

Bionetworks: Distributed Forms of Collaborative Practice in Architecture

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INTRODUCTION

While much attention has been focused upon the influence of emerging digital technologies on architectural form, little has examined its far broader implications for forms of architectural practice. Yet, as with modernism and the professionalization of architecture at the end of the 19th century, as well as the rise of architectural corporations such as SOM in the mid-20th century, the future of architectural design will inevitably depend upon the reconfiguration of architectural authorship in the wake of new technologies. Just as centralized computing was replaced by the emergence of the Internet, decentralizing corporate organizations and giving way to the emergence of open-source communities such as the Gnutella file-sharing network, digital technology is transforming the way architects, designers, and artists organize their practices and thus reconfigure the objects of that practice.

This paper examines why and how compelling contemporary architecture is emerging from what we call bionetworks: robust but supple, open affiliations of actors, technologies and products that continuously modulate flows of information as a new form of design life. Bionetworks are the organizational result of pursuing Foucault and Deleuze's work on the importance of *bio-power* and by extension Michael Hardt and Antonio Negri's interest in *biopolitics*. Building on the former, the notion of a biopolitics resists the separation between the social and the natural, that which is artificially constructed and that which is given and unchanging.³ Rather, biopolitics sees

social life as a creative force that is in perpetual feedback with the natural. Hardt and Negri imagine this at work at several scales, the individual body being one of them. "Bodies themselves transform and mutate to create new posthuman bodies. The first condition of this corporeal transformation is the recognition that human nature is in no way separate from nature as a whole, that there are no fixed and necessary boundaries between the human and the animal, the human and the machine, the male and the female, and so forth."⁴ Other scales include social and cultural bodies and it is here that we situate the *bionetwork* as a collective entity that oscillates between natural and artificial states, embedding individuals, forces of production, desire, and consumption, into the technological matrix of the Internet to produce a *bionetwork*, a collective form of life. The implications of this for architecture rest in the degree to which bionetworks allow for the emergence of new agencies outside the persona of an individual genius and his centralized office or the bureaucratic hierarchies of corporate identities. Instead, constellations of experimental, international, and cross-disciplinary, decentralized, collaborative organizations are now emerging, repositioning architecture to engage unconventional problems, briefs, clients, and manufacturing processes.

This text was written collaboratively with a full awareness of its poignancy given the topic under consideration. Exploring questions of collaborative practice, especially those newly empowered by network technologies, necessarily raises questions as to the practice of writing itself, and of course, of authorship. This is very much at work in the writings of Michael Hardt and Antonio Negri, which were in turn influenced by the collaborative writings of Deleuze and Guattari. As Hardt points out, in the sciences collaborative writing is quite commonplace, and a necessary pooling of diverse specialties.⁵ It is only in the humanities that one still finds predominate a Romantic model of single authorship. For Hardt, and by extension for us, collaborative writing presents an opportunity to actualize in the text itself what is at work in the

topic of study. One is confronted with newly distributed forms of identity, of authorship and individuality, which are neither purely local (specific to one author) nor global (a pure unity) but rather are in constant feedback with one another.

THE ORGANICISM OF MODERN ARCHITECTURE AS KNOWLEDGE AND PRACTICE

In spite of those desires to see architecture as the most ancient of arts, dating to a mythic origin in the “primitive hut” or Vitruvian Figure, what we refer to by “architecture” is an irreducible and complex constellation of practices, knowledges, ethics and objects. Moreover, all these are historical (in the sense of transforming in time and related to broader cultural developments) rather than essential, or eternal. Ironically, historical evidence for this claim lay outside the scope of this paper, yet its merits are clear conceptually and theoretically. For outside the specific configuration of “architecture’s” historical conditions of possibility, little specificity can be claimed for “architecture” and little actual understanding or analysis can occur. To reduce the complexities of the field we know as architecture to a simple derivation, or deviation, from origins or essences is to prejudicially adhere it to an identity that is already given, thus preventing any real possibility of assessing its condition in the present or establishing robust alternatives.⁶

If so, then the organizations of architectural practice, its knowledge’s and the objects of those knowledges cannot be taken as *a priori* to the other. We cannot simply legitimate these by thinking them natural conditions of architectural knowledge. Instead, they should be approached as productive of each other, as nodes within a bionetwork. We can recast the constructions of modern architectural practice usually based on oppositional logics that privilege the natural with via bionetwork concepts based on irreducible complexity and non-dialectical operations.

