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Vienna, March 2nd 2016

Digital Architectonics

In a recent article entitled *Quantum Words for a Quantum World,* by the Quantum Physicist Jean-Marc Lévy-Leblond, we find a reminder of a remarkable scene in Alfred Hitchcock's movie *Torn Curtain* (1966) which tells a story of spying and science. It features a scene where two physicists confront one another on some theoretical question. Their 'discussion,' the author of the article suggests, "consists solely in one of them writing some equations on the blackboard, only to have the other angrily grabbing the eraser and wiping out the formulas to write new ones of his own, etc., without ever uttering a single word." This picture of theoretical physics as an aphasic knowledge entirely consisting of mathematical symbols may be very common in popular representations, our author maintains, but "we know [it] to be wrong […] and we have to acknowledge that, far from being mute, we are a very talkative kind; physics is made out of words." Of course, there is some considerable distance between architectural theory and theoretical physics. However, insofar as contemporary architecture encompasses both engineering and design that is aided by computers, the two fields occupy a closer contextual relationship than might at first be apparent. The software environments provided to assist architectural design all provide their formulas and formulaic elements, neatly packaged into a clothing we know from drama and theater: we have 'stages', 'casts', 'behaviors', 'properties', and 'actions' all pre-fabricated (formulated) in code. The as yet brief history of these environments proceeds in paths of greater and greater generality of those 'formulaic elements' and they do so according to several different paradigms; a major one being the approximation of a unified system within which all the governing factors in the construction of spatial form and organization can be combined and put into accord with the greatest possible liberties – *greatest possible* thereby referring to the smooth mechanization of how the system as a whole can be operated.

Such performativity is not well captured, it seems to me, by speaking of *the society of spectacles* or the like. There is one crucial ingredient to computer modeling and information technology at large which is the measurement of chance, and the calculation of probabilities. Elie Ayache, a financial market economist and somewhat of an intellectual activitst, has just recently published a book where he spelt out the implications of chance-calculations by speaking of such math as *The Medium of Contingency*. He proposes nothing less than an inverse view to markets – one which takes seriously that arguments today are taken up less for a *weight* they might have than for a *price.* The digital has brought us a new situation of sophistry. This might be putting it just a little too stark, but have our modern cultural institutions of authority, supposed to stand in for something like public values – the press, university education and research, publishing houses, museums,

theater, concert halls – are they not perceived to speak up in a swollen manner, the more distinctive they articulate those values? Who would deny that they suffer from a certain disintegration by the big waves of digitization, that there indeed is something inflationary about the manner of mediating those values? Things appear contingent, more and more people do no longer trust in the distinctiveness of intellectuality, in recognising that things are complicated, that there are many faces to every issue that matters broadly.

– one striking example of an aggressive fight against articulate distinction and intellectuality:

> **Donald Trump** wins his votes by declaring that he ‚loves all the uneducated' – who welcome him in return as *plain*, *honest, straightforward* and „one of them", and they want to trust the promised clarity of his leadership.

Without suggesting that they be looked at on the same scale, I'd like to mention two more situations which indicate intellectuality's inflationary blasé attitude in critical manner :

> **Arch+** celebrates ***A Thousand and One Theories*** – as if it all depended upon seducing a cruel Sovereign for one more night, in order to buy time and prolong survival – but of what exactly, of architecture? And from whom, from which Sovereignty, exactly?

> The last **Biennale** was called ***Fundamentals***, and it studied „the absorption of modernity" – suggesting thereby that our societies are not only different, but also somehow „separate" from modern societies – that they are like sponges that saturate themselves with modernity, or worse perhaps, that they are like dark nooks and crannies, or black holes, swallowing the light of reason, while giving back barely any reflection.

– The digital is here to stay. We have this sophistic situation because we are witnessing the rise of a new literacy: literacy in digital coding.

