

The Autopoeisis of Architecture

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Karim Rashid's slogan "I want to change the world" works as ironic gesture against all odds. It entertains as a crass contradiction of the all too evident impossibility of designing a new world. Karim Rashid's sense of humor thus indicates how far utopia has been left behind.

There are two related tendencies that conspire to frustrate any straightforward utopian impulse within architecture and design:

1. The dissolution of the utopian politico-cultural discourses of emancipation and social progress, as expressed in Lyotard's notorious formula of "the end of grand narratives".
2. The increasing autonomy and self-referential closure of the discipline of architecture, as expressed most explicitly in the influential work and writings of Peter Eisenman.

(Both phenomena are also tackled in the contributions of Bart Lootsma and Andreas Ruby.) It might seem that the second tendency is a direct consequence of the first: architecture withdraws into itself because no compelling social project exists that could inspire and direct architectural speculation. However, there is another way one could theorise the relationship between these two phenomena.

Differentiation and Self-referential Closure

The tendency towards architectural autonomy might be understood as a moment of an overall societal process of differentiation, whereby social communication fragments into a series of autonomous domains - the economy, politics, the legal system, science, art etc. - establishing self-referentially closed subsystems within society. Each of these autonomous discourses contributes, in its specific way, to the overall social process. But this overall social process - society - does no longer have any control centre over and above the various increasingly autonomous communication systems. The differentiated discourses establish their own sovereign independence with respect to their underlying values, performance criteria, programmes and priorities. In this sense the various subsystems operate self-referentially. Scientific truth is constructed and validated within the scientific communication process. Positive law is continuously re-written, interpreted and applied on the basis of its own legally validated procedures. The establishment of economic rationality is long since internal to the economic process (capitalism). The astonishing emancipation of art is perhaps the most familiar example of self-referentially enclosed autonomy.

Politics can no longer control any of these subsystems of society. The political system is but one of the subsystems which produce society through their co-evolution. Each subsystem follows its own logic and conceives of society in terms of its specific problematic, within its particular (and increasingly incommensurable) conceptual framework. Political decisions can neither determine judicial outcomes, nor can they replace economic exchanges, or dictate scientific concepts or artistic paradigms. In turn scientific arguments do not force political decisions. The evolutionary advantage of separating these discourses, i.e. of establishing "near-decomposability" of the societal subsystems, is enormous: a huge gain in the ability to experiment with adaptations to a turbulent environment on many local fronts simultaneously, without the need to synchronise all moves, and without running the risk that failures rip too deep into the social fabric. This has to be paid with a certain loss of control and sense of vertigo.

The society that reproduces itself via the co-evolution of autonomous subsystems has been able to build up new levels of dynamic complexity that effectively exclude the reintegration of society into a single project governed by a single rationality. Legal rationality is neither political nor scientific rationality. And one might add here: design rationality too can neither be reduced to nor controlled by any other than its own logic.

Any attempt to reduce all value systems to one - a form of regressive totalitarianism - could only serve to blunt the operative complexity achieved by the co-evolution of the self-enclosed discursive systems with catastrophic consequences.

Functionally differentiated Society

This sketch of a society as a communication process without centre and without binding self-representation is based on Niklas Luhmann's theory of "functionally differentiated society".

According to Luhmann this internally differentiated system of communication works, because the process of differentiation follows a functional logic, crystallising self-referentially closed, but structurally coupled, function systems. Luhmann defines modern society - the post-modern being but its most expressed form - as a society in which functional differentiation has replaced stratification (feudal order) and segmentary differentiation (tribal societies) as primary mode of societal differentiation. Stratified society still contained the privileged position that could guarantee central control and a unified self-description with respect to social communication: the monarch, heading the internally stratified aristocracy at the peak of the social pyramid. The irreversible result of societal differentiation is a society without centre and therefore without unified, hegemonic self-description that could become a vehicle of utopian self-projection.

Now the hierarchy of causation between the two tendencies - the end of utopia and the increasing self-reference of discourses - seems reversed. The self-referential closure of the differentiated subsystems of societal communication spells the end of utopia.

Utopia as a coherent project and blueprint, i.e. as the wholesale reinvention of society integrating politics, law, economy and architecture, breaks up in the face of an insurmountable complexity barrier. Vitruvius and Alberti could still think of themselves as participating within a unified civic discourse. Architecture and good design were inseparably bound up with the good life, just society and cosmological harmony (science). To a certain extent this is still true, if only subjectively, with respect to Le Corbusier. An educated man of Alberti's stature was at ease in all domains of social communication and the integration of those aspects of society, which later differentiated into autonomous subsystems, was as yet unproblematic. Society still had an identifiable address, to which utopian speculation, with due deference, could be addressed. Political, judicial, economic and ideological power was still concentrated at the top of the stratified order. Therefore it is no empty politeness if Alberti's "De re aedificatoria" is dedicated to his powerful patron Lorenzo de' Medici. Today society has no address, no centre and no opportunity to generate a binding representation of itself and its destiny.