In this regard, the professionalization of architecture, a process which began in the 19th century, can be seen as perhaps the crucial historical *a priori* for the identity we call “architecture” today.⁷ This process has many simultaneous and often contradictory genealogies. The founding of the first schools of architecture, such as the Academie des Beaux-Arts in Paris Architectural Association (AA) in London, or MIT School of Architecture in the United States. Each of these institutions began life as informal parlors for the discussion of architectural issues outside the constraints of then current practice, and only became formal schools in the first quarter of the 20th century, notably around the same time as Modernist architecture was entering its mature phase of development. For example, architecture instruction began at MIT in 1868 under the guidance of Robert Ware, but the school, the first in the United States, was formally opened only in 1932 with a sweeping reorganization for the entire university. The AA was begun in 1864 by two young architects, Robert Kerr and Charles Grey, as

an “endeavor towards an improved system of architectural study” but only began awarding degrees three year after the Royal Institute for British architects established standardized architectural exams and professional titlature.⁸ The synchrony of these events across national boundaries marks the emergence of an international profession of architecture, prior to which in the late-18th to middle 19th century was most often an heterogeneous assortment of regionally determined tacit knowledges trained by apprenticeship and based on rules-of-thumb traditions.⁹ The formalization of architectural knowledge via the establishment of schools and bodies necessarily established, and for the first time, a normative organization of architectural practice with a defined, and convention based, ethics. They also privileged building as the normative object of these knowledges in a way that had not existed before (remember that Vitruvius included time-pieces and war machinery within the remit of architecture). We can claim this normative practice is a new condition based on historical evidence and the history of ideas—the concept of the norm as simultaneously the optimal and the average is an idea born in the middle of the 19th century and its statistical framework rapidly expanded from physics through to the establishment of social sciences, medicine, etc.¹⁰ Integral to the spread of capital via industrialization and colonial power, this allowed architecture become globally normalized as a field of knowledge in advance of capital and even construction technology.

Within this condition, the profession and the avant-garde are not really the dialectical oppositions they appear to be so much as they define the topology of architecture as a discipline in modernity as a Mobius strip, in which what appear to be two-sides are actually a single surface. The architect as the “expert” on aesthetic construction inevitably led in two directions, each of which depends on the other. Firstly, to a valorization and mystification of this expertise as the domain of a heroic genius alone, or at least lonely in his (and it is a masculine identity) pursuit of his object by breaking all norms; secondly, to the further standardization that saw its ultimate triumph in the proliferation of large-scale corporate practices after World War Two. For the latter, the real project was the design of the firm, an organization that, as stated by Bruce Graham of SOM when facing criticism for the firm’s designs, would endure far longer than its architecture. Here the value of permanence in architecture has been subjected to a quintessentially 20th century turn from the object and into the mutations of practice as an organism, the products of which are merely the excretions of its endless consumption of capital. Corporate practice depends upon a division of labor and knowledge, and moreover, on an economy of scale, in which the practices of architecture are morselated into small, precise, and therefore manageable, actions. The subject of the architect becomes the firm, and the firm is divided into a series of organs, each with a designated job, and each within its place within a hierarchal, holistic organization of the corporate body. This has, in spite of self-serving claims by avant-guardists, been extraordinarily success-

ful. Moreover, because it employs models of the organic and the whole, this constitution of practice is powerfully self-naturalizing while mystifying the conditions of its emergence as a dominant model. Its commitment to expanding organization based on totalizing whole, makes corporate architectural practice ideally suited to the image of the homogenizing normalizations of global capital economies and its elevation of the “market” a natural, and thus unquestionably good, force.

