Paul Pangaro, "How Cybernetics Connects Computing, Counterculture, and Design," in Andrew Blauvelt ed., *Hippie Modernism: The Struggle for Utopia* (Minneapolis: Walker Art Center, 2015).

7. The distinction between information theory and cybernetics shifts with perspective and time, although proponents of cybernetics would argue that information theory is included in cybernetics, which has a more general approach. For a detailed discussion of this issue, refer to Ronald R. Kline, *The Cybernetics Moment: Or Why We Call Our Age the Information Age* (Baltimore: John Hopkins University Press, 2015), 4 and 11.

8. Tiqqun, 46.

9. Arturo Rosenblueth, Norbert Wiener, and Julian Bigelow, "Behavior, Purpose and Teleology," *Philosophy of Science* 10, no. 1 (1943); Seb. Franklin, *Control: Digitality as Cultural Logic* (Cambridge: MIT Press, 2015), 166-67.

10. Franklin, *Control*, 28-32.

suggests that the term cybernetics itself is new.<sup>11</sup>

Wiener defined cybernetics as an “entire field of control and communication theory, whether in the machine or in the animal.”<sup>12</sup> This was the typical cybernetics swagger, promising a universal system that would unite all sciences and make politics a relic of the past. The word cybernetics itself, Wiener notes, from Greek, means “steersmanship.” Cybernetics can be considered the art of piloting (or controlling) systems, with etymological reference to governing. The systems are here comprised by agents; each agent (human or non-human) affects the system in one way or another, and the agents defined in terms of input and feedback within the system.

The perhaps most central concept in cybernetics is the feedback loop, succinctly described by media theorist Alexander R. Galloway as “an internal message loop in which messages originating within the system also effect the operation of the system. This results in dynamic change, and, as a result, systems use feedback in order to mitigate imbalance and pursue homeostasis.”<sup>13</sup> The negative feedback loop permits a system to adapt itself and remain in balance as it compensates for fluctuations, and, in theory, permits the system to evolve. Originally, in the relationship between the cybernetician and the system, the cybernetician was on the outside, very literally a controller of the system. This perspective changed with what became known as *second-order cybernetics* (sometimes described as second-wave, or social cybernetics), which included the cybernetician in the feedback system. Second-order cybernetics was an approach articulated by Heinz von Foerster (the cybernetics of cybernetics), and advocated by Gregory Bateson, Margaret Mead, and Gordon Pask, among others. N. Katherine Hayles notes that if first-order cybernetics was concerned with the flow of information within a system, second-order cybernetics concerned itself with the interaction between system and observer.<sup>14</sup> The system thereby becomes not only self-regulating, but also self-organizing, or even *autopoietic*, as it would be claimed. As Kline notes, second-order cybernetics resonated with the counterculture movement in the US at the time, bridged by Gregory Bateson’s “ecology of the mind.”<sup>15</sup> Seemingly paradoxically, in counterculture, cybernetics became associated with freedom *from* control rather than control itself, a curious twist that has arguably served to obfuscate the naturalization of the cybernetic hypothesis that Tiqqun suggested has replaced the liberal hypothesis.

The cybernetic hypothesis starts from the presumption that the world is a system (in a network model). This serves as the starting point for thinking through a network-oriented system, of edges and nodes, as Galloway reminds us, the cybernetic hypothesis “refers to a specific epistemological regime in which systems or networks combine both human and nonhuman agents in mutual communication and command.”<sup>16</sup>

11. Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine* (Cambridge: MIT Press, 1985 [1948]), 11-12, 97.

12. Wiener, *Cybernetics*, 11.

13. Alexander R. Galloway, “The Cybernetic Hypothesis,” *Differences: A Journal of Feminist Cultural Studies* 25, no. 1 (2014), 113.

14. N. Katherine Hayles, “Cybernetics,” in *Critical Terms for Media Studies*, eds. William J. Mitchell and Mark B. N. Hansen (Chicago: The University of Chicago Press, 2010), 149.

15. Kline, *The Cybernetics Moment*, 197-98.

16. Galloway, “The Cybernetic Hypothesis,” 111.

Tiqqun, relating it back to the cybernetic aspiration of making machines out of animals and animals out of machines, put it rather pointedly in the following terms:

Il ne s'agit plus d'arracher le sujet à des liens traditionnels extérieurs comme l'avait commandé l'hypothèse libérale mais de reconstruire du lien social en privant le sujet de toute substance. Il faut que chacun devienne *une enveloppe sans chair*, le meilleur conducteur possible de la communication sociale, le lieu d'une boucle rétroactive infinie qui se fasse sans nœuds.<sup>17</sup>

The individual subject is thus primarily considered through her part in the system, as an agent, and Tiqqun focus on the social aspects whereby minimum distortion in social communication is considered desirable and facilitating control.

