SOFTNESS, HARDNESS: CONTEMPLATING ARCHITECTONIC CIRCUITS OF MEDIACY AND IMMEDIACY MICHAEL R. DOYLE

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Limitless opportunities for applying the new control sophistication will appear, once we recognize as obsolescent the old economic pressures which reduce people to that average required by a rigid external environment—once hard architecture begins to be replaced by soft (Brodey 1967, *Soft Architecture*, p. 12).¹

I believe that the ‘softs’ are an important vehicle to responsiveness, but they must be studied with great caution. In the same way that I refute computer graphics’ proliferating Gaudiesque architecture, I worry about the obvious materials of ‘responsive architecture’ foisting a soft-Soleri, or globular, mushy architecture. Not everybody wants to live in a balloon (Negroponte 1975, *Soft Architecture Machines*, p. 147).²

Ironically, the development of man-environment studies, at least in their early days, led to an even greater neglect. The attempt to be ‘scientific,’ to apply positivistic approaches, led to a neglect of the fuzzy, ‘soft’ aspects of the environment such as meaning (Rapoport 1990, *The Meaning of the Built Environment*, p. 19).³

To keep things simple, we can describe opportunities for experience from two extremes. One extreme is the street with a ‘soft edge’ with shops lined up, transparent façades, large windows, many openings and goods on display. Here there is much to see and touch, providing many good reasons to slow down or even stop. The other extreme, the street with a ‘hard edge,’ is a diametrical contrast: the ground floors are closed and the pedestrian walks past long sections of façades of black glass, concrete or masonry. There are few or no doors and all in all little to experience or even reason to choose that particular street, short of necessity (Gehl, 2010, *Cities for People*, p. 79).⁴

[T]he terms soft and hard identify several tensions in the field of architecture: between indeterminate and determinate approaches; between the possibility for users to adapt space according to their needs and the designer determining use over time; between flexibility in the hands of the users and the provision of flexibility, only on the architect’s terms; between designing in redundancy and slack space and tight-fit functionalism (Schneider 2011, *Discard an Axiom*, p. 100).⁵

1 Warren M. Brodey, ‘The Design of Intelligent Environments: Soft Architecture’, *Landscape*, 1967, 8–12.

2 Nicholas Negroponte, *Soft Architecture Machines* (Cambridge, Mass: The MIT Press, 1975).

3 Amos Rapoport, *The Meaning of the Built Environment: A Nonverbal Communication Approach* (Tucson: University of Arizona Press, 1990).

4 Jan Gehl, *Cities for People* (Washington, DC: Island Press, 2010).

5 Tatjana Schneider, ‘Discard an Axiom’, in *Transdisciplinary Knowledge Production in Architecture and Urbanism*, ed. by Isabelle Doucet and Nel Janssens (Dordrecht: Springer Netherlands, 2011), 97–115 <https://doi.org/10.1007/978-94-007-0104-5_7>.

Architecture and urbanism tend to employ the terms ‘soft’ and ‘hard’ in order to establish distinctions with regard to expressions of materiality, authority and autonomy. They tend to separate and classify gestures of ‘joining’, mapping them to binaries such as ‘bottom up’ and ‘top down’, ‘indeterminacy’ and ‘determinacy’, ‘flexibility’ and ‘rigidity’. Explicitly or implicitly, the architectonics of the ‘hard’ finds itself subjected to “old economic pressures” and to a “rigid environment” (Brody), to “positivistic approaches” (Rapoport), to “determinacy” and to a “tight-fit functionalism” (Schneider). The ‘soft’ is associated with “new control sophistication” (Brody), “responsiveness” (Negroponte), to the meaningful (Rapoport), to that which can be directly experienced (Gehl) and concerns that which finds itself “in the hands of the users” (Schneider).

Such an opposition appears to mirror that of the sciences and the humanities and seems to fuel debates on the primacy of experience over reason, immediacy over mediacy, perception over understanding and everyday language over mathematics.⁶ One could question whether characterizing the ‘soft’ and ‘hard’ in such a way only serves to perpetuate a prejudice pitting the real against the imaginary, for which theory and the metaphysical are perceived as imposing a veil in front of the real, forming a barrier to the authentic truth of experience.⁷ In the end, forms of symbolization, like writing and mathematics, are regarded with suspicion or accused of exacerbating the distance between the individual and his or her sensory experience. In this essay, I contemplate this distinction as an architect and researcher socialized in this tradition. I will try to examine the soft-hard distinction in a fashion orthogonal to that of the dualisms mentioned above. It will specifically pick up on how they appear in the work of French philosopher Michel Serres, whose work is committed to breaking down the barriers between reason and experience.