Within the sophistic present

The term *sophistry* derives from cunning and wittiness, from the Greek term *sophós.* It referred to the rhetorical fabrication of arguments which only *appear* to withstand a logical examination. A *sophism* is an argument with no weight, it is one with a price. It is an argument based on opinion

rather than knowledge. Now, it is important that until the advent of a mathematics of chance, all things *probable*, unlikely but possible, all things *speculative* and *imaginative*, they were referred to in this way.

The sophists in ancient Greece were travellers, they advertised their services wherever there was demand. They knew how to make themselves heard. They convinced. They speculated. More often than not, I like to belief, according to the best of intentions. A sophist was literally someone who claimed to be wise, and was recommended as such. Sophists share the emphasis on *wisdom as cunning* with the schools of philosophy that began gradually to emerge in ancient Greece. In distinguishing themselves from the sophists, the *philosophers* began to say that they were not wise, but in love with wisdom.   They were the friends of wisdom. With this, they anchored wisdom, cunning, and the power that comes with speaking well (influentially and convincingly), in a law transcendent to the technique of argumentation. Philosophers share a care for wisdom, and it is the *sharing* which is governed by this law – the law of friendship, a law whose institution lies, as many authors will tell us, in the darkness of history. Livy, the Roman historian from the 1st century BC, for example refers to it without further specification as ‚an ancient law'. A law that commits one to honour friendship above all political rules and agreements. It is the law which lead Diomedes and Glaucus, in Homer's Illiad, take off and exchange their armours on the battlefield, despite their commitments to fight on opposed sides. Because their fathers were friends. The law of friendship at once transcended and fitted in the logics of blood lines, it introduced a blank card, a joker, an element of contingency into rigid and unambiguous lines of descent. Friendship means to be mates by soul. *Soul mates* rather than *family.* It pointed a way out of the traditional forms of honour, revenge, and purification. The law of friendship respects that there be many friends, that friendship must be earned and that it takes effort to care for it, a kind of *sacrifice* even, yet in a form that is not impersonal and religious, but *polite*.

So what had happened, where did the sophists come from?

A new literacy. When it turned possible to exercise oneself in speaking well, with the phonetic alphabet – a script which captures full *articulation*, consonants *and* vowels – *the power of the word was generalized*, and thereby, like all things generalized, this power was made *available*: Raising one's voice on matters of concern was no longer a sacred privilege. It gave way to city states, to novel forms of governance and trade, to a co-existence with the Gods rather than a continuation of their reign in dynasties, and, with myth and poetry, also to other novel forms of craft, art, and technique. This revolution through literacy meant, literally, that Greek was whoever can speak and

understand Greek, regardless one's cultural origin. Greeks were *autochthonous*. Children of the *Earth-in-general*, not children of a tribe, a particular territory and tradition.

Another comparable moment, another new literacy: *Rennaissance*. Now *the power of counting was generalized*. The 1, identity, at once *unit* and *unity* in syllogistic reasoning, was symbolized, broken apart into a ratio-nality made up of a *denominator* and a *nominator (rather than of unit fractions, Stammbrüche)*. Identity now incorporated time. It was no longer *intelligible* only, formal, pure and ideal. Identity turned *sensible*, and variable. Identity was linked up with individuality rather than notions of the quintessential. Now it was space that was formal, ideal and pure, a space intelligible because coordinated by a *generalized point of origin*. Identity was no longer accommodated in any fixed way within proportion.[1] Analogous reasoning was discredited in favour of *decipherment*. The cipher is the 0, the point-of-origin-in-general. Identity was rational now. It could be put into perspective. It could be observed as unfolding variably in time. Education moved from the monasteries to the cities, to universities. Paper money was invented. Banks and the calculation of interests (Zinsen). Double bookkeeping. Novel governmental practices of inventorization. Techniques of planning proliferated. So did instruments to support it. Once again, arguments were balanced by their *price*, had no weight.

Today once more. A novel literacy. The Digital Code. It generalizes *the power of measuring*. A new sophistics. A new renaissance.