Second-order cybernetics could be considered, as von Foerster put it, a "*cybernetics of cybernetics*" [emphasis in original],<sup>18</sup> or, as the British cybernetician Gordon Pask put it in relation to architecture: "design is control of control."<sup>19</sup> The keyword here is "control." Control, as Alexander R. Galloway and Eugene Thacker note, should not be understood in terms of something exercising control over something else (which is perhaps the most common understanding), but as *the premises according to which the system functions*. They write: "One does not simply control a device, a situation, or a group of people; rather, 'control' is what enables a relation to a device, a situation, or a group."<sup>20</sup> Control, in this sense, conditions interaction rather than disciplines subjectivities. Control is furthermore always on different levels and can be considered twofold: "*it is both an apparatus that facilitates networks and a logic that governs how things are done within that apparatus.*" [emphasis in original].<sup>21</sup> There is, in other words, no cybernetic system where there is no control, but control varies from protocol to protocol and system to system.

There is a distinction that must be emphasized here: that between the system as a pre-existing system observed by the cybernetician, and the system designed by the cybernetician. The role of the cybernetician differs significantly between the two, and so does the definition of control. Architects for the most part design systems, or, at the very least, define and activate systems that were not considered systems prior to the architect's instigation. In the latter case, the architect still defines the premises of the system, the rules and extent of the system, as well as stabilizing it. I would argue that such a system be considered designed rather than pre-existing.

In these designed systems, the cybernetician designs the rules for interactions inside the system, which we, with Galloway, can call the protocols of the system. Once these conditions or protocols are in place, the cybernetician becomes included in the feedback loop and the self-generating capacity of the system as a participant. It is precisely here that

17. "It's no longer a question of removing the subject from the traditional exterior bonds, as the liberal hypothesis had intended, but of reconstructing the social bonds by depriving the subject of all substance. Each person was to become a *fleshless envelope*, the best possible conductor of social communication, the locus of an infinite feedback loop which is made to *have no nodes.*" Tiqqun, "L'Hypothèse cybernétique," *Tiqqun 2* (2001), 49. English translation uncredited.

18. von Foerster in Kline, 196.

19. Gordon Pask, "The Architectural Relevance of Cybernetics," *Architectural Design* (September 1969), 496.

20. Alexander R. Galloway and Eugene Thacker, *The Exploit: A Theory of Networks*, vol. 21, *Electronic Mediations* (Minneapolis: Minnesota University Press, 2007), 35.

21. *Ibid.*, 29.

the social aspects of cybernetics become problematic, as the architect in effect occupies two positions within the system: acting as the catalyst/arbiter of the architect that defines the extent and protocols of the system; and, at the same time acting as a participant within this system that steers it according to the protocols, seemingly with no greater authority than other participants. The definition of the system is the level of control, the protocols of interaction make up the system's form (which is a topological form), and the system is consequently social and cannot exclusively be associated with modes of technological surveillance; this social level is both more elusive and more influential since the control of the system (as opposed to control within the system) becomes less visible and less comprehensible.<sup>22</sup> With this in mind, we turn to the cybernetic moment as it played out in architecture.

### **Cybernetics in Architecture**

The influence of cybernetics in architecture during the second half of the 1960s was substantial. We can consider architects such as Buckminster Fuller to belong to the cybernetics club, as proposed by Jonathan Massey in a discussion on the cybernetic qualities of the US pavilion for Expo 67 in Montréal.<sup>23</sup> Other architects, such as Christopher Alexander, also discussed cybernetic principles, e.g. in "Systems Generating Systems," published in *Architectural Design* in 1968.<sup>24</sup> And, at MIT, Nicholas Negroponte developed his "Architecture Machines" in the second half of the 1960s. In the UK, there was Cedric Price, Joan Littlewood and Gordon Pask's Fun Palace, which although unbuilt exerted a great influence.<sup>25</sup> There are, in other words, multiple entry-points into the discussion of cybernetics in architecture, and if one adds the countercultural narrative to the cybernetics discourse, as Hugh Dubberly and Paul Pangaro do in their "How Cybernetics Connects Computing, Counterculture, and Design," we could readily expand the discussion on cybernetics in architecture much further.<sup>26</sup> I will here delineate the field sharply, and focus on two specific articles that address the role of the architect as system designer working with social systems, as a catalyst or arbiter: Gordon Pask's "The Architectural Relevance of Cybernetics" (1969) and Sean Wellesley-Miller's "Self-Organizing Environments" (1972).

