Soft Infrastructures for a Neo-Metabolism

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Abstract

Designers’ universal impulse to naturalization deals today with reframing new approaches towards soft vs. hard biourban structures. Operative infrastructures generate organic creative futures, and oppose informal, serendipitous, innovative, and risky soft systems urbanism to hard design determinism. The emergency of a Biourbanism soft systems approach contrasts several Metabolist principles and practices, especially those favouring hard infrastructural platforms as fixed systemic cores and conduits. Biourbanism – a conceptual process of creative assemblage generating soft infrastructures – think of the hard-soft and risk-innovation couples, as ecologies. In this way, Biourbanism flourishes between multiple forces, modernities, and ecologies, by retrofitting urban situations where hard infrastructures are incomplete, ruined, or even lacking. It can integrate hardware, software, freeware, and wetware creatively through a thinking design of landscape, architecture, and urbanism, that has to operate also methodologically on multidisciplinary networks, and that can be called neo-Metabolism. Among its unconventional potentialities there are biourban acupuncture, nomadism, multi-effect linkages, biopolitical tactics.

Finally, Biourbanism has a revolutionary capacity within the biopolitical issues of identity and control, as soft systems can still bind and cage; and this challenges with responsibility its idealism and optimism.

Keywords: Biourbanism, neo-Metabolism, ecologies, architecture, soft infrastructure, Soft Natural Systems, informal urbanism, risk, biopolitics.
The persistent allure of the biological imperative for designers is a potentiality in pulsation over time. The potentiality of this recurring organic impulse has already structured mimetic and analogous processes in architecture and urbanism, going back to before early modern and modern design. Architecture, as a fascinating built record of this organic affinity cast in stone, tracks how understandings of natural systems have generated naturalized forms of buildings and spaces. Today we certainly have more precise cognitive (and computational) tools available to clarify this potentiality, a potentiality to situate and interlace a diversified range of design processes and protocols. Thinking the organic, and its transfer from thought into material form, is the most ancient of naturalization processes, traces of which persist today even in those building types and urban morphologies whose organic sources can be obscure. The attraction and imperative to work towards naturalization – of transferring thought into natural form, especially in the modernist reification of systems thinking and positivist organization, repeatedly framed nature as system – where architecture (and its urban context) performed as a system of recording and system of production – tracking from the observed to the imaginative projection, as a production of new typologies and topologies have settled as our “second nature.” The fluctuating allure of the organic, and architecture’s role as imperfect recording-production device of this allure, has given rise to our multiple forms of modernity. The experience of this resonance between nature and artifice (both evident within organic designs) appears also as an inexhaustible source for future design speculation.

To speculate through the organic impulse is to seek new conceptual territories, new linkages and connections, and new systems of dynamic equilibrium. Systems thinking itself has diversified into fascinating protocols and procedures, all of which can be used as cognitive and design tools. This speculative research proposes a series of thought experiments organized through conceptual and spatial correspondences operating under the banner of “Soft Natural Systems.” This variant of systems thinking, where the processes are seen as mutable and fluctuating, stages a possible rethinking of a second nature for the design disciplines – one proposed here to intersect architecture, infrastructure, and landscape urbanism.

This intersection, as a dynamic interplay of systems, means looking specifically at the proliferation of soft natural systems, but using all sorts of hard thinking to do this. We should include a focus on the softer aspects of systems thinking, and the grounding of these soft opportunities within the logic of the informal, organic, emergent, and mutable conditions present in Systems Ecology and recent design discourse. The intertwining of these multiple soft modes are intended to animate certain potentialities to create associations, resonances, and conceptual transfers and transformers regarding soft systems operating in the city, as a type of Biourbanism. There is a fascinating potential to rethink urbanism away from infrastructural planning and turn towards reflection and speculation on the necessary values of identifying “soft natural systems” at play in the spaces and experiences of architectural and urban spaces. The “soft” aspect of ecologies, playing upon the puns of soft systems, soft machines, as well as software – as an example, see (Bhatia, Sheppard 2012) – would be phenomena that tend towards processes “becoming” but never arriving at static completion. This characterization of the soft is often excluded from determinism or design, though the soft edges or conditions are just as necessary as the hard (fixed, determinate) elements of order.

