Upon Entropy

Riccardo M. Villa

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Architectonics of the Image in the Age of Information

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Introduction

In 1973, architecture historian Manfredo Tafuri penned what would be largely quoted afterward as an "epigraph" on what was considered contemporary architecture at that time. In the introduction to *Progetto e utopia*, he writes:

What is of interest here is the precise identification of those tasks which capitalist development has taken away from architecture. That is to say, what it has taken away in general from ideological prefiguration. With this, one is led almost automatically to the discovery of what may well be the 'drama' of architecture today: that is, to see architecture obliged to return to *pure architecture*, to form without Utopia; in the best cases, to sublime uselessness.¹

¹ Manfredo Tafuri, Architecture and Utopia: Design and Capitalist Development (Cambridge, Massachusetts: The MIT Press, 1976), ix.

There are two points worth highlighting in this quote: firstly, the description of architecture as something stripped from any ideological prefiguration and condemned to "return to pure architecture" or "in the best cases, to sublime uselessness;" and secondly, the statement that directs the aim of Tafuri's book, i.e., "the precise identification of those tasks which capitalist development has taken away from architecture."

In 1979, six years after *Progetto e utopia*, French philosopher Jean-François Lyotard published *La condition postmoderne*. If Tafuri aimed to identify the tasks subtracted from architecture by capitalism, Lyotard's goal was instead to identify how technological transformations changed the statute of knowledge:

The nature of knowledge cannot survive unchanged within this context of general transformation. It can fit into the new channels, and become operational, only if learning is translated into quantities of information. [...] Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange.²

² Jean-François Lyotard, The Postmodern Condition: A Report on Knowledge (Minneapolis, Minnesota: University of Minnesota Press, 1984), 4.

In computerized societies, Lyotard writes, knowledge ceases to have an end in itself and starts to be produced in order to be sold and consumed. Exchange becomes its ultimate goal: the introduction of the computer and information technology defines not only a society but a condition at large and a stage of progress in which knowledge turns into a commodity. According to Lyotard, such a condition can be found "in the most highly developed societies:"3 his argument underlies a notion of progress that the term "postmodern"—understood as what comes after the modern—already foregrounds. Modern and postmodern appear here as two stages of a process that is the outcome of science's conflict with narratives: while trying to distance itself from the ground of narratives and "fables" that, given their fictional nature, are not compatible with scientific knowledge, science must nevertheless produce its own ground of legitimization. Science "is obliged to legitimate the rules of its own game."4 This novel discourse (that Lyotard identifies in philosophy) is what he calls a "metanarrative." The term modern designates for him any science that legitimates itself with reference

^{3 &}quot;The object of this study is the condition of knowledge in the most highly developed societies. I have decided to use the word *postmodern* to describe that condition." Lyotard, xxiii.

⁴ Lyotard, xxiii.

to such a ground.5 Postmodern corresponds to the next natural stage of the conflict, or with the realization that even such metadiscourse is ultimately a narrative: "Simplifying to the extreme, I define postmodern as incredulity toward metanarratives," Lyotard writes. "This incredulity is undoubtedly a product of progress in the sciences: but that progress in turn presupposes it."6 The invariant between the two is the figurative loss of ground caused by the incredulity towards narratives first and metanarratives next. The fulfillment of this conflict closes one age and opens another with a question: "Where, after the metanarratives, can legitimacy reside?"7 Lyotard's postmodern condition presents us with one of the central paradoxes of the contemporary age. Inscribed as forms of knowledge, in the core of science and philosophy stands a nihilism that, if fulfilled to its maximum, reverts itself into its opposite. If the modern incredulity

^{5 &}quot;Science has always been in conflict with narratives. Judged by the yardstick of science, the majority of them prove to be fables. But to the extent that science does not restrict itself to stating useful regularities and seeks the truth, it is obliged to legitimate the rules of its own game. It then produces a discourse of legitimation with respect to its own status, a discourse called philosophy. I will use the term modern to designate any science that legitimates itself with reference to a metadiscourse of this kind making an explicit appeal to some grand narrative, such as the dialectics of Spirit, the hermeneutics of meaning, the emancipation of the rational or working subject, or the creation of wealth." Lyotard, xxiii.

⁶ Lyotard, xxiv.

⁷ Lyotard, xxiv-xxv.

towards narratives turns to metanarratives, the postmodern incredulity towards the latter unites with a condition in which knowledge becomes a matter of exchange, i.e., shifts, in Platonic terms, from *sophia* to *sophistry*.