### **Gordon Pask**

In terms of British cybernetics and architecture, Gordon Pask was – and, to some extent still remains – a central figure.<sup>27</sup> Pask's relevance is usually associated with the machines he constructed (e.g. MusiColour), perhaps most notably in exhibitions like "Cybernetic Serendipity" (ICA, London, 1968), "Evolutionary Architecture" (Architectural Association, London, 1995),<sup>28</sup> and through his notion of "conversation theory."<sup>29</sup> Pask

22. The social side of cybernetics, where the observer is invariably part of the system s/he observes, was central to second-order cybernetics. See Hugh Dubberly and Paul Pangaro, "How Cybernetics Connects Computing, Counterculture, and Design," in *Hippie Modernism: The Struggle for Utopia*, ed. Andrew Blauvelt (Minneapolis: Walker Art Center), 2015.

23. Jonathan Massey, "Buckminster Fuller's Cybernetic Pastoral: The United States Pavilion at Expo 67," *The Journal of Architecture* 11, no. 4 (2006).

24. Christopher Alexander, "Systems Generating Systems," *Architectural Design* 12 (1968).

25. For a nuanced insight into the complexities of Fun Palace, see Mary Louise Lobsinger, "Cybernetic Theory and the Architecture of Performance: Cedric Price's Fun Palace," in *Anxious Modernisms: Experimentation in Postwar Architectural Culture*, ed. Sarah Williams Goldhagen and Réjean Legault (Montréal: Canadian Centre for Architecture/MIT Press, 2000), 119-39.

26. Dubberly, Hugh, and Paul Pangaro, "How Cybernetics Connects Computing, Counterculture, and Design," in *Hippie Modernism: The Struggle for Utopia*, ed. Andrew Blauvelt (Minneapolis: Walker Art Center, 2015).

27. Among texts discussing the relevance of cybernetics in architecture and Pask's legacy, we find: John Hamilton Frazer, "The Cybernetics of Architecture: A Tribute to the Contribution of Gordon Pask," *Kybernetes* 30, no. 5/6 (2001); Usman Haque, "The Architectural Relevance of Gordon Pask," *Architectural Design* 77, no. 4 (2007); Luciana Parisi, "Cybernetic Thought," in *Contagious Architecture: Computation, Aesthetics, and Space* (Cambridge: MIT Press, 2013); Andrew Pickering, "Ontological Theatre: Gordon Pask, Cybernetics and the Arts," *Cybernetics and Human Knowing* 14, no. 4 (2007), 43-57.

28. There have also been exhibitions dedicated to Pask after his passing, e.g., "Pask Present" in Vienna in 2008, see <http://paskpresent.com> (accessed August 14, 2017).

29. Haque, "The Architectural Relevance of Gordon Pask," 54.



was also a continuing presence at the Architectural Association in London, running a project there called "Morphogenesis" until his death in 1996.<sup>30</sup> Pask belonged to what has above been introduced as "second-order" cybernetics, where the cybernetician is part of the system himself/herself, and took a specific interest in the architect as a system designer.<sup>31</sup>

Pask was continuously interested in architecture and authored one of relatively few cybernetic texts explicitly discussing the role of the (cybernetic) architect: "The Architectural Relevance of Cybernetics." Herein, Pask notes that architecture is similar to engineering, as both professional roles "prescribe artefacts," but that architects are "first and foremost system designers," and have become forced to "take an increasing interest in the organizational [...] system properties of development, communication and control."<sup>32</sup> Pask notes that one significant difference is that architects design artefacts that interact with humans, whereas the engineers design material configuration alone. The architect's role as a system designer, in other words, extends beyond the material and into the social realm. Here, control and protocols become central tenets of the systems designed by the architect. Pask writes:

a building cannot be viewed simply in isolation. It is only meaningful as a human environment. It perpetually interacts with its inhabitants, on the one hand serving them and on the other hand controlling their behaviour. In other words structures make sense as parts of larger systems that include human components and the architect is primarily concerned with these larger systems; they, (not just the bricks and mortar parts) are what architects design. I shall dub this notion architectural 'mutualism' meaning mutualism between structures and men or societies.<sup>33</sup>