Those elements which resonate with our sensations are the soft attributes deserving attention – in the built landscape this includes the pliable, flexible, and agile process-oriented growths.
and patterns that run through our senses and experiences of the surface of the world, and how the movements of ideas, pressures, and materials is structured by conduits, habits, cultural parameters, and other softer infrastructures. These soft qualities are being nominated and propositionally interlaced within the current thinking of systems ecology, so that we can recognize the inseparability of soft configurations pressuring the harder determinate qualities. These reciprocal hard systems are schematically more like fixed ideas or geo-philosophical characteristic attributes which persist across time, “hardening” as parts of the unyielding built second nature of the urban landscape.

The historical pulsation of organic design is made new by the introduction of new types and methods of spatial-intellectual analysis of natural systems, which under these new formations can yield new operative parameters, shifts of values, and new design solutions (such as using diversified forms of soft systems as generators and transformers, as soft systems already operating outside singular discrete objects) within this conceptual territory of imagined (future) second nature of the architectural ecologies of the city. This conceptual territory can yield diverse models and hybrids of natural processes as refreshed design imperatives, allowing us specifically to consider the growth of cities as a form of growth from a diversified mapping or projection from multiple modes of infrastructure – which proposes architecture and urbanism as components of soft naturalizing systems. This would require us to reframe and rethink our new approaches towards a range of life-supporting infrastructures, from hard to soft. It is the ambition of this mode of thought that drives the search for more agile schemas of the infrastructure-territory coupling as manifold, complex, flexible, and intensive.

Hard vs. soft infrastructure is a distinction between the permanence and determinism of the network, loosely following the hardware/software distinction of the cybernetic era (Brugmans 2010; Shannon, Smets 2010). In terms of infrastructure, deliberated and partially under rational guidance, in the softer edges of Systems Ecology, we can narrow and characterize the hard/soft distinction along this intensive qualitative distinction.

There are categories of hard and soft infrastructures along economic lines, defined by the World Bank and other organizations, but the design distinctions are more effusive. For example, if we consider the new focus on soft infrastructure in urban growth in India, even the software sector is only partially physical and hardened. Soft infrastructure is “institutional support mechanism for exchange of goods and services, regulated and accessible financial markets, legal institutions and support services… soft infrastructure contains elements of social and cultural life…” (Brugmans 2010, pp. 96-97). In most attempts to enumerate soft infrastructures, we get into the edges of traditional design, and soft infrastructures will include references to cultural necessities, invisible or virtual environments and relations, even cultures of trust. Widely considered, any perceived necessities that are not locked into a specific piece of concrete can be interpreted as potentially soft, and as systems potentially organic. When infrastructures are needed to perform in a new way, or to meet new needs, as movement and communications systems, when they need to flexibly intertwine though a physical-social territory, they can be conceived and made soft – but only because this softness-flexibility is a basis for resiliency in the face of fast change (see, for example, One Lab’s program examining water porosity at http://www.terref orm.org/farm_details.html).

Now these emergent soft infrastructures – whether they are indeed made of soft materials, or nearly invisible shifting relations, or activated informal chance opportunities – in many cities
can and do supplement prior existing hard infrastructures, and can modify the hard models and structures and habits over time, often delivering responsive immediacy and re-structuring future malleability. The premise of multiple modernities as infrastructural thought – as systematizing, totalizing, and hardening – when reconfigured conceptually to follow compelling aspects of soft natures and soft systems, can lead to new thought structures of possible relations in the general schema, and new tactics of connectivity and assemblage in the particular.