Tafuri's statement on the one side and Lyotard's on the other present us with a challenge: on the one hand, the open question over the "lost" legitimacy of knowledge—a knowledge that, in the meantime, has turned into exchangeable quantities of information—and, on the other hand, an erosion of the tasks of architecture (which does not disappear, but remains there, almost like a ghost, in the form of "pure architecture"). Two *aporie*, two impossibilities: the impossibility, in information, of a legitimate science and the impossibility of a "usefulness" or an actuality of architecture.

The present work picks up this challenge by bridging these two *aporie* under the sign of the *image*. Medium par excellence, the image is copy (not original), fictional (not real), accidental (not substantial), ornamental (not structural), subjective (not objective), part of an imaginary (not of reality), subject to interpretation (not calculus), representative (not effective), contingent (not necessary), religious (not scientific). Quite similarly to

^{8 &}quot;The word 'image' is in bad repute because we have thoughtlessly believed that a drawing was a tracing, a copy, a second thing and that

the ornament for modern architecture, the image is precisely what modern science tries to liberate itself from, in the quest for absolute transparency.9 As a medium, the image corrupts; it infiltrates and pollutes that space in between the observer and the observed; it compromises the possibility of a genuine and uncorrupted "friendship" with knowledge—of a *philo-sophia*, of an intimacy with knowledge that would nevertheless remain "chaste," that would not "conceive" but only acknowledge what stands *upon (epi-histēmi)*, and thus beyond cycles of generation and corruption.

And yet, the question posed by the image is not just a metaphysical or an epistemological concern. The timeliness of the image, especially when related to what is referred to in the title of the present work as an "information age," is in the fact that, now more than ever, it becomes a relevant notion from a physical and thus *material* point of view. Not only architecture and knowledge find themselves in crisis in the contemporary condition: physics itself is

the mental image was such a drawing, belonging among our private bric-a-brac." Maurice Merleau-Ponty, "The Eye and the Mind," in *The Merleau-Ponty Reader*, ed. Ted Toadvine and Leonard Lawlor (Evanston, Illinois: Northwestern University Press, 2007), 356.

⁹ On this particular aspect, see Riccardo M. Villa, "Architecture of the Diaphanous," in *Ghosts of Transparency. Shadows Cast and Shadows Cast Out*, ed. Michael R. Doyle, Selena Savić, and Vera Buehlmann (Basel: Birkhäuser, 2019), 183–96. This essay is, in a way, prototypical for the present research.

faced with a profound upheaval with the quantum. The positivist and materialist determinacy according to which the world could be "pictured" (and thus determined) without any subjective interference that dominated the field and kept it apart from any idealism seems untenable from Heisenberg onwards. To a quantum-physical understanding, observation matters: not only can science not liberate itself from images but, quite on the contrary, it has to take them into account (and it cannot just do so in logical or calculative terms, as suggested, for instance, by perspective). If, on the one hand, knowledge becomes "exteriorized," as Lyotard says, on the other, it cannot avoid taking into account the relationship it entertains with some cryptic interiority, an incalculable "as much."

The title of book draws precisely from the field of physics, borrowing the notion of entropy and making it central beyond physics itself. Entropy is quite an "elusive" notion. Even in physics, this term absorbed a variety of meanings: a way to account for the loss of the capacity for work in a thermodynamic system, a "measure of disorder," the amount of information relative to a code, just to name a few. The notion of entropy polluted the exact science in which it was born with a certain degree of polysemy. At the moment of its coinage, Rudolf Clausius chose a Greek term so that such a name could be

transcribed into different languages: "I consider it better to take the names of such quantities, which are important for science, from the old languages, so that they can be applied unchanged in all new languages." In this regard, entropy belongs to different territories both in a linguistic sense and a technical-scientific one.

What is interesting, though, is that despite these variations, the term entropy was ultimately chosen by Clausius to preserve a certain *invariance*. Quite counter-intuitively, such an unchangeable character does not imply sameness and cannot be mistaken for a "stable" identity, fixed once and for all. On the contrary, as a *ne varietur*, entropy cannot be grasped but in the continuous change of its discrete states, as a bridge between being and time. Clausius chooses the Greek *tropē* precisely to indicate transformation and change (*Verwandlung*), a change that the prefix *en*-turns into a "content" (*In*-

¹⁰ Here translated from the German. "Sucht man für S einen bezeichnenden Namen, so könnte man, ähnlich wie von der Größe U gesagt ist, sie sey der *Wärme- und Werkinhalt* des Körpers, von der Größe S sagen, sie sey der *Verwandlungsinhalt* des Körpers. Da ich es aber für besser halte, die Namen derartiger für die Wissenschaft wichtiger Größen aus den alten Sprachen zu entnehmen, damit sie unverändert in allen neuen Sprachen