Pask goes on to note that this architectural mutualism "must be imaged as continually regulating its human inhabitants."<sup>34</sup> Pask's "mutualism" begins to become associated with self-governing systems, and ultimately, evolution. He is adamant that "architectural design should have rules for evolution built into them" and that "a responsible architect must be concerned with evolutionary properties; he cannot merely stand back and observe evolution as something that happens to his structures."<sup>35</sup>

Pask suggests that the architect's "aim is to provide a set of constraints that allow for certain, presumably desirable modes of evolution," and continues: "the architect determines what properties will be relevant in the man-environment dialogue."<sup>36</sup> Towards the end of the article, Pask notes how the architect's role shifts with a cybernetic approach: "design is control of control, i.e. the designer does much the same job as his system, but, he operates at a higher level in the organizational hierarchy."<sup>37</sup> Ultimately, Pask notes that the architect as controller is no longer authoritarian, but rather some form of benevolent mechanism in the background, "an odd mixture of a catalyst, crutch, memory and arbiter."<sup>38</sup> This is a role of the

30. Frazer, "The Cybernetics of Architecture," 641-42.

31. Parisi, *Contagious Architecture*, 197; Kline, *The Cybernetics Moment*, 236.

32. Pask, "The Architectural Relevance of Cybernetics," 494.

33. *Ibid.*

34. *Ibid.*

35. *Ibid.*, 495.

36. *Ibid.*, 496.

37. *Ibid.*

38. *Ibid.*

architect that is multifaceted and extends beyond the singular perspective of the architect as playing one role within the system designed.

### **Sean Wellesley-Miller**

In a 1972 article in *Architectural Design* entitled “Self-Organizing Environments,” the MIT professor Sean Wellesley-Miller argues for what he refers to as “tactical design” rather than “strategic design.” Wellesley-Miller argues that design should be considered an “online system” – like a traffic system, adapting in real time to overcome obstacles – rather than an “offline system,” where, for instance, improvements in manufacturing processes are calculated toward a stable optimization off-site. As the world is becoming increasingly complex, and with it the future, there is no need for strategies of the offline variety, since what we hold true now is by no means synonymous with what we will hold true a few years down the road. Design of the urban realm should consequently operate based on the information relevant there and then, rather than assume the task of solving the underlying problems.

In one passage, Wellesley-Miller suggests that a tactical design of a park would hypothetically amount to so much as: “we went to the site and scattered some seeds around, placed some saplings in pots at random and went home leaving the gate open.” In this process, the job of the architect or designer would be to “stimulate, steer and stabilize the process.”<sup>39</sup> The designer could make a path that enables prams to navigate the park, place a bench along the path, and possibly a telescope on the top of the hill, and so on. And should the process fail, he could introduce some stimulant to spur on the process according to different parameters. Wellesley-Miller is adamant that the designer is necessary. However, he emphasizes that: “In place of designing finished objects or structures, we design systems or environments in which structure becomes equipment and equipment is responsive to variable needs.”<sup>40</sup> The design is, in other words, conceived of as a system, and the designer is a caretaker or pilot of this system, evening out some of its bumps and keeping the process in motion. In many ways, Wellesley-Miller has a way of prefiguring the passage from cybernetic design to participatory design very bluntly, while still emphasising the role of the architect within the process.

39. Sean Wellesley-Miller, “Self-Organizing Environments,” *Architectural Design*, 5 (1972), 315.

40. *Ibid.*, 316.

## **Part 2: Contemporary Cybernetics**

At an unspecified moment in the 1970s, cybernetics as an identifiable discipline disappeared, the term fell out of fashion, and it vanished from sight. The question then is: where is cybernetics today? Everywhere, Tiqqun argue, but it is now disguised as a form of liberalism (neoliberalism). According to Tiqqun, neoliberalism is based on cybernetic principles and it is thus pointless to critique neoliberalism in relation to liberal values,



as neoliberalism is cybernetic rather than liberal at its core.<sup>41</sup> In turn, an implication of this is that critique of neoliberalism starting out from an equally cybernetic perspective – although ideologically oppositional – misses the point. To test Tiqqun’s theory in the realm of architecture, we would have to establish a cybernetic non-absence both in architectural theory and practice that operates with an explicit neoliberal framework and in architectural theory and logic that explicitly critiques this framework. In this sense, we must establish two categories: architecture operating under the umbrella of “post-critical” architecture, which will here be considered neoliberal, and, in the other category, architecture defining itself as critical of the neoliberal hegemony in post-critical architecture.