Yet the corporate model retains aspects of romantic humanism and anthropomorphism of practice as a centralized intelligence. Both the genius and the corporation ascribe to roughly the same delineation of architecture, its competencies and its specializations and both require that the normative practice be maintained above all else. The corporate body because that is, literally, its “bread and butter” on which its ever greater need for consumption existence can be maintained, and the heroic sole practitioner because his avant-gardism, and hence his own brand value, depends on transgression.¹¹ Given these conditions, the Romantic notion that architecture constituted an unknown territory full of discovery and potential innovation by the genius who ventured forth was complimentary to the standardization of what that Genius was expected to produce.¹² Thus, both the avant-garde/critical practice and the corporate service profession are essentially conservative of the identity of architecture that was born in the mid-19th century and which privileges the natural organism as whole.¹³

There are, however, several collateral effects of this landscape. Firstly, as 20th century capitalism advanced, it led to a split in which, as network theorist and Marxist know, the rich get richer. Today, as recent AIA studies have shown, the very small percentage of firms (around 4%) that have over 50 employees (i.e., the corporate bodies) consume around 90% of the total billings for all projects.¹⁴ The two-thirds of firms that have under five employees (i.e., the heroes or their prosaic shadows the sole practitioners) are left to scrounge for the remains amidst small projects that rarely allow the experimentation or to a competition system that enforces the idea that good architecture is exceptional to normal practice. Moreover, in each case, the singular, hierarchal, centralized corporeal model of the architect has been maintained as natural at all costs.¹⁵ This has neglected other models of order of practice, other non-organic organizations, of “architecture” that might lead to entirely different objects of knowledge and persona of the architect. These might significantly renovate the discipline; even reconfigure it completely into a different organization of knowledge comparable to that which occurred in the mid-19th century as part of industrialization, colonialism and capitalism. Such a transformation of architecture might be useful in order to engage the problems and opportunities afforded to a global information economy. It might be inevitable if we are to conserve architecture’s operativity within culture rather than precipitate the discipline back into a rote trade.¹⁶

BIONETWORK PRACTICES, CASE STUDIES

Recently, and from a variety of sources, the usefulness, and even the actuality of this corporeal model has come under scrutiny in architecture. The skepticism began decades ago in work that analyzed how knowledge is produced. Foucault’s archeological and latter genealogical “methods” revealed how discourses and knowledges were (at least in the human sciences) constructed as often as not through non-propositional statements and historical determinants. As he argued, practices produce the objects of their study, and both precipitate from the specific, historical, conditions of its discourse as a complex field in dispersion (a *discursive formation*). The assemblage of these formations establishes a consistent topology of knowledge that is nevertheless complex and heterogeneously multiple, not whole or singular. This *episteme* is not simply the whole sum of theories and facts but the questions that can be asked and the divergences that are possible within it.¹⁷ Later, Bruno Latour pursued these implications via an ethological approach to experimental science.¹⁸ His field research did not fit the picture of a rationally unfolding discourse; to account for it Latour developed “actor-network theory” to explore the dynamics of knowledge production that: does take the distinction between subjects and objects, the subjective and the objective, into consideration. What they call an “actant”, for example, is more than a human actor. Both humans and nonhumans may be actants. An actant may be “enrolled” as “allied” to give strength to a position. When a biologist argues for the existence of a molecule, the data that prove this existence are enrolled actants. An actant may be an automatic door opener (Latour 1988), or it may be scallops in the sea (Callon 1986). In networks of humans, machines, animals, and matter in general, humans are not the only beings with agency, not the only ones to act; matter matters.¹⁹

This rephrasing of the *episteme* as a complex surface of bottom-up relations is already very close to a bionetwork. Most recently, Friedrich Kittler has expanded both Foucault’s and Latour’s work to examine “how the “discourse networks” that produce practice and objects of knowledge depend on their mediation by instruments and technology, especially how mechanical-electronic reproduction and communication technologies produce entirely different organizations of thought and practices, and in turn, their reality.²⁰ The networking of Latour’s actants occurs via media technologies of transmission. Indeed, it is no accident that these theories of knowledge production emphasize linguistics; as Kittler makes explicit, they are theories that are part of the post-cybernetic, informatic understanding of all of life processes, including that of knowledge.²¹ This opens the door to a theory of practice organization that does not assume completeness, wholeness, or centrality as *a priori* models derived from nature but the heterogeneous networking of nature-culture assemblages that Hardt and Negri, Latour and Kittler argue are basic linkages in any knowledge.