MUTUAL IMPLICATIONS OF SOFTNESS AND HARDNESS

Serres’ account of the ‘soft’ and the ‘hard’ addresses the two with regard to scales of energy and instruments of measurement. The ‘soft’ concerns any order that can be deciphered using a particular measuring device. The ‘hard’ is on the side of that which acts as background noise, or a channel upon which measuring devices, techniques of discretization, may act. The soft always implicates the hard and the hard always implicates the soft. The physical concept of mass is mathematical, enfold-ing both the soft (on the side of generic orders that hide within it) and the hard (the physical matter that natural processes have ordered and

6 C. Snow, *The Two Cultures*, Canto Classics (New York: Cambridge University Press, 2012); Michel Serres and Bruno Latour, *Eclaircissements: Cinq Entretiens Avec Bruno Latour* (Paris: F. Bourin, 1992).

7 Gilles Dowek, *Ces préjugés qui nous encombre* (Paris: Le Pommier, 2009).

informed). The genetic code of living organisms is an example of the softness of life itself, which organizes a hard that is always already coded (having always a 'softness'), the imperfect deciphering and decoding of which leads to the mutations we can observe at various temporal scales.

The mutual implication of the soft and the hard suggests that one is always accompanied by the other. Before meaning is born, mass already has direction, has 'sense'. To reason the world is in part to code it, to generate information and to be plunged into the experience of this reasoning. Of course, the world about which one reasons is not a passive mass, a *tabula rasa* upon which reason imprints itself, towards which the 'soft' directs its 'hardness'. Rather, as Serres puts it, "there is meaning [*sens*] in space before the meaning [*sens*] that signifies."⁸ There is a softness to the hard. In *Hominescence*, Serres seems to offer a fourfold setup for dealing with this mutual implication: the softness of the soft [*le doux du doux*], the softness of the hard [*le doux du dur*], the hardness of the soft [*le dur du doux*] and the hardness of the hard [*le dur du dur*].⁹

To say that there is a softness to the soft suggests that codes carry latent orders, that they can themselves be symbolized further. If Serres equates this with a certain angelic form of communication, it is because the softness of the soft is more like the prepositions in the French language, like fleeting messengers that are neither substance (nouns) nor actions (verbs).¹⁰ The scale of energy they operate on is relatively low. The 'softness of the hard' recognizes that mass is mathematical, that there is something always already written on the *tabula rasa*. The genetic code is one way of looking at the softness of the hardness of the physical organism as this latter energetically acts to stay alive while reproducing itself—coding and decoding (processing and storing) while receiving and emitting.

As Léon Brillouin demonstrated mathematically, a message without noise would require an infinite amount of energy.¹¹ This hardness of the soft suggests that orders are always articulated with regard to a background noise or material upon which symbolization can be foregrounded by an instrument of observation. The call for the purity of the soft feigns an innocence that forgets the energetic nature of the message in transit. To establish social orders, to set up devices of discretization (policies of 'sorting'), is never innocent and operates energetically on various levels. Raising one's voice against these mechanisms of ordering is not passive, but channels energy, gives that energy a sense/direction, sets up the possibility of engendering meanings that challenge the codes and their mechanics of operation.

8 Michel Serres, *Rome: The First Book of Foundations*, trans. R. Burks (London: Bloomsbury Academic, 2015 [1974]).

9 Michel Serres, *Hominescence* (Paris: Pommier, 2001).

10 Michel Serres, *La légende des anges* (Paris: Flammarion, 2009).

11 Léon Brillouin, *Science and Information Theory*, (Mineola, NY: Dover Publications 2013 [1962]).

Even if the hard always implicates the soft, its hardness comprises a potency for the production of channels upon which new symbols can ride. If the breath necessary for language becomes vowel and consonant through bodily articulations, this latter must respond energetically to that which the breath's hardness is capable (often combining complimentary bodily movements to economically use the energy necessary to keep the breath flowing). The hardness of the hard is this potency: an energetic potential.