### ***Post-critical Architecture***

Considering the close affinity between neoliberalism and post-critical architecture, and between neoliberalism and cybernetics, it is perhaps not surprising to find several overlaps that seemingly confirm a lasting influence of cybernetics in everything but name. The “theoretical” foundation for the post-critical or the projective is essentially an argument against theory as such.<sup>42</sup>

In a series of articles around the year 2000, Michael Speaks argued for the superiority of “design intelligence” over “theory;” he considered the latter redundant. Speaks considered design intelligence to be a feedback-based system whereby architects act in an unstable world according to the latest information available, adapting their actions to intelligence as it emerges. In his distinction between theory and intelligence, Speaks notes that:

Philosophical, political, and scientific truth have fragmented into proliferating swarms of “little” truths appearing and disappearing so fast that ascertaining whether they are really true is impractical if not altogether impossible. No longer dictated by ideas or ideologies nor dependent on whether something is really true, everything now depends on credible intelligence, on whether something might be true.<sup>43</sup>

Theory, according to Speaks, has thus come to outlive its usefulness. All that remains is to respond (architecturally) to the intelligence constantly revealing little truths. The architect must inhabit this dynamic and complex system accordingly, or herself face redundancy. In this way, Speaks’s argument seems to directly mirror Wellesley-Miller’s argument some 30 years earlier concerning the need for tactical on-line architecture. The same justifications are presented: the speed with which the future approaches makes the question of truth irrelevant; all we can do is tactically manoeuvre according to the information or intelligence visible to us at this particular instant. Speaks’ argument also echoes Pask’s

41. Tiqqun, “L’Hypothèse cybernétique,” 42.

42. In this context, I consider Michael Speaks’s and Somol & Whiting’s articles as foundational texts; this is arguably an over-estimation of their importance. We can identify many other texts in the same vein, but the ones selected here can readily be considered representative of the architectural discussion in the early 2000s.

43. Michael Speaks, “Design Intelligence and the New Economy,” *Architectural Record* 190, no. 1 (2002), 12.

notion of the architect as system designer, where “[d]esign problems were coped with as they cropped up,”<sup>44</sup> rather solved from the bird’s eye-view of the strategist.<sup>45</sup>

Along parallel lines, architectural theorists Robert Somol and Sarah Whiting sought to replace the “indexical” of critical architecture with the “diagrammatic” in their 2002 article “Notes Around the Doppler Effect and Other Moods of Modernism.” Such an architecture would, according to Somol & Whiting, be an architecture that “actually respects or reorganizes multiple economies, ecologies, information systems and social groups” rather than be “reflective, representational and narrative.”<sup>46</sup> The diagram focuses on the organizational, privileging relations and their organization over anything else. The diagram defines relations within the system, protocols rather than a plan in the traditional architectural sense. The nodes in a diagram are here *agents* of one form or another, and these agents may be human, or not. Again, the affinities with Wellesley-Miller’s tactical design are palpable; the architect operates as a design-expert in the context in which she finds herself, working with the tactical rather than the strategic. Pask, on the other hand, noted that architects are required to design “*dynamic* rather than *static* entities” with an emphasis on form rather than material.<sup>47</sup> Somol and Whiting argue in a parallel note that what they term “projective architecture” should be considered in terms of “design and its effects rather than a language of means and material.”<sup>48</sup>

In the article “Big Forking Dilemma,” architectural theorist Wes Jones distinguishes between two different kinds of practices, both of which consider architecture in terms of a system where the architect is not so much the authoritarian of form, but the instigator of a process generating architectural form.<sup>49</sup> Jones distinguishes between form-generating practices – including what is habitually referred to as parametric architecture – and program-generating practices – including the “Superdutch” movement/moment, as well as its acolytes.<sup>50</sup>

In form-generative practices, the parametric design process constitutes a system of its own, continuously morphing in response to feedback. In one way, these systems work well as long as they remain in the design, as diagram or as parametric design, but once they become buildings, they lose these system-like qualities to a more static reality. In this sense, they lose the dynamics characteristic of a system; one might possibly think of the built edifice as a representation of a system. Where we (architects) habitually consider the design process to work with representations of the built edifice, this is here reversed: the edifice then becomes a representation of the system in the design process. This does not hold true for all architecture, but there is perhaps a grain of truth in some instances of post-critical design. In program-generative practice, on the other hand, the form of a building is generated through a (“witty”) programmatic gesture, which serves as the organizing protocol of the

44. Pask, “The Architectural Relevance of Cybernetics,” 494.

45. It should be noted that both Wellesley-Miller and Pask consider modernism to be the exception in history, and both maintain that pre-modern architecture was for the most part, in Wellesley-Miller’s term, on-line and tactical rather than off-line and strategic.