What I want to propose as a program for the Chair for Architectural Theory here at the TU is to leave the sophistical arena of dialectics, where thesis and antithesis debate and spectators await an ever new next turn. What I want to propose is to talk as friends once more. But *Roman* friends, with mixed and migrational rather than pure and earthly identity like the Greek friends. I propose to call such talk *architectonic* – it is what I would like to help initiate and develop at TU.

So what is this architectonic talk?

Architectonics does not, like theory, aim at *explaining*. Theories presuppose a metrical space and time. Yet it is exactly the power of measurement of space and time that is being *generalized* by the emerging literacy in digital coding – available and explicit in information through its mathematical constitution, in electricity, its logistics, its networks, its real time transactions, the finance economy it gives rise to.

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[1] like the famous proportion offered in the Timeaus as a guarantor of the sensible's intelligibility: *fire is to earth as air is to water*.

Architectonic as talk as talk among friends spans across the rules of established disciplines and communities. Precisely in this it remains committed to the main idea of modernity, namely the investment of science for a novel humanism, adequate for a world society. But it doesn't aim at explaining, nor at engagement. It claims a milieu of restraint. A space to think. In the midst and in relation to everything that pertains to globalization: its cultural issues, its economic, political, infrastructural, technical and ethical conditions. A milieu of *dis-engagement*, but not one of dis-interest. One of care and concentration.

The term *Architectonics* appears for the first time in the writings of the 18th century polymath, Johann Heinrich Lambert, in order to address „mathematical and philosophical insight (Erkenntnis)" – he introduced it together with a logics of phenomena, which he established as a prospective manner of reasoning based on his method of measuring the *intensity* of light. He called this method *photometria* – a method which gained importance only in the 20th century, in the course of 3-D modeling software in CAD environments. Immanuel Kant has a famous definition of *architectonics,* as *the art of systems,* which he actually took from Lambert whom he recognized as one of the greatest minds of his century. However, there is an important point of divergence between the two. It concerns what in philosophy is called the synthetic apriori, which Kant had conceived of as the *forms of time and space,* his famous „forms of intuition" in which the manifold sensory experience is being apprehended in what counts to Kant as critical, reasonable thought. Lambert, unlike Kant, embraced chance-calculation among his notion of reason and critique. His concern was to attribute a central role to speculation and hypothesis *within* critical reason, in a manner that can treat them both experimentally, that is based on geometry and measurement.

But this is not the place to expand on the philosophical implications – what *is* important for a program of a digital architectonics in architecture is the combination of mathematical thinking with sensorial perception in Lambert's architectonic mode of speculation, imagination, and hypothetical reasoning. Architectonic speculations to him are like a theoretical skeleton, which need to be fleshed out gradually with experiences. Speculations alone lack soul. A system is an organism in its becoming, to Lambert. It is not an organism in its becoming *better* (as it was to Kant). Scientific methods do not guarantee moral conduct for Lambert. Architectonics treats scientific methods more like gymnastic exercises, exercises to gain agility, to know what the *corpus of knowledge* as *a living and quick body of thinking* is capable of. Architectonics is all about interiorizing and growing alive to what mathematical forms and constructions render us – speculatively and schematically – capable of.

This is what a digital architectonics for architecture would lend itself for as well: to discover something like *soul* in all the sophistic articulations all around us. To connect with the *breath* that animates technical objects. To view them not as ‚smart' or ‚intelligent' only because their functionality has turned them into veritable *athletic power bundles*. But to recognize them in their intelligibility.   Yet how to think of this breath, of such soul? What we can learn from Lambert, and others, is that it concerns the symbols used in mathematics. Neither are they letters, nor numbers. In short, what I understand from having studied the history of algebra:

> There is *nothing in particular* to be laid bare in the mathematical symbols.
> But at the same time *everything that can be known* is conserved in translations of just such symbolized nothingness (ciphers).