These implications of this non-organic mediated network theory for architecture are only now beginning to be instrumentalized. While many of Foucault's conclusions have been appropriated by architectural theory (Latour and Kittler's far less so) the implications of his methods for understanding architecture as such a constellation of knowledge (what Foucault calls a discursive formation) had barely been touched.²² All, however, point to the importance of the relationship between human agency and the boarder technical, social and discursive forces. At the same time, networking theory from the engineering and social sciences has created an extensive set of concepts and instruments with which to remap social and spatial relations via information infrastructures. If so, then there is a potential not only to remap the historical and present conditions of architecture as a bionetwork but to actively reconstitute architecture as a bionetwork organization, especially in regards to digital visualization and information technologies that, as Kittler might say, determine the conditions of architectural practice today. The term bionetwork thus seeks to combine these epistemological frameworks for analyzing architecture's the production of knowledge *and* implications the ontological configurations of life (including social and technical life) processes that are occurring with the exponential proliferation of material network technologies.

Within this context, we can now turn to briefly examine a few examples of recent bionetwork organization in architecture.

OCEAN NETWORK (RIP)

OCEAN is perhaps the first recent example of a networked distributed practice.²³ Established in 1995, OCEAN Net emerged from the nascent graduate design program at the Architectural Association and the advice of its teacher, Jeff Kipnis. In contrast the neo-avant-guard of the day, OCEAN Net did not seek a deconstruction of architecture's conventions. Instead they sought to reclaim a projective role for their discipline by widening its borders and reorganizing its practice as a hybrid between the sole-practitioner/small office model and network organization. It was an association of small, semi-autonomous practices located across Europe as and attempt to think-or rather, work-through the problem of how a group of young likeminded architects could forge a significant practice under current professional limitations. A network organization would allow, it was hoped, for each node to remain highly adaptive and light on its feet with low overheads. These small offices would pursue smaller projects as nodes within the OCEAN Net, while pooling resources for competitions and larger projects. As Gregory Batson stated, a network remains local at all points however extensive and the OCEAN Net was to exploit the specific cultural and economic milieus of its nodes while engaging broader issues with global implications. Hence, it could operate within the realm of the corporate giants without their inevitable homogenization and normalization of knowl-

edge or projects, and hence, the social space of those projects. This ambitious web, however, was extremely volatile and lasted only a few years, suggesting the difficulties that resist smoothly linked organizations. The network was too literally inscribed as a business plan that was inherently conflicted; because the office retained an autonomous ego, it was almost inevitable that the "rich" nodes (in terms of projects) would become richer and understandably feel less need for collaborative identity. As a result, the OCEAN Net fragmented into several "small worlds": Ocean North, Ocean D, Ocean UK, Sadar+Vuga, etc. Each of these offices continues today, some still retaining the ethic of a network practice (Ocean North) while others have become more conventional (Sadar+Vuga).

servo

While very similar to OCEAN in origin, *servo*'s organizational structure differs in a number of ways, most notably in terms of its approach to expansion. Whereas OCEAN expanded its reach by adding on additional OCEAN offices, each based in a different city and with a unique identity (OCEAN UK, OCEAN North, etc) *servo* has maintained a core structure of four partners, each practicing in separate cities but under a shared identity. This can be seen in part as a response to the increasing autonomy that emerged within the various OCEAN nodes, ultimately compromising the network's overall continuity. For *servo*, expansion has come instead in the form of external collaborations with outside entities such as MIT's Media Lab, the Interactive Institute in Stockholm, and the motion graphics company Trollback in New York. This strategy attempts to define and maintain a stable internal identity and structure of practice while simultaneously expanding into external terrains where forms of collaboration offer access to new resources and modes of production. Another difference here is that while both practices work off of nodal structures, *servo*'s approach to competition and collaboration differs in important ways. Rather than having a series of more or less identical offices each with separate and competing identities (ultimately leading to the potential of imbalance within the system) *servo*'s nodes differ from one another in drastic ways, each with a focus on different areas of research and production. Furthermore, *servo*'s design work holds an interesting relationship to their method of practice. Much of the work produced thus far, typically in the form of installations and prototypes, has had a clear focus on questions of authorship and new technology. Projects like *Lattice Archipelogs* and *Thermocline*, each commissioned for group exhibitions, integrate new interactive technologies with fabricated formal and spatial systems to, among other things, empower the user with a degree of authorship. This form of interaction between object and user within a spatial environment can be seen as parallel to the logics of the practice itself, which distributes authorship through various scales of interaction and collaboration via the Internet. Thus the objects of architectural production, their material and technological logics, are bound up in forms of organization specific to the