Soft infrastructures, as a category of mental and physical processes of construction, can improve, or tense, or subvert, or obscure prior hard infrastructures, as in the extreme case of the range of expressions of informal architecture and informal urban structures (often spilling from the fault lines of hard infrastructure). Informal urbanism can be read from this vantage point as the cause and effect of a subtle type of alternative informal distribution network, emerging form necessity but reactive to the current infrastructure. If we think beyond the regulated industrial conventions of water, utilities, and transport infrastructure to the widest possible range of possible human rights, commodities, and experiences, we can imagine these two working as activators of infrastructural presence. Soft infrastructures can conceptually deliver new and influential conveyances coming to us (especially in urbanism) through the expanded notion of operative soft infrastructures as organic generators of organic creative futures. And as these possibilities become displaced from centralized sites and made mobile through imposed or discovered conduits, we can seek their manifestation and optimization in soft infrastructures that can be formed organically – formations including assemblages, prostheses, inflections, detours, feedback loops, phase states, all sorts of varieties of new propositional configurations, and even as systems of deliverance or future urban mutations (Koolhaas, 2000).

Hard infrastructures can distribute and stabilize flows, but soft infrastructures, being messy, can generate new and transient growth patterns, including emergent or liminal aspects of landscape into urbanism, even to the level of generating new sensations to promoting lifestyles – all possibilities distributed through space as the dream of organic hybrid interactivity, fluctuating pressures, including a necessity of new forms of resilience involving emerging systems. The multiplicity of means for moving people or objects exceeds the hard infrastructural tracks for this, as does the multiplicity of ways you could send time-sensitive information between those two locations using a variety of soft systems. Like the recognition of the rise of informal urbanism, thoroughly analyzed by (Hernández, Kellett, Allen 2012), and the specific fascinating case of the informal spatial logic of the necessary transient inhabituation of street markets (and the covert exchange economies supporting them), soft infrastructures can be invented from necessity, not the optimization that drives harder operations. The messiness of soft systems is the flexibility and impermanence and mutability that can be their long-term advantage over determinate hard infrastructures. Soft infrastructures as a potentiality can always come to fill the gaps and absences of design determinism.

Necessity breeds innovation, but desire breeds success, and it is an invisible economy of desire that animates these informal networks, that gets them flowing. In the current ethos of scarcity, innovation and desire can still be used to push and propose new types of soft infrastructures. It should still be possible, and is increasingly necessary, to think of how soft infrastructures can be used to form and connect improbable relations and exchanges, so that
ultimately soft infrastructures become the mechanism for replacing the culture of (ecological) crisis with a culture of (innovation) risk. Risk has been the impulse that can initiate the processes to deterrioralize and dissolve “wicked problems” – or problems of inoperable complexity, to be overcome through emergent strategies (Cutler 2009) – and risk has been the secret impulse driving much visionary design and many magnificent technologies. In a sensed culture of crisis (such as current water security conflicts and food security tensions) risk-aversion solidifies and makes harder these “wicked problems,” and it is therefore crucial that the flexibility of soft infrastructures as organic design principles be conceptually grounded in a culture of innovation-risk.

Incidentally, it should be obvious that the vice of gambling or other types of rampant speculation, such as in financial markets, is inherently “risky,” but riskiness is not the intellectual design capacity of the creative culture of innovation-risk nominated here. Note also that creative risk is not specifically a calculated risk, so this nominated ethos demands a more detailed analysis of risk in design culture.

Increasing forces and pressures structure a culture of risk and innovation, creating turbulence and change as palpable forces in the fabric of the growing city. This turbulence urbanistically sites and locates risk as the potentiality of innovation, creating a risk-innovation coupling still present today, and conceptually co-located in the soft systems described here. Ulrich Beck, in his Risk Society: Towards a New Modernity has proposed ideas of “risk society” and “reflexive modernity” in media-formation, hence in a media ecologies, one of the larger soft infrastructures running parallel or submerged through uncertain territories of the perception of buildings and spaces of the city. The role of the soft circulation of image-ideas through nearly invisible / indiscernible layers of the city, some pulsating, some receding, hard and soft, visible and invisible, are in constant interaction (and competition). The culture of risk persists as a promise of technological acceleration, and consequences of embedded ecologies are a new Metabolism, a neo-Metabolism interspersed and interacting in the spatial logic of the city. The emergency of a soft systems approach under the proposition of Biourbanism of today is in many ways the inversion of some key elements of the earlier hardened Metabolist principles and practices, especially those favouring hard infrastructural platforms as fixed systemic cores and conduits. The absence of diverse speciation of modules and capsules with these structural armatures (armatures promising a limited range of flexibility) today seems to lack the diversity and fluidity of organic urban architectural propositions. In the hard built ecologies (and cool sci-fi media ecologies) of that initial Japanese avant-garde Metabolist wave, we have a geological precursor – traces of Metabolism (and Brutalism) still rise in cities today. From the postwar Metabolist fantasy of an organic biosphere superimposed into the emergent city, to the contemporary emergent nested ecologies forming the city as a second nature, we have seen an intellectual tipping point crossed from hard infrastructures to soft infrastructures. The Biourbanism of today is still emerging from the conceptual and computational tools for designing and thinking the hard-soft, risk-innovation couples as situated ecologies. In this way, the Bioarchitecture and Biourbanism flourish between multiple forces, multiple modernities, and multiple ecologies.

To focus these claims, let us consider under what conditions this tipping point can be crossed, or more precisely let us ask how can hard infrastructure go soft? The cities of Beirut and Delhi have incomplete highways, truncated incremental hard infrastructural conduits that cast an enigmatic presence in the cityscape. These present the opportunity for the introduction of
new ecologies of thought and new presences of landscape – from sports to urban farming, but also informal street markets and other opportunities for soft infrastructure to graft upon the ruins of the hard, including reinventing new territories in the ruins of the past. Informal and resilient soft infrastructures will rarely achieve the staged mono-functional image of the natural of the well-known NY Highline competition, but differentiated urban second natures are themselves a significant design project and promise in neo-Metabolism. The case against hard infrastructures is a case against their rigidity: for example, obsolete aqueducts, abandoned buildings, industrial brownfields, failed railways… all of these once hard infrastructural devices have devolved over time. Design choices to interact with manifest hard infrastructures are choices of determining the naturalization of second natures to come, and in these projections we know the city will continue to entangle multiple modernities as multiple ecologies: building ecologies, media ecologies, urban ecologies, intellectual ecologies, and hundreds of others. Consider here the insights of Felix Guattari, in his influential *The Three Ecologies*, and its viable application to those aspects of urban architecture and their entangled ecologies. Consider the potentiality of ecologies of thought, of media, of building, and how innovation and risk grows from the dynamic punctuated equilibrium of urban soft systems, we need to understand.

“By means of these transversal tools, subjectivity is able to install itself simultaneously in the realms of the environment, in the major social and institutional assemblages, and symmetrically in the landscapes and fantasies of the most intimate spheres of the individual. The reconquest of a degree of creative autonomy in one particular domain encourages conquests in other domains…” (Guattari 2000, p. 69)

It is here that Biourbanism’s revolutionary disposition begins to emerge as a conceptual process of creative assemblage, in all its manifestations, experiments, and culture of risk (itself perhaps the most generative soft infrastructure).

It may be clear that only some of these infrastructures or ecologies lie within the architect’s competencies and/or (softer) expansive circle of influence, but the necessary assembly of expertise can be formed beyond individual circles of influence, so that risk and desire can form a design network that itself becomes a design economy, a relay between nodes of information, capital, risk, will, and expertise. Consider some sci-fi 1990s protocols that would allow for an expanded field of infrastructural states to be considered for design: the correlations of hardware, software, freeware, and wetware (Rucker 2010). These categories (neither absolute nor finite), must be reconsidered as categories of landscape infrastructure (as forms of socialized technologies) and can also be applied metaphorically to infrastructural thought as models of procedural operations, as scales of operations, as tactical solutions to mesh or fuse incomplete spatial entities. For example, the answer to the question of how can the urban distribution of necessities such as food or education be designed would use these multiple infrastructures elucidated by using multiple ecologies – in this example as interconnected hard, soft, and wet procedures that intersect at multiple locations to determine an emergent fine grain reality for a district or territory, as a soft urbanism.

If we can rethink infrastructures as operating under a greater range of softness that simply economical, and if we can think and design soft infrastructures as supplementing, deflecting, and reordering relations and pressures interactively with other forms of infra/structures, so as to increase their agility in conditions of risk, we should also seek to integrate them into
multiple intellectual contexts simultaneously. We could also rethink soft infrastructures as the distributive spores of hybrid generative ecologies. Architecture and urbanism already exist as simultaneous reciprocal ecologies, in light of the influential terms of Guattari’s categories: mental, social, and environmental. Even more, this late modernist triangulation of ecological criteria applied to thinking and designing as soft infrastructural speculation would lead to an integrative intensification of thought and knowing of the second nature that enfolds urban settings:

“More than ever today, nature has become inseparable from culture; and if we are to understand the interactions between ecosystems, the mechanosphere, and the social and individual universes of reference, we have to learn to think ‘transversally’.” (Guattari 1989, p. 135)

The variant organic design sensibilities, when used to distill variant types of soft infrastructures, will benefit from tactical operations and fluid procedural and process-oriented forms of emergence: grafts often fail, but responsive transitory patterns can be modeled and made to grow. Design not of objects but of pressures, flows, and accumulation (of bodies, of goods, of ideas) can be territorialized by situating desires in these three ecologies. The movements of soft infrastructures can include scales of transience, tipping points, nomadology and temporary occupations, fugue states, liminal and interstitial spaces, spatial alterity, emergent multiplicities, and robust identities. These impermanent and unstable characteristics indicate the key to invention that innovates lies in the risk culture (contra crisis culture), and we propose that thinking though multiple ecologies can generate performative soft infrastructures for the development of a Biourbanist integration of systemic multiplicities.

Three significant historical projects would support this turn to Soft Natural Systems, while simultaneously modeling them into spatial locations of processes and risk: Frederick Law Olmstead’s 19th c. Boston Emerald Necklace as an urban ecology and proto-landscape urbanism; Kenzo Tange’s 1960s Tokyo Superstructures as a revolutionary metabolism growing out of hard infrastructures; and the risk-innovation example of OMA’s unbuilt 1980s Paris competition for Park Villette, an urban landscape that is a cinematic factory of the subconscious, relay of desires through a lattice of hybrid gardens. Further reading on these projects have been offered by (Beveridge, Rocheleau 1998; Poole 2000; Vidler 2000; Weller 2006; Lin 2010; Koolhaas, Obrist 2011). In Olmstead, we find the urban landscape project surviving today, a mark of its cultural and economic value, but also an original solution to linking pockets of green space into the growing hardscapes of modern Boston.

In Tange’s project for Tokyo Bay, we can locate the growth of concrete-Brutalist forms into systems of relations determined by extreme articulation of tectonic joints, individuals tied into collective structures, and ambitious movement systems offered floating above the Tokyo Bay, creating an urban second nature that is both historical and modern, organic and industrial, structured and evolving, so purely Metabolist. The design vitalism of the original Metabolist movement in 1970’s Japan (Tange, Kikutake, Kurokawa) was in partial response to the pulsation of organic oceanic biopolitics as mythical ideal, an imaginary marine ecology enmeshed within densification and systems design of increasing Tokyo urbanism.

In OMA’s project, we see the tight modernized discipline and order of cinematic strips of landscape, each with distinct characters and textures arrayed in attenuated individuated plots
of urban gardens, duplicating a memory of the Dutch non-perspectival agricultural landscape. In the original model, the landscapes of the Netherlands have always been engineered – water is the hidden ordering system of the submerged hydraulic engineering infrastructure that generated much of the Dutch soil. The reference to non-perspectival views recalls the argument of Alpers (1983), where layered landscape painting of the Low Countries is contrasted with the Italian linear perspective model. The risk of all three involves scaling or transposing the proper place of nature, landscape, infrastructure, and city into other positions or relations, with intent and for effect. The design innovation of all three is the originality of the bold moves, and the challenge to conventions and expectations created by the genesis of the new form the unrealized potentiality of the existing and the real. In all three, the originality came out of a design that articulated the three ecologies of hard and soft infrastructures, not as a value-add feature, but as the genesis of the world-visions that radiates out into the real world from the imaginary manipulations of the everyday.

The intertwined modal ecologies in soft infrastructures follow the trajectory of these (and many others) precedents into a new metabolism, here proposed as a type of thought process spanning (or scanning) landscape + architecture + urbanism, called neo-Metabolism. This neo-Metabolism would be the sophisticated and responsive accruing movements between the hardware, software, freeware, and wetware aspects of the hard-soft infrastructural couple. This neo-Metabolism is an applied theory, retrofitting the prior theory of metabolism (as organic impulse driving infrastructural-technological daring) into the landscape urbanism and hard and soft infrastructures of the immediate near future. The neo-Metabolist city is a multiplicity of scales of ecologies (built ecology, media ecology, and others) increasingly nuanced and influenced by slow and often invisible effects, delivered quietly by these networked potentialities. Note also that even values and ideas can also initiate soft infrastructures, like justice or safety distributed into terrains and topographies. Along with lifestyle improvements, the biological initiatives in the mechanosphere of architectural thinking that has led to built ecologies capable of scrubbing and cleaning the air and the ground, of engineering self-repair, of sensing and responsive buildings and structures (tangible and intangible).

These operations can and should be developed in play with the emergence of soft infrastructures, so that their conceptual flexibility can be integrates with the experiential demands of pleasure, delight, sensuousness. Even alterity and unexpected encounters could be part of their bearing capacity and subject positioning, not an either-or, but a both-and with engineered services. This compelling experiential supplement to determinist thought would also benefit from another level of softening, specifically a play on the “infra” of infrastructure – like infra-disciplinary practices (thinking linkages at the expanding margins of professions), or the infra-thin animate surface within and around acts of infrastructure. The infra-disciplinary was a notion proposed by Jane Rendell following our keynote speeches at the Networked (In)visibilities conference at ETH Zürich in November 2011. The infra-thin is the confounding principle of minimal difference in artist Marcel Duchamp’s theories of the 1920s-1930s.

Along with unconventional problem-oriented design discourse/s, soft infrastructures as neo-Metabolist potentialities can emerge from rethinking scales to include micro-interventions, soft infrastructures for urban acupuncture (massive change from minimal intervention), all sorts of lateral coding and re-coding (even misrecognition) from local conditions, migration
as neo-Metabolist form and theory, all leading to new landscape infrastructures as part of a larger constellation of risk. These unusual operations will reposition non-objective soft infrastructures as transformers for releasing permutations and producing multiple effects. And as it is said, the difference between having an idea and having a good idea is that the good idea solves multiple problems simultaneously (producing wonder and delight).

Another way to look at soft infrastructures, loosely defined, would be to read the adaptive and informal networks and connections of commodities, services, values, and information in their entirety as a soft grid or scaffolding for the biopolitical order. Biopolitics, after Foucault, is a sovereign move from absolute power to a soft extension of other forms of power over subjectivity, more like the multiplicity of ecology (Foucault 2002, pp. 326-348). In the recent theories biopolitics is read as more pervasive and invisible – Hardt and Negri clarify biopolitical production as “the production of social life itself, in which economic, the political, and the cultural increasingly overlap and invest one another.” (Hardt, Negri 2000, xiii)

In biopolitics everything social can be engineered; biopolitics after industrialization falls under the order of “cognitive capitalism” where informatics-production relations lock individual subjectivity, and the social spaces of those subjectivities, to hardening infrastructures and hardened territories. The Soft Natural Systems and the soft infrastructures of Biourbanism are also disciplinary practices that call upon designers to make hard decisions about bodies and identities. In this manner, the optimism or idealism of Biourbanism, its vitalism or revolutionary capacity, needs to be situated in the larger (lingering) question of identity and control, which establish the hardness for risk to spring from. Specifically, soft systems can still bind and cage, and so they can be seen to perform as a mode of biopolitics.