Michel Serres has beautifully characterized ciphers as atom-letters, spelling out, in a way that is of consequence, a hesitation in being either one without the other.

This is a way of thinking an elusive essence that actually became familiar in thermodynamics: everything depends on the assumption that the amount of energy in the universe be invariant. With this assumption of invariance there is no need to specify what energy is. Instead, nature can be studied in its transformations of energy from one form into another. A physical understanding of nature can gradually be enriched through the scientific understanding of it.

Nothing would make sense in the natural sciences if systematicity were let go from its methods. There is an autonomy to *the object*, *because of* its mathematical constitution that cannot be availed over by the intentions and the will of subjects. It is in its commitment to mathematical insight of this sort that architectonics doesn't aim at explaining, nor at archiving. It aims at developing cryptographic literacy in all the novel possibilities the new ‚script' – digital coding – brings. It embraces chance dispositions and probabilistic reasoning. This is inevitable because today's state of the art technology, as well as of science, gives the *measurement of Chance* a central role. It would indeed be unthinkable without it. It is what fuels and propels the articulations on the sophistic global marketplace. Architectonic talk is talk that refuses both, nerdishness (Fachidiotie) as well as superficial generalism – and, important to add, also moralistic edutainment and ideological priestly-hood.

Architectonic talk embraces the measurement of chance, but it doesn't *use* this measurement for predictions. With this, it sets itself apart from theories that immediately serve application, in economy or politics. It *talks* in the terms the new script, digital code. It explores all that the novel

script allows to express. But it knows that it doesn't know what its articulations might come to trigger. Its talking is the *dispositioning of such meaningfulness to come* – that is why prediction, and the framework of legitimate vs illegitimate propositions and planning, is not in its focus. Architectonic talk is not theory that serves design in any direct manner. It is exercise capable of *informing* design, planning, marketing, advertising, counselling, decisions, policy making and so on, all that happens on the sophistic marketplace.

In the current times of crisis architectonic talk is the talk among soulmates in standing up against the *athletic control of systems*, so forceful with sensory performance but poor in intelligibility. Architectonic talk is talk that seeks to make four affirmations without knowing how to:

1) it affirms the real asymmetry between writing and reading,
2) it affirms the mathematical laws of conservation of entropic, energetico-material possibility (1st Law of thermodynamics)
3) it affirms the irreversibility of time (2nd Law of entropy)
4) it affirms the principle impossibility of a perfect experiment because observation is not gratuitous, (information has a price, Leon Brillouin's theorem of *Negentropy*).

It is talk, hence, that refuses the *anthropological* a priori. It's commitment is to the cosmos again. A cosmo-literacy, and a cosmo-graphy, based on the measurement of chance, uses systematicity as spectral masks that render phenomena *apparent*. Different systems, different spectra, render *different* phenomena apparent without necessarily contradicting each other. A system can be either coherent or exhaustive. Architectonic talk turns to cosmos, based on the measurement of chance, because it chooses coherence over knowledge's possible exhaustiveness – which it regards as hubris.

So how does this connect to architecture as we know it?

First, I want to say again that the problem in today's sophistry is not that coding and computing are too difficult to be mastered well by the many. There is something patronizing about this often heard reservation. The problem is that it is *so easy* to handle computing – as tools. Sophistically. Schematically, with little inspiration, swollen with self-rightousness.

So how does such aimed at literacy connect to architecture as we know it?

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Every architectural treaty since Vitruv is concerned with notions of systematicity, measurement and adequacy. Just like philosophers, architects have a tradition to write about the very big picture: *every* treaty presents a system. Talks about *all* of it. All of architecture, not problems in particular. All of knowledge, not philosophy of this or that. This stands odd in today's landscape. We are used today to discrediting this big gesture, because we attach so much weight to the one criterium that was always merely *speculative* – often *metaphysical* – before Enlightenment: *the criterium of exhaustiveness*. This reservation against the big gesture today, it comes from a belief in theory well-grounded, bare of speculation: indeed, nothing would make theory different from a narrative, or a tradition, or a particular manner of conduct, if it were not geared towards fitting-in, eventually, into a *Theory* that unifies all theories.