Autopoeisis

Luhmann's theory of modern society as a functionally differentiated society is embedded in his general theory of social systems. The problem of systems theory - the constitution, maintenance and evolution of continuous (rather than stable) systems within changing environments is also the problem of Luhmann's sociology. In particular Luhmann appropriates Maturana & Varela's theory of autopoeisis. Autopoeisis defines biological life-processes as the circular self-reproduction of recursive processes that constitute a unity of interaction (the system) within a domain of interaction (the environment). The environment is not assumed to be given as the same for all organisms but each organism occupies a peculiar niche in accordance with its peculiar mode of life, sensitivity and responsiveness. Each system thus determines what counts as its relevant environment, i.e. which differences make a difference versus those aspects that remain indifferent. Maturana poses divergent "observers", distinguished on the basis of different cognitive/metabolic mechanisms. Although Maturana talks about interactions, observers, distinctions, reference, self-reference and the constitution of the observed through the observer, he is not implying consciousness as the necessary medium with which such terms traditionally are associated. Luhmann's transferral of Maturana's conceptual schema to the domain of social systems maintains this (initially counterintuitive) refusal to imply consciousness as the agent and medium of "distinction", "(self)-observation", "(self-)reference" etc. Instead the bearer (quasi-subject) of these "operations" is the social system which in turn is nothing but the self-constraining recursive network of those very operations.

Everything social is theorised as autopoeitic communication systems. This accounts for friendships, families, ephemeral gatherings, conversations, distributed intellectual communities (discourses), rituals, organisations such as corporations, universities, hospitals, nation states and, last but not least, the great modern function systems like the economy, the legal system, the political system, the mass media, and the scientific system with all its disciplinary subsystems. Luhmann avoids to give a complete list of all modern function systems. Architecture - so far - did not receive separate recognition within Luhmann's theoretical system. Luhmann refers to architecture within his "The art of society" where he treats art as self-referential social system. It is my contention here that this treatment of architecture and design under the umbrella concept of art is an anachronism - at least since the re-foundation of the discipline as modern architecture during the 1920s. However, if architecture and design are still, at times, brought into proximity with the art system, this does not necessarily indicate an adherence to a traditional formula. Rather this re-

assimilation of art and architecture/design is due to the recent, quite significant fact, that architecture, in its avant-gardist and experimental mode, uses the tropes, tactics and spaces of artistic communication. However, notwithstanding such partial similarities and cross-fertilizations, architecture and design have clearly separated from art and constitute an independent function system within (post-)modern society.

Irritation versus determination

Differentiation can not be the full story. Obviously autonomy and self-referential closure can not imply hermetic isolation. Luhmann posits the formula: openness through closure. This formula poses the task of continuous adaptation of the system to the relevant changes it distinguishes within its environment. This process of adaptation in turn implies self-referential autonomy for the system with respect to the task of organising its response. The impact of the environment does not pervade and directly determine the system. Unlike the billard ball that is pushed around without options, the autopoietic (living or social) system is absorbing environmental impacts into its complex web of processes so that no "response" can be regarded as immediate one-to-one effect of a singular cause. History plays a part here. That's the difference between kicking a dog versus kicking a ball.

It is important to sharply distinguish two types of communication: communication within a given subsystem of society and communication between different subsystems. Within a given system communications are constituted recursively within a shared conceptual framework or horizon of understanding. Across system boundaries communications do not share the same horizon and are therefore not understood in the same specific and elaborate way. Here communication can only rely on the rather simple, common denominator of colloquial understanding. The distinction of its own versus alien communications, is actively made within each autopoietic social system. Communications within a particular system have to be able (and mostly are able) to recognize each other as mutually relevant, and reject (as irrelevant) any foreign intrusion. This active boundary maintenance is a crucial part of autopoiesis. Only within this bounded zone can a specific complexity of discursive structures be elaborated beyond the mediocre level of everyday conversation. Within the autopoietic system communications recursively refer to each other. Across the boundary lies the "environment" which remains an unpredictable source of irritation, because the various specialized discourses are not mutually mastered and thus remain largely intransparent with respect to each other. Specialized communication is thus contrasted with irritation. This formulation is reminiscent of Maturana's notion of perturbation as the mode in which the autopoietic system engages with its environment.