46. Robert Somol and Sarah Whiting, “Notes around the Doppler Effect and Other Moods of Modernism,” *Perspecta* 33 (2002), 77.

47. Pask, “The Architectural Relevance of Cybernetics,” 494.

48. Somol and Whiting, “Notes around the Doppler Effect,” 75.

49. Wes Jones, “Big Forking Dilemma,” *Harvard Design Magazine*, no. 32 (Spring/Summer 2010).

50. See Tahl Kaminer, *Architecture, Crisis and Resuscitation: The Reproduction of Post-Fordism in Late-Twentieth-Century Architecture* (Oxon: Routledge, 2011), 159-164.

system then generated around this gesture. In both cases, the architect functions as the controller of the system rather than the author of form, working in a way that resembles first-order cybernetics.

### **Critical Spatial Praxis**

If the broad category of post-critical practice primarily considers the design process as a system, another group of architects that can perhaps – again sloppily – be classified as “critical spatial praxis” takes a different approach, one more reminiscent of second-order cybernetics. I take the term “critical spatial praxis” from the introductory chapter of the 2011 *Spatial Agency: Other Ways of Doing Architecture*, edited by Nishat Awan, Tatjana Schneider and Jeremy Till. The book and the examples discussed in it have become increasingly influential in recent years, particularly within architecture education, and the authors suggest that the critical spatial praxis constitutes a different paradigm of practice.<sup>51</sup> Essentially, the authors posit their position as a way to critically engage with architecture rather than as a negation of post-critical practice.<sup>52</sup> There is however a clear tone in the introduction, juxtaposing their “paradigm” to neoliberal capitalism and “traditional architecture” that focuses on buildings as well as contrasting their approach to “traditional theory.” The authors instead focus on architecture as the development of a system. They write: “Buildings and spaces are treated as part of a dynamic context of networks. The standard tools of aesthetics and making are insufficient to negotiate these networks on their own, and so the examples collated here use other priorities and ways of working as part of their toolkit.”<sup>53</sup> The view on architecture echoes Pask’s view of architecture as a dynamic system that evolves: “In other words, structures make sense as parts of larger systems that include human components and the architect is primarily concerned with these larger systems; they (not just the bricks and mortar part) are what architects design.”<sup>54</sup> Similarly, the architect is a system designer who cultivates, rather than designs, a system.

The role of the architect in critical spatial praxis is of one who empowers others; the architect makes it possible for these others “to engage in their spatial environments in ways previously unknown or unavailable to them, opening up new freedoms and potentials as a result of reconfigured social space.”<sup>55</sup> There are once again affinities here with Pask’s view on architecture, where: “His [the architect] aim is to provide a set of constraints that allow for certain, presumably desirable, modes of evolution.”<sup>56</sup>

One key term in critical spatial praxis is the notion of agency, borrowed from Anthony Giddens.<sup>57</sup> Following Giddens, Awan, Schneider & Till argue that agency can be considered in terms of an ability to act otherwise, of transforming a system; the agent is consequently one who initiates a transformative act.<sup>58</sup> Pask, on the other hand, maintained a second-order cybernetics view on the cyberneticist (the architect) as first an instigator

51. “The work presented here ... [is] presenting a new paradigm as to how to operate – a paradigm that has thus far been largely written out of the standard histories of architecture.” N. Awan, T. Schneider, and J. Till, *Spatial Agency: Other Ways of Doing Architecture* (Routledge Chapman & Hall, 2011), 27.

52. *Ibid.*, 28.

53. *Ibid.*

54. Pask, “The Architectural Relevance of Cybernetics,” 494.

55. Awan, Schneider, and Till, *Spatial Agency*, 32.

56. Pask, “The Architectural Relevance of Cybernetics,” 496.

57. Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Cambridge: Polity Press, 1984); Awan, Schneider, and Till, *Spatial Agency*, 31.