practice itself, initiating a feedback loop of influence between the invention of new material organizations (design production) and the invention of new social organizations (practice).

United Architects

The model OCEAN initiated was recently replicated by the collaborative venture United Architects. This group's formation was catalyzed by the World Trade Center competition comprised of Greg Lynn, UN Studio, FOA, Reiser+Umemoto, and Kevin Kennon, among a larger set of collaborations. Like OCEAN Net, the collaboration was based on the practicality of pooling resources and expertise to operate in an otherwise too grand field. It was also hoped, of course, that such a collaboration could engender alternatives to the failure the proposals produced by large corporate offices and brand-name architects. However, unlike OCEAN, United Architects was mostly composed of already famous firms situated at a perceived cutting-edge. Hence it seems to perform more like a 1970s "super-group," a band formed by members of various other famous bands by a producer, than as a distributed emergent identity. UA may be more of a branding than a structural deterritorialization of what we have argued is their ultimately conservative individual practices. Nevertheless, it would be useful to speculate about how this structure might have been able to avoid the obviously detrimental effects of adhering one avant-gardist (Libeskind) with one corporate head (David Childs) as a pseudo-team. It is possible that by incorporating skills and competencies of corporate practice (in Kevin Kennon) into its core as a new identity, that United Architects, or a group like it, might have been better able to negotiate a robust design process amidst the powerful non-architectural forces determining the outcome of the project. How? By not treating these forces and pressures as exterior threats to an ego-istic image of a design or to a bottom line removed from all process, or falling into the trap of committees-design, but enfolding them as agents and components in an extensive bionetwork, from which a project could emerge as a process. Beyond this competition, UA continues to develop work as an international collaborative practice, reflecting a shift from singular and centralized identities and models of practice to multiple and decentralized ones. Indeed, the "star architect" willingness to participate in a high-profile competition under the condition of submerging their individual identity marks a shift.

+RAMTV

RAMTV formed out of a team-based thesis project at the Architectural Association's post-graduate Design Research Laboratory (AADRL).²¹ Like OCEAN and United Architects, +RAMTV is international and multi-cultural: its name is an acronym of its members, ROBERT Sedlak (Germany), ALJOSA Dekleva (Slovenia), MANUELA Gatto (Italy), Tina Gregoric (Slovenia), VASILI Stroumpakos (Greece). Their thesis project,

"Negotiate My Boundary" (which has been published as an eponymously titled book), is exemplary of how distributed practices not only change the role of the architect within larger social networks but also alter the nature of the objects of design and its knowledges. This project for a middle to high density housing complex in London incorporates the design opportunities the internet affords a reconfigured practice by allowing potential owners (clients) to negotiate their desires and needs with other potential residents, based on questionnaires that align traits and desires, followed by direct telecommunication. Through web-based interfaces and the technologies of mass-customized components, the process of design becomes a hybrid between the business model of Dell Computer (in which clients can build customized machines derived off robust platforms) and day-trading. Through the project, +RAMTV made a convincing case for how spaces and functions that normally exist in the private domains and conventional typologies might be shared between households, as well as how more widely shared areas and functions might perform. In their project, the managerial role of corporate practice is accelerated and shifted from internal conservation to the process of design as the management of forces and the construction of the project as a robust and sustainable actualization is space and matter. The resulting project is itself a projection of how an artificial community could be constituted outside bourgeois and humanist conventions (such as public/private dichotomies, racial/class identities, typologies) and instead operate as a bionetwork. Such projections are vital if architects are to re-engage the demographic transformations of the contemporary metropolis beyond empty clichés of usually vacant plazas and picturesque homogenizations of the global suburbia.²⁵ Today, +RAMTV continues to develop the internet as an instrument to re-tool architecture as a cybernetic machine, using web-technologies as meeting place from their geographically dispersed locales, for dissemination, and as a generative laboratory for design.