Serres undoubtedly sees a promise in a prominence of 'softness' that can be observed today in information technology and in the proliferation of techniques of symbolization.¹² Unlike the technologies inherited from the Industrial Revolution, for which the movement of messages operates on large energetic scales (of steam engines and fossil fuels), in the context of the 'digital revolution', messages travel at faster speeds and at lower energetic scales—not only thanks to semiconductor technology but also to the growth and penetration of the Internet and satellite technology, of what Serres has referred to as 'world objects' [*des objets-monde*].¹³ Logical systems, founded upon tradition or convention, lose their hold in a world where people can code themselves, saturate their identity with varying degrees of affiliation different from those based on geographical proximity or kinship and family. Individuals can learn to cultivate their identity through techniques of differentiation ('I am not like the others') and dedifferentiation ('I share something with the others').¹⁴

BIFURCATION, BIAS:

THE SOFTNESS AND HARDNESS OF DATA THAT IS 'MASSIVE'

This conception of the soft and hard inspires me to organize my thoughts around 'data' and 'information', which are important terms for both those who are technically-inclined and technically-averse among my peers. Like the physical concept of mass (in French, 'big data' is even sometimes translated as '*données massives*'), data has a softness and a hardness. The distinction between data and information is not perfectly immediate but mediated by a cipher—a mathematical formalization—and a dexterity—an application of that formalization to a 'given' that is, itself, also dually hidden.¹⁵ If we were to settle for the idea that data constitutes 'the hard' while information is 'the soft', we

12 Michel Serres, *Darwin, Bonaparte et le Samaritain: une philosophie de l'histoire* (Paris: Pommier, 2016).

13 Michel Serres, *Le contrat naturel* (Paris: Flammarion, 2009).

14 For a development on differentiation and de-differentiation, on the human body, see Michel Serres, *Genèse* (Paris: B. Grasset, 1982); Michel Serres, *Variations Sur Le Corps* (Paris: Pommier-Fayard, 1999); in nature, see Michel Serres, *L'incandescent* (Paris: Editions le Pommier: Diffusion Harmonia Mundi, 2003).

15 Michel Serres, *La Naissance de La Physique Dans Le Texte de Lucrèce: Fleuves et Turbulences*, Collection Critique (Paris: Éditions de Minuit, 1977).

would lose the fourfold setup. All data has informational content; it has been ‘informed’ by the double articulation of a code, a ‘softness’, and its application to prior data, to ‘previously given givens’, a ‘hardness’. Data is thereby both explicit and implicit, constative and performative.¹⁶

Some are quick to cry out that data is biased. If we want, however, to distance ourselves from the accusatory nature of such a statement, to be ‘biased’ means to be inclined or at an angle. It means to have a direction—there is softness to hardness. This is true of any data like it is true of any information decipherable from it. To order, to negate entropy (to render it negentropic, or informational) requires differentiating, inclining, giving angularity to noise. It is an act of differentiating figures from grounds. Without ‘bias’, such differentiation would not be possible. There would be nothing discrete in the continuous.

What is at stake today seems to be related less to these statements about data and information than to the nature of the processes by which softness and hardness are mutually implicated. And this is of course of importance, because these processes channel different intensities of energy, which have ‘material’ consequences. Communicational circuits parasitize data, decoding and recoding. In a linear conception of time, one can think of this parasitizing as bifurcating the data, addressing it as continuous and then discretizing it sequentially—like the act of speech, to pick up an earlier example. The mouth modulates a continuous breath (the air itself as data) of varying intensities that it discretizes with the lips and teeth, forming the consonants. What the sender receives must be decoded by listening, excluding the noise (the breath itself as well as modulations that are slightly ‘angled’ such as in regional accents) and extracting only the linguistic elements in the patterns of their occurrence. Such linguistic elements are received in the frequency domain, in a time that is cyclical. These two domains are orthogonal to each other—they cannot be brought into perfect correlation.¹⁷ This is why it is difficult to affirm the very possibility of a perfect transmission between sender and receiver. The receiver does not merely record word-for-word what is received, but translates the datum received in time to an informational network of connections. The coding of the received information in this way takes the datum out of time into a frequency domain in which one can quasi-objectively interpret or make sense of that which is deemed as informational.¹⁸

16 Jean-Yves Girard, *Le Fantôme de La Transparence* (Paris: Éditions Allia, 2016).

17 The Fourier transformation translates between the time and frequency domain, for more on this in computer science, see Vahid Moosavi, ‘Pre-Specific Modeling: Computational Machines in a Coexistence with Concrete Universals and Data Streams’, in *Metalithikum IV, Coding as Literacy*, ed. by Vera Bühlmann, Ludger Hovestadt, and Vahid Moosavi (Basel: Birkhäuser, 2015), 132–66.