58. Awan, Schneider, and Till, *Spatial Agency*, 31-32.

and later a part of the system as a whole, a system that is composed of a variety of agents that all affect the system according to their capability. Both Awan, Schneider, & Till and Pask view the architect as an agent within this larger system, and hold that the role of the architect in this contingent system is to move beyond hierarchies and open up for (self-governed) evolution to take place. This requires an interaction with the environment, and defines architecture as invariably contingent on external factors. Awan, Schneider & Till outline a “mutual knowledge,” again from Giddens, where the architect is considered an “expert citizen” rather than a protected professional.<sup>59</sup> Mutual knowledge is considered the “defining feature of the agent’s makeup.”<sup>60</sup> Pask considers architecture to be contingent in relation to other systems:

Once a rudimentary version of the functional/mutualistic hypothesis has been accepted, the integrity of any single system is questionable. Most human/structural systems rely upon other systems to which they are coupled via the human components. By hypothesis, there are organizational wholes which cannot be meaningfully dissected into parts.<sup>61</sup>

To Awan, Schneider & Till, the intent of the architect remains valid; critical spatial praxis, they argue, “starts with an open-ended evaluation of particular external conditions, out of which action arises with no predetermined outcome but with the intention to be transformative.”<sup>62</sup> The system is too complex to contain any truths, predetermined ideologies are to be shunned and the process guides itself through the contingencies imposed on the system. Pask’s take on the intent of the architect appears in some ways reminiscent, as shown below:

An immediate practical consequence of the evolutionary point of view is that architectural designs should have rules for evolution built into them if their growth is to be healthy rather than cancerous. In other words, responsible architect must be concerned with evolutionary properties; he cannot merely stand back and observe evolution as something that happens to his structures.<sup>63</sup>

In Pask’s view, the intent of the architect is to enable a system to auto-evolve, where the architect is no longer the power of control, but rather the agent who makes the evolution possible by determining the system and situating it in relation to other systems. He notes that: “In all of the cases so far considered the primary decisions are systemic in character, i.e. they amount to the delineation or the modification of a control program. This universality is typical of the cybernetic approach.”<sup>64</sup> Awan, Schneider & Till would not use that precise terminology, and while they emphasise the importance of the political – all architecture is political – and have a short discussion on the subject of power relations. In it, they recast the architect as an agent within a system who catalyses and enables without elaborating further on what kind of control (in the sense

59. *Ibid.*, 32.

60. *Ibid.*

61. Pask, “The Architectural Relevance of Cybernetics,” 494.

62. Awan, Schneider, and Till, *Spatial Agency*, 29.

63. Pask, “The Architectural Relevance of Cybernetics,” 495.

64. *Ibid.*, 496.

discussed above, through establishing protocols that define the system) the architect wields, and how this makes the empowering agent an agent with a somewhat different power to act than the others. However, it is precisely in the realm of the political that their approach and its cybernetic legacy can be considered problematic.

### Conclusions

The echoes of cybernetics are in other words multiple, in post-critical architecture as well as critical spatial praxis. What we could hesitantly call a cybernetic ideology is not-absent in architecture that finds itself liaised with neoliberalism as well as architecture in opposition to this dominant order. This omnipresence would, at least provisionally, attest to a certain validity of Tiqqun's cybernetic hypothesis, and appears as something that merits further discussion and research.

Architecture is habitually considered as a system; in all the examples above it is either the design process or the architectural assemblage itself that has systemic characters and evolves over time. A system can here be understood as "an aggregation of things brought together to form a complex whole."<sup>65</sup> The systems envisioned, both in cybernetics and in contemporary architectural practice, are basically of a network model; i.e., understood in terms of nodes and links; communication between nodes passes through the links. In both "post-critical" architecture and critical spatial praxis, the feedback loop plays an important role – it is feedback that permits the design or the system to evolve and become generated rather than authored, that is, the architect authors the parameters or protocols according to which the system evolves.

In terms of post-critical practice, the system in question appears to be limited to the design process in many cases, whereas in critical spatial praxis, it is the protocols that define the system that is defined and subsequently co-evolved with participants whose agency is *within* the parameters of the system-defining protocol. In both post-critical architecture and critical spatial praxis, the generated system is contingent on external factors; this is what makes each project unique, and incidentally also what lends a certain democratic legitimacy to the project in terms of critical spatial praxis.