This notion of external irritation is not only distinguished from internal communication, but is then sharply contrasted with any notion of external determination. This contrast focuses on two aspects:

What can or can not become an irritation for a system depends first of all upon the historically elaborated structure of the system. "Living systems as units of interactions ... can not enter into interactions that are not specified by their organisation." Secondly the responsive behavior of the autopoietic system is specified by its peculiar sensitivity (information processing apparatus) and its current momentary/historical state. Thus there can be no talk of external determination with respect to an autopoietic system, except in the purely negative and trivial sense of a crude physical disruption. (Hitler and Stalin had to resort to such crude, and ultimately self-defeating, means of control. This also included the political control of architecture which in effect obliterated their countries' participation in the discourse of architecture.) But the reverse is also true - as much as the system retains its sovereignty with respect to its adaptive response to external "irritations", it in turn can only irritate, never control and positively determine the operations of the various other autopoietic systems it is able to locate within its environment.

All it can do is absorb perturbations and intervene by counter-perturbation. The result of this imprecise type of exchange, in case of recurrent and continuous mutual perturbation, is termed structural coupling. As a dynamic process this implies co-evolution and structural drift. This set of related concepts replaces the idea of integration, implying a far more loose and unpredictable coupling of aspects of the overall social process. This leads to an enormous acceleration of evolution. But at the same time, paradoxically, such autopoiesis in flux, with the only prerogative of continued communication, by whatever means necessary, and in whatever mutant forms, might be presumed to be far more robust and resilient than any supposedly stable or static social formation (Fourth Reich, Soviet Union).

The "loss" of a single, integrated social formation implies that we have to move from the pursuit of a single, a priori posited utopia to the playful and "opportunistic" browsing across multiple latent utopias that circulate as "irritations" between the co-evolving subsystems of society. Architecture has to allow itself to be irritated by its societal environment and in turn should become a productive irritant.

Architecture as autopoietic system of communications

The dispute within architecture about its degree of autonomy might be clarified and assessed within the framework of Luhmann's theory of social autopoiesis.

Architecture's autonomy within society does not imply indifference to society. Rather it is a necessary mode of contributing to society with sufficient flexibility and sophistication. Contemporary society is far too complex and too dynamic to establish clear and fixed hierarchies of values/priorities that would in turn allow the societal division of labor to be conceived as chains of instruction, whereby centrally/democratically set purposes are to be fulfilled by the various appointed function systems. Instead each function system is condemned to self-governance. Architecture too can only appoint itself, and define its own purposes, both with respect to the identification of the most urgent architecturally relevant social problems and with respect to the appropriate selection of architectural means to tackle such problems. However architecture, like all the other subsystems of society, is doing this under risky conditions of mutual interdependence. Failure to self-organise effective responses leads to irrelevance and spells extinction.

This is why Eisenman's stance of absolute autonomy can only be a subsidiary moment within the overall constitution of the discipline. Equally one-sided however is the attempt to return to the tenets of a radical functionalism that pretend to be able to react directly to socio-economic demands, without any discursive detour into the depth of an elaborated (and to be elaborated) formal universe. The formalist stance finds its partial rationality in the fact that initial proliferation of spatial concepts and formal techniques flourishes best in the absence of functional and programmatic constraints. This is the *raison d'être* of the oeuvre of Peter Eisenman and his followers. However this stance can not be generalised across the discipline. That would indeed be suicidal.

When we compare different stages in the evolution of system differentiation within a society we can observe an increase in the (degree of) the autonomy of the developing systems. The systems increase the selectivity of their irritability, sharpen their relevance criteria, construct longer chains of communications, distributed across time (and space), and increasingly establish their own independent temporal rhythms.

The autopoietic system, as a complex, historically evolving system, always uses time and involves whole series of events into its "responses", so that simple, predictable one-to-one correlations between environmental impacts and system responses are out of the question.

With respect to architecture, any attempt to establish immediate and determinate correlations between architecture as a discipline, with its current analytic/synthetic procedures on the one hand and its social environment on the other hand, is as futile as the related attempt to determine fixed one-to-one relations between functions and forms. Changes in the socio-economic environment (functions) do not straightforwardly determine new architectural concepts and types (forms) although some response(s) might sooner or later be elaborated, and perhaps several responses are released in parallel. Any impact is absorbed and mediated via a route through the evolving internal complexity of the system. One important aspect of this mediation is the subordination of the response to the system's own temporal regime, i.e. the response is delayed and various impacts might be aggregated and dealt with en bloc, or an impact might be worked through piecemeal via a long series of different responses, stretched out across time. Such mediation might involve an extensive internal processing of options before a response is established. This has enormous advantages if compared with immediate action: A client might try to force the "straightforward" adaptation of a design to his brief or a crowd might simply overrun its allocated and articulated space to create an ad hoc "event architecture" from the spatial features at hand. Compared with such myopic immediacy, the absorption of functional demands into architectural design processes (that are all about processing and selecting from options) allows the integration of the current concern with a whole number of other concerns through the application of procedures that represent the condensed experience of discipline. We might refer to those experiences, that have sedimented within the operating distinctions and routines of the discipline/profession, as the discursive structures of architecture. However delayed, roundabout and self-determined/structure-determined the response, some form of adaptation will be required.