It is this criterium of exhaustiveness that seems to differentiate *architectonics* from *theory*. Both *architectonics* and *theory* are concerned with systematicity (elements and axioms, unity, completeness, reasonability, generalization), but theory presupposes *metrical space and time*, while architectonics presupposes, I would say, *a cryptographical notion of the object*. Now, the object, and metrical space and time, they are like two sides of the same coin. It is a question of giving primacy to one or the other – of course theory wants to achieve objectivity, and of course architectonics wants to achieve metricity. But for theory, the criterium of exhaustiveness is central, and the object can be fuzzy, confuse. While for architectonics, the object is central, *in* its prismatic clarity, its painterly colorfulness, its topological constitution. Architectonics neither needs to nor claims to account for all possible experiences of a certain kind. To illustrate – we can think of a musical composition, for example.   No one would expect that one such composition exhaustively clarifies what music is. Think of a musical instrument: however well someone may be able to play the violin, it would be absurd to claim that this person exhausts the full potential of the instrument. This is how I propose to think of the digital code in a digital architectonics as well – in terms of such rule based, physical instrumentality that is, nevertheless, not properly speaking a tool. The later Wittgenstein thought of language as such an instrument when he compared language to a city, and asked whether it was ever complete before Mendeljevs table of chemical elements, or before the new vocabulary initiated by particle physics. Architecture, in such understanding, brings forth compositions, and its criticality depends upon being sophisticated *and* in touch with something we could again begin to call its „soul".

Now why propose such a program at a *Technical* University, and not at an art school for example? Precisely because the digital code has brought *a new literacy.* A profanization of the power of measurement. Architectonic talk, because it explicates systematicity, is the *scientific* side of mastership, not its artistic one. It is what opens up paths, methods, of achieving mastership – but

methods in form of exercises, such that a dimension of the intelligible soul can accompany the

brutely athletic power of sheer signal-based performance.

LITERACY

Digitale Technik ist keine Techno*logie,* sie ist algebraisch:
opportunistisch, selbst-referentiell, symbolisch, partitive, in ihrem Wesen unstet
und Verteilung. Ihre „Einheiten" sind Einheiten von „Genereller Äquivalenz". Das
Bit. Wie Geld. Abstrakt und mächtig, ohne ein Konkretes zu repräsentieren. Kann
alles mit allem vermengen.

Sie *ermächtigt* das (Er)Tasten vor dem (Be)Greifen.

Sie *artikuliert* (gliedert) was die Logik voraussetzt: Raum und Zeit.

Sie *erschliesst* (verschlüsselt) Zeitlichkeit durch Bündeln von Wahrscheinlichkeiten.

Sie *markiert* (indexiert) Räumlichkeit in den Elementen ihrer Sichtbarkeit und
Zeitlichkeit in den Elementen ihrer Planbarkeit.

Sie *ermöglicht* uns eine architektonische Objektivität.

LITERACY

Code verkörpert die Asymmetry zwischen Lesen und Schreiben.

Das ist nicht neu am digitalen Code.

Neu ist, dass der abtastende und ertastende (digitale) Code die Symmetrie zwischen Lesen
und Schreiben aufbricht, welche wir seit Descartes mit dem Begriff der *Objektivität* und der
Formalität verbinden.

Neu ist auch, dass der abtastende und ertastende (digitale) Code der Asymmetrie zwischen
Lesen und Schreiben, die wir seit Descartes mit dem Begriff der *Subjektivität* und der
Interpretation verbinden, eine Symmetrie aufprägt.

Wertvoll (selten, seltsam) ist, was
jenseits von Gleichgewichtszuständen bestehen kann.

Symbolisierung.
Ökonomisierung.
Kontrakte.