CONCLUSION: BEYOND THE GLOBAL, THE BIONETWORKS OF EMPIRE

Each of these case studies present alternatives to the oppositional model and understanding of architectural practice. As Stan Allen notes, "too often, contemporary practice oscillates between mechanical repetition and shallow novelty."²⁶ He goes on to outline what he sees as a dialectic of "dumb practice" and "dumb theory." As mentioned earlier we can understand this in the polarity of corporate practice and the avant-garde. Both fail in the extremism of their approach, ultimately begging the question of a *third way*. Corporate practice utilizes processes and technologies of repetition and expansion to further its productive capacity but often at the expense of innovation. The avant-garde, or what some refer to as critical practice, focuses almost exclusively on innovation but typically from a position so external to *reality* that more often than not it is relegated to mere speculation or theory. In the former, communication as

fostered and accelerated by the Internet works in exceptionally sophisticated ways but usually towards simple notions of efficiency (the Internet allows for companies to expand without jeopardizing its solidarity). What is perhaps more at stake is the capacity for increased communication to become a site of invention and production itself. It is here that Allen looks to practice itself as a way out of this binary condition. By focusing on practice, its very techniques, technologies, and operations as opportunities for innovation, one is presented with the potential of an alternative. "Material practices produce new concepts out of the materials and procedures of work itself, and not as a regulating code grafted onto the work from outside."²⁷ Here one is obviously referred to the material practices of drawing and other forms of making in the practice of architecture, but by extension one imagines similar dynamics at work in the social practice of architecture as well (the very exchange of information and acceleration of communication as seen with the emergence of the Internet). And it is here as well that we can return to Hardt and Negri and the issues raised in their collaborative book *Empire* for similar suggestions.

In the context of biopower, as developed from Foucault, Hardt and Negri offer a slight revision to its conceptualization. Whereas Foucault imagined forms of biopower operating from the top down, Hardt and Negri see it at work from the bottom up.²⁸ Information, not only in its generation but in its communication and consumption as well, is itself a site of innovation. To the extent that the user or consumer of information no longer engages with it on a purely passive level but becomes instead an active participant, consumption transforms into a variation of production. One then no longer sees a one-directional system of production and consumption, cause and effect, but rather a complex socio-economic feedback loop whereby the user, at both individual and collective scales, becomes a part of the process of invention. "What characterizes the current technological revolution is not the centrality of knowledge and information, but the application of such knowledge and information to knowledge generation and information processing/communication devices, in a cumulative feedback loop between innovation and the use of innovation."²⁹ It is here that Hardt and Negri site what they refer to as 'the multitude.' If *empire* represents the increasingly globalized regime of economic and political forces, a vast network of power structures that have essentially relocated the traditional power structures of the nation-state and the corporation to a global level, then the multitude is what Hardt and Negri see as a potential alternative. They argue that it is the very conditions that define *Empire* (the technologies of the Internet, forms of political deregulation, etc.) that ultimately enable the emergence of alternative forms of global organization. The multitude then cannot be seen as a form of resistance and therefore differs from familiar models of political and cultural resistance. It is very much inside of *Empire* and thus by definition operates not through a logic of opposition and critique but of opportunism and projection. One could say it is a form of material practice,

seeking opportunities among the various techniques and technologies of economic and political production for the invention of new forms of social organization.