Agency within these systems is often emphasized within critical spatial praxis, and this is also one of the areas where one may have certain objections to this form of practicing architecture. One of the key tenets in cybernetics is to consider the world in terms of agents that affect the operations of a system, and agents are thus included in analysis regardless of their relative power. As Galloway reminds us, "while agents may be wildly different in their relative size and power, each agent is endowed with the power of local decision according to the variables and functions

65. Galloway, "The Cybernetic Hypothesis," 113.

within its own local scope.<sup>66</sup> Galloway notes, with reference to an aircraft and a pilot as a system, that “while the pilot and the instruments are not equal in power or type, they interoperate as equal peers to the extent that each may accommodate inputs and outputs and each may influence the outcome of the overall system.”<sup>67</sup> Such a conception of agency appears similar to how critical spatial praxis focuses on the agent (as distinguished from the architect). Critical spatial praxis does not recognize figures of authority within the system. The architect, for example, is recast as an “expert citizen,” an agent who is a citizen, but at the same time an expert. This double nature, where the architect is on the one hand equal to every other participant, and on the other hand an expert with specific authority in these matters, arguably obscures the power invested in those who instigate and define the protocols, i.e., the architect.

66. *Ibid.*, 114.

67. *Ibid.*

One could readily argue that critical spatial praxis is a form of *prefigurative politics*, i.e., based on an embodied ideology enacted through the system itself. The act of evolving the system is both political means and ends in one, meaning that the system replaces politics to an extent.<sup>68</sup> The focus in prefigurative politics is on the decision-making process, which simultaneously functions as means and ends; it is what it does, an ideology enacted rather than something to be implemented after victory.<sup>69</sup> If we view critical spatial praxis as a form of prefigurative political architecture, the system is both the tool employed to enact change and representative of the change intended to be enacted. As it is both means and ends, we must keep track of the system itself, and particularly the power relations within the system, which become very difficult to perceive. The double role of the architect and the double protocols of the system: the system-defining protocols defined by the architect and the protocols defined *within* this system by participants – become an enactment of a form of politics that presupposes the system. Or, more precisely, the system is politics – politics of a specific kind however: a cybernetic politics. And one could be inclined to agree with Tiqqun, who argue that in terms of politics: “Nous ne voulons pas plus de transparence ou plus de démocratie. Il y en a bien assez. Nous voulons au contraire plus d’opacité et plus d’intensité.”<sup>70</sup> Cybernetics has, as mentioned, a tendency to render power relations invisible, power is no longer anywhere special, but this does not mean it is absent, only that it is in the *framing* of the system rather than the active enforcement of discipline within the system. What Tiqqun argue is that power should be made visible. It is in the very act of establishing the protocols for interaction that the enactment of ideology that is critical spatial praxis becomes a *re-enactment* of cybernetic ideology, rather than an effective resistance to neoliberal ideology.

68. See Awan, Schneider, and Till, *Spatial Agency*, 55.

69. Prefigurative politics dates back further however, and one can readily consider the counter-culture movement of the late 1960s and the early 1970s as prefigurative politics in their own right.

70. “We do not want more transparency or more democracy. There’s already enough. On the contrary—we want more opacity and more intensity.” Tiqqun, “L’Hypothèse cybernétique,” 61.

It would appear that Tiqqun’s “L’Hypothèse cybernétique” is worth keeping in mind as we continue to struggle with the possibility of an ethical role and civic responsibility/mandate of the architect. Cybernetics presented a worldview which has permeated many perspectives on the



world, perhaps also including architecture. Opposing the doxa that is the cybernetic hypothesis is difficult as we are situated within it, rather than occupying an outside position. However, a greater awareness of the presence and pretense of the cybernetic hypothesis enables thinking against the cybernetic system, and perhaps beginning to work with noise rather than assuming that the cybernetic ideology of control is somehow emancipatory.<sup>71</sup>

71. Tiqqun, "L'Hypothèse cybernétique," 69-72. Tiqqun's recipe for resisting the cybernetic hypothesis: panic as the constructive antidote to cybernetic risk-management. All revolt, they argue, must be based on noise in the feedback loops. Criticality is then not the positive adaptation of cybernetic logic and the attempt to use it for other purposes – such an act will merely reinforce and naturalize the hypothesis further – but instead through the very act of going against the cybernetic system itself, producing what cybernetics has attempted to eliminate all along: noise.