A mark of the self-referential closure of architecture is that design decisions are tightly knit to their kind and only obliquely/indirectly, i.e. en bloc, refer to external demands and circumstances. Design decisions always refer to other design decisions which in turn are embedded in the extensive chain and network of architectural discourse. Design decisions also have financial as well as legal, sometimes even political implications and they respond to such external concerns. However, they do so only indirectly, only en bloc, and on the basis of the architectural structures (concepts, principles, routines) that guide all individual operations. Political, legal or financial concerns are not immediately architectural concerns. No one-to-one correlations can be established here however much a client in distress might like this to be the case. The network of implications is too complex. Any architectural response has to involve whole

networks of design decisions on the basis of architectural (theoretical) principles. This is a measure of the sophistication of architecture, it can not be bullied into a knee-jerk response. This is the *raison d'être* of autopoietic closure.

A client might force his way nevertheless, but the result will have little chance of being recognised as architecture. Architecture is innovative architecture on the basis of mutated principles combining both variation and redundancy. Neither repetition of old formulas nor mere deviation qualify as architecture. The distinction of avant-garde versus mainstream, merely commercial "architecture", remains constitutive for the discipline. Only innovative, generalisable contributions are considered, i.e. contributions that are deeply entangled in the autopoietic network of architectural communication, and therefore are able to move this network.

The degree of autonomy that architectural discourse has established by differentiating itself from the immediacy of everyday talk about buildings, and thus the complexity of the discursive detour which mediates a particular impact/response, should grow with the overall complexity of society. The more complex the societal environment the more autonomous - the more selective and specific - must every social system operate in order to cope with the various, often contradictory demands that challenge the respective social system.

Architecture has to react to societal and technological changes. It has to maintain its ability to deliver solutions. But its very problems are no longer predefined. In fact, these problems are themselves a function of the ongoing autopoiesis of architecture. Architectural experimentation has it to leap into the dark, hoping that sufficient fragments of its multiplicitous audience will throw themselves into architectures browsing trajectory. Risks have to be taken. Obviously, architecture - armed with architectural theory - tries to aim in the right direction. Current experimental work focuses on issues of organisational complexity (layering, interpenetration of domains), the production of diversity (iteration vs repetition), the spatial recognition of fuzzy social logics (smooth vs striated space), ways of coping with uncertainty (virtuality vs actuality), and engagement with new production technologies (file to factory) etc. Thus architecture is trying to take aim at what seem like relevant targets popping up in its societal environment. However, the resulting manifestos remain precarious, relative and are often based on retrospective discoveries rather than prospective visions. Utopia is latent within the stray trajectories of architectural speculation, but to the extent that they cross the path of the projectiles that escape from the other domains of social communication.

notes:

This is the title of Karim Rashid's monograph: Karim Rashid - I Want to Change the World, Universe Publishing, New York 2001

Jean-François Lyotard, *La condition postmoderne*, Editions de Minuit, Paris, 1979

Herbert Simon, *The Sciences of the Artificial*, Cambridge Massachusetts 1969, 1980, chapter 7, *The Architecture of Complexity*.

Niklas Luhmann, *Die Gesellschaft der Gesellschaft*, Suhrkamp Verlag, Frankfurt am Main 1997, Kapitel 4, VIII, *Funktional differenzierte Gesellschaft*

Humberto R.Maturans & Francesco J.Varela, *Autopoiesis and Cognition - The Realization of the Living*, 1980, Dordrecht , Holland.

Humberto R.Maturans & Francesco J.Varela, *Autopoiesis and Cognition - The Realization of the Living*, 1980, Dordrecht , Holland, p.10. Further: "What is from one perspective a unit of interaction, from another may only be a component of a larger one, or may be several independent units" ., p.31

These structures are brought to bear on new experiences/cases. This in turn even if ever so slightly leaves a trace on those structures. Thus the discursive structures evolve through use.

end., P.Sch

<http://patrikschumacher.com/Texts/Autopoiesis.htm>