One sees the multitude at work in a variety of hacking cultures whereby users increasingly engage actively with the products they consume. Other examples include the relatively recent phenomenon of protest groups newly empowered by the ability to network virtually. One might look to the global protests of February 2002 in which organizations like *moveon.org* were able to mobilize people in numbers previously unimaginable, or to the WTO protests that preceded it. Many have referred to these politically oriented forms of distributed cultural practice as *smart mobs*. The smart mob is a distributed cultural body employing the material potency of the Internet as a site of invention for new and unpredictable modes of social agency. Organizations like *moveon.org*, while instrumental to the coordination of these systems, actually play a minimal role by conventional standards. Often referred to as *leaderless*, the smart mob relies less on organizations like *moveon.org* for a systematic structure of operation and more as a catalytic information and resource hub.³⁰ Less a top down structure whereby agency is distributed from a single source through a chain of command, these cultural systems seem to breed like a kind of virus from the bottom up. Their intelligence originates at a local level where individuals pass information on to one another. The speed and flexibility of the Internet combines this local networking with new forms of access to information about political activities made available by organizations like *moveon.org*. Thus agency is distributed across the system and is the direct byproduct of new and increasingly flexible forms of interface between technological and cultural activities.

We also see these organizations taking cultural forms not necessarily political in origin, but which eventually become political by way of the threat they pose to traditional models of economic organization. Here one might look to the effect Napster had on the recording industry, essentially transforming the way music is produced, distributed, and consumed. Initially an improvisational programming experiment eventually dismantled through a series of legal battles, the idea Napster posed to the world about new forms of distribution continues in the likeness of Apple's iTunes Music Store. Ironically, it is not the recording industry but a computer company that has made inroads into developing the illicit provocations of an on-line subculture into a legitimate business strategy. Aware that the efforts of Napster were less a revolutionary posture built around ideology and more the inevitable manifestation of an organizational shift resulting from the emergence of new technologies and the social practices they engendered, Apple works within as opposed to against the interface of technological and cultural systems. "In America there seems to be a greater loyalty to industrial achievement; there's a morality that dictates that one should not hack or patch or copy. The result, it seems to me, is that one is that much more hopelessly surrendered to the

industrially determined products while their foam packing turned to the outside sells as cyberspace ideology.”³¹

Ultimately, then, our interest has been to position new forms of architectural practice within two predominate contexts, one being more specific to architecture itself and the other to a larger cultural framework as raised by the discourse around questions of globalization, particularly in relation to Hardt and Negri’s *Empire*. We also argue that the reformulation of practice and its objects also requires a reformulation of our understandings of the history of those practices and knowledges. Both are of these projects pose a imperative question: whether one can imagine new forms of practice, bionetworks, born from the very techniques and technologies that define existing power structures, and whether or not this imagining might reorganize the landscape of architectural knowledge and practice differently from the normative conservation of a wholly modern, divide between the professional and academic.

NOTES

¹ “The Theory & Event Interview: Sovereignty, Multitudes, Absolute Democracy: A Discussion between Michael Hardt and Thomas L. Dumm about Hardt’s and Negri’s *Empire*,” *Empire’s New Clothes: Reading Hardt and Negri*, Paul A. Passavant and Jodi Dean, Ed. (Routledge, 2004), 163.

² “The Theory & Event Interview: Sovereignty, Multitudes, Absolute Democracy: A Discussion between Michael Hardt and Thomas L. Dumm about Hardt’s and Negri’s *Empire*,” *Empire’s New Clothes: Reading Hardt and Negri*, Paul A. Passavant and Jodi Dean, Ed. (Routledge, 2004), 163.

³ Michael Hardt and Antonio Negri, *Empire*. (Harvard University Press, 2000)

⁴ *Ibid.*, 215

⁵ “The Theory & Event Interview: Sovereignty, Multitudes, Absolute Democracy: A Discussion between Michael Hardt and Thomas L. Dumm about Hardt’s and Negri’s *Empire*,” *Empire’s New Clothes: Reading Hardt and Negri*, Paul A. Passavant and Jodi Dean, Ed. (Routledge, 2004), 164.

⁶ That is not research but moralism and cannot produce knowledge but merely platitudes. The problems with these identities of the Same have been thoroughly examined by, among others: Deleuze and Guattari, Foucault, Elizabeth Grosz, and Homi Bhabha’s concepts of hybridity.

⁷ This is the implication of Dana Cuff’s ethnological dissection of practice as a culture in: *Architecture: The story of Practice* (MIT Press, 1991). It would be interesting to extend such work via Latour’s actor-network theory (see below). The term “historical a priori” is from Foucault’s inversion of the Kantian principle of the “transcendental a priori.”