The bio- of biopolitics refers to the method of soft systems and hard systems within control space, implemented through the body, through the hard and soft landscapes, through the organic impulse and analogues of life. It is important to understand soft landscape infrastructures as devices that will also operate as political devices; they can never maintain indifferent positions. The cognitive subject in the hypermodern landscape is forever enmeshed in the modern-industrial and modern-media conditioning of biopolitics, caught in multiple ecologies, formed and reflected in them, provided and controlled by them. In this landscape of hard abstractions and rigid boundaries of inclusion and exclusion, the potentiality of soft infrastructures to open up flexible and porous urbanism is here a nominated line of flight through optimized organizational space, which is the emergence formation of this neo-Metabolist design attitude. The range of hypermodern, automatic, and ultrathin landscapes emerging in place of given nature today are no longer mediating the image of conditioned nature (the remnant of the natural we have left in the city) but mediating the processes of conditioned nature that can best inform these scale transitions, which for design is a question of creating scales of organization as soft systems, for resilience and sustainability. All of these stresses inform a needed type of architectural intelligence, a form of multiple ecologies brought to bear upon the “transversal” emergence of the subject that neo-Metabolist biopolitical tactics require.

In place of a conclusion to this speculation, consider how these select concepts above have been assembled together give a flexible theoretical framework whose operational flexibility. This specified neo-Metabolism vision is centered on the potentiality of conceptually expanded
and spatially expansive soft infrastructures – as spores and tendrils for new models and procedures of artificial second natures that should lead to intensive urban growths, raising the intensively of life into the foreground of design principles and methods. By retrofitting urban theories of the prior heroic Metabolism to produce design innovation-risk utilizing aspects of hardware, software, freeware, and wetware, the older organic impulse can become desirable layered and distributed ecologies, uncoiling across the urban landscape, and with concentration and sensitivity this can lead to a greater liberation of subjectivity under biopolitics – where spatial subjectivity is here proposed as a type of “intensive science” for emergent Biourbanism, one that cultivates a multiplicity of ecological operations as a process of softening - in increasingly informal, indeterminate, and transitive urban territories. The intensive is used precisely here to name the architectural intelligence of reconciliation of these soft natural systems of the biopolis. De Landa initially proposed the intensive as this correspondence, in a process well known to designers:

“We may expand the meaning of the term ‘intensive’ to include the properties of assemblages, or more exactly, of the processes which give rise to them. An assembly process may be said to be characterized by intensive properties when it articulates heterogeneous elements as such… More generally, the interactions which organisms have with the organic and inorganic components of an ecosystem are typically of the intensive kind (in the enlarged sense), an ecosystem itself being a complex assemblage of a large number of heterogeneous components: diverse reproductive communities of animals, plants and micro-organisms, a geographical site characterized by diverse topographical and geological features, and the ever diverse and changing weather patterns.” (de Landa 2005, p. 64)

Throughout the city there are micro-intensities waiting to be recognized, adapted, incorporated, and brought into resonance and relation with other micro-intensities. These can drive emergence, risk, and form tipping points as some will rise into nascent networks and soft infrastructures, waiting to be wired into informal urban ecologies. The possibility of new soft infrastructures within this proposed neo-Metabolism attitude would not only develop from the intensive science of informal spatial-network genesis and mutation, but should also serve to operate imaginatively as a model for intertwining new types of thinking, specifically a thinking through multiple ecologies, to modify and adjust the biopolitics of existing (hardened) urban order, and to nominate soft infrastructures as a powerful risk-apparatus for liberating unknown natures.

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