18 On the quasi-object and its relationship to parasitism, see Michel Serres, *Le Parasite* (Paris: B. Grasset, 1980).

PROJECTION:

DESIGN, INVENTION AND THE INSTRUMENTS OF TRANSLATION

The architectural project also deals with articulating 'softness' and 'hardness' as it encounters and produces data and information. The challenge, as I see it, is that we often begin with 'a lot' and must learn to reason this 'lot' without being able to properly experience it, as we are faced not only with the materiality of the site, of the potential building materials, but also building codes, actual or potential clients and users, larger problematics like sustainability or urban sprawl and the relevant or intriguing things that we pull in from other disciplines or our own intellectual interests.

What I observe as I reflect upon the design project in architectural education is the result of this dichotomous, mutually exclusive treatment of the soft and the hard. It is as if the project is to begin with the 'soft' and then turn to the 'hard'—we can decide what to do in the most economical way only after we have gathered as much 'relevant' information as possible from the 'available' data. The disciplinary side of architectural education offers (if not imposes) various analytical methods, from site and precedent analysis (in their social or material aspects) to the study of the interests of stakeholders, sometimes even bringing these latter in as part of the production of the design brief. These methods are strategies of discretization, but ones that operate with predefined classifications and systematizations, often within the normative (methodological) constraints of the social or natural sciences from which they are borrowed. They imply logical systems or semantic ontologies, often grounded in convention and tradition and some of which are disciplines in their own right (typology, morphology, ecology, sociology, anthropology, etc.).

The performativity of these methods makes them attractive, because they seem to guarantee an objective overview from which one can best identify what is to be done. If the 'hard' is treated as the material reality of the project (as the citation from Jan Gehl seems to suggest), then these methods promise to lift the veil behind which meaning is hidden. To argue for a close proximity to meaning and to the soft (against 'positivistic approaches' as Rapoport seems to suggest) is to look warily upon the type of mediacy offered by mathematics, theory and technology, by the symbolisms that make abstract reasoning possible, but that tend to precisely move us away from the immediacy of the meaningful.¹⁹ I think we can also read in a similar manner the wariness

19 As Gilles Dowek puts it, 'les théories et les formules font écran entre le sujet et le réel: ils ne voient plus le réel, ils ne voient plus que la formule qui le représente, mais qui, en le représentant, le trahit' Dowek, 36.

of architects for digital techniques of conception that produce forms that appear disconnected from anything known or experienced, that seem to come more from theoretical or mathematical abstractions than from 'meaning' (Negroponte: 'not everyone wants to live in a balloon'). It is perhaps this wariness that also drives us to ask of our digital tools the same explicitness as analytical methods. If the semantic ontologies of the social sciences promise openness and transparency, does the turn towards Building Information Management ('BIM') or parametric set-ups based on systems theory feign a similar 'honesty' that sheds all veils between the 'soft' and the 'hard'?

The fourfold setup I read in Serres' thinking on the soft and hard offers a way to address the soft and hard as mutually implicated and in terms of 'softness' and 'hardness', always in mixtures and never in a pure form. The logical system is thereby not the best figure for thinking architecture as an art of joining, for in such a semantic ontology, the elements and their relationships are already given. If joining is an art, an *ars*, then it is also a craft whose implicit practices of joining are precluded by logic. A more appropriate figure is the circuit or semiconductor where electrical currents pass, where the soft and hard flow in mutual implication (energetically and informationally). These circuits are not mechanical or thermodynamic systems, because they are informational and can incorporate any code and accommodate various energetic intensities.

What is our own agency in such a circuit? Who are we as architects if we are to be someone other than what a logical system would tell us to be? When picking up a method of analysis as objective and transparent can we do anything other than serve its authority, or speak, criticize and administrate in its name? When employing a method (or perhaps, more abstractly, an algorithm) and challenging its authority with our own, doping it with softness and hardness in a circuitous fashion, with sophistication and cunning, how can we learn to speak as a political individual who cannot claim a natural right to be heard? I would like to think that we are to act less like an administrator or a royal figure than as a joker or a harlequin whose position is not attributed by a logical system but negotiated within circuits of mediacy and immediacy.

SOFTNESS AND HARDNESS: DOPING IN AN ART OF JOINING

Architecture as an 'art of joining' is more than design, more than problem-solving²⁰: It is an inventive act of placing into communication that which otherwise would not resonate, not have a logical common ground.

²⁰ Anne Meyer, *The Art of Joining: Designing the Universal Connector*, ed. by Stiftung Bauhaus Dessau (Leipzig: Spector Books, 2019).

It is about articulations of softness and hardness and of the instruments by which such articulations can be inventive. Through doping, by adding 'more', such articulations pick up contingency, require cunning. This understanding of the mutual implication of the soft and the hard sheds new light on that which the 'soft' and 'hard' tend to stand for and permits us to read differently, and at a higher level of abstraction, the quotations selected from architecture and urban theory presented at the beginning of this chapter. Their statements pick up implicitly or explicitly narratives of alienation and emancipation: The 'soft' has been neglected in favour of the 'hard', but there is a way out that has implications for planning and architecture. 'Soft architecture' is more flexible, more easily adaptable, responsive (Brody), which risks (according to Negroponte) in becoming literally 'soft' to the eye (formalistically) or the body (materially). To argue for the 'soft' is to call for a return to 'the meaningful' (Rapoport), to 'the indeterminate' to 'the user' (Schneider) or to 'fuzzy boundaries' (Gehl).

If we take the hard and the soft out of the ontological fixity that such oppositions imply, addressing them instead as mutually implicated and as ciphered (rather than logically determined), the stakes for architecture and urbanism do not look the same. I would like to think that it allows us to see the architectonic artefact as the result of a projection from an arbitrary (but 'designed') set of elements whose joining is an inventive craftiness (an art; an *ars*) of an architect. The mutual implication of the softness and hardness implies a certain statuesque autonomy of the artefact while at the same time being authored by a human intelligence. The artefact cannot transparently speak of its origin, but neither can its author. The artefact has a softness and a hardness and part of their implication remains veiled and ciphered. Its meaning must be continually generated, translated: a circuit where the softness of its hardness is made soft again while maintaining a hardness.

From this perspective, what seems to be at stake in stories of alienation and emancipation is the potential exclusion of the human intellect from the performances that give birth to and keep 'meaning' alive. The risk that one 'bias' will become implicitly adopted or explicitly codified and that all energy (human or otherwise) will be devoted to ensuring that everything is clear, understandable, irrefutable and accessible to all. The elements and the alphabets would have to be settled, banks of words limited, sets of vocabulary closed.²¹ The only freedom would become combinatorial and eventually the relationships between the elements would become codified for the sake of efficiency, optimization or consensus. Certain 'readings' would be able to be claimed to be wrong because authority would have been granted to one logical system (whether from

21 Ivan Illich, *ABC: The Alphabetization of the Popular Mind*, trans. by Barry Sanders (San Francisco: North Point Press, 1988).

the ‘bottom’ or the ‘top’). To maintain the stability of such an authority would require the softness to have a hardness, mobilizing the levels of energy necessary to prevent unwanted deviations, to precisely avoid the type of importations that would change the accepted meanings.

The paradox here is that embracing a ‘softness’ that operates on a planetary scale today means the ability to distance oneself from the mundane—and precisely the opposite of what the proponents of a triumphal return to the soft would be arguing for. To address the softness and hardness within a circuit of mediacy and immediacy calls for contemplation in higher levels of abstraction. To be able to artfully join the disparate and the dissimilar means inventing a space in which none of the elements are native, in which none has a greater (and certainly not a logical) claim: A space that, like a semiconductor, is ‘doped’ such that the relations between the elements can be redefined. Where ‘softness’ and ‘hardness’ are kept in play. A space where the elements begin to lose their distinctions; a space that dedifferentiates. Where an individual becomes a person (a political *persona*), who can stand up and say something that has never been heard before about the very things that seem to have been taken for granted. I wonder what it would look like to learn to reason around this circuit of softness and hardness, to dope the proximate with the distant, immediacy with mediacy, transparency with opacity.