⁸ The nascent AIA experimented with the idea of becoming a school in the 1860s as well, but due to funding restraints chose instead to support emerging centers for formal architectural education, such MIT. See also, James Fisher’s PhD research at the Architectural Association. *The Gift of Profession* (2003).

⁹ This also indicates the extent to which the formalization of architectural education a condition of professionalization rather than something opposed to the needs of practice.

¹⁰ For the emergence of the norm and normative frameworks of ethics and epistemology, refer to: Georges Canguilhem, *The Normal and the Pathologi-*

cal. (Zone Books, 1991); Ian Hacking, *The Taming of Chance* (Cambridge University Press, 1990).

¹¹ Of course there are many forms of practice that do not fit in either of these categories, but that nevertheless occupy the same surface of architecture: however our examination is focused on dominate forms of practice either in terms of architectural discourse and/or sheer size and scope.

¹² All this has been accompanied by a complete compliance to normative conditions of the construction and insurance industries.

¹³ The personas of the “Architect,” in both its heroic and corporate guises, inhabit this terrain of knowledge (and not some timeless, essential ideal).

¹⁴ AIA, *The Business of Architecture: 2003 Firm Survey Hardcover*. (AIA, 2003)

¹⁵ This model is subject to the same critique Deleuze and Guattari level at what they call “aborescent”, or tree-like hierarchical models of order, or the privileged accorded to the organism and the organic whole, what they call molar, in understanding order at the expense of the machinic, operations of molecular, distributed alternatives.

¹⁶ As Reyner Bahnam suggested in the conclusion of *Theory and Design in the First Machine Age*: run with technology and abandon all conventional persona of the architect or die. While acknowledging the problems with Bahnam’s Sophie’s choice we would argue that an alternative has not been adequately presented.

¹⁷ Foucault, *The Archeology of Knowledge* (Pantheon, 1972); c.f. Deleuze, *Foucault* (Athlone, 1988).

¹⁸ Bruno Latour, *Laboratory Life* (Princeton, 1986).

¹⁹ Christian Risan, *Artificial Life: A Technoscience Leaving Modernity? An Anthropology of Subjects and Objects*, (TMV-senteret 1997).

²⁰ Friedrich Kittler, *Discourse Networks 1800/1900*. (Stanford University Press, 1992).

²¹ C.F., Canguilhem, “The Knowledge and the Living,” *A Vital Rationalist* (Zone Books, 1993).

²² Christopher Hight’s forthcoming research, *Measuring Vortices: Architectural Principles in the Age of Cybernetics*, in part, pursues these implications for retelling the history of architecture through archeological and network-theory methods.

²³ TEAM 10, among other collaborations that arose in the 1950s and 90s, can be understood as a pre-historic example of a bionetwork practice. This prehistory lay beyond the scope of this paper.

²⁴ Christopher Hight was, with Patrik Schumacher, +RAMTV’s principle thesis advisors. Brett Steele and Tom Verebes were also their instructors on the course. The AADRL, in its team based approach to parametric design processes and physical-analogue computation, is itself designed as an experiment with networked configurations of practice and education, especially in regards to the potential of information technologies.

²⁵ For more on this project’s cybernetic implications refer to: Christopher Hight, “Subjects, Boundaries, Negotiations,” *Negotiate My Boundary!: mass-customization and responsive environments*, +RAMTV (Architectural Association, 2002).

²⁶ Stan Allen, *Practice: Architecture, Technique, and Representation* (G+B Arts, 2000).

²⁷ *Ibid.*, 13

²⁸ “The Theory & Event Interview: Sovereignty, Multitudes, Absolute Democracy: A Discussion between Michael Hardt and Thomas L. Dumm about Hardt’s and Negri’s *Empire*,” 167.

²⁹ Manuel Castells, *The Rise of the Network Society* (Oxford, 1996), 32

³⁰ George Packer, “Smart-Mobbing the War” (New York Times, 2003)

³¹ Friedrich Kittler and Laurence Rickels, “Spooky Electricity” (Artforum, Dec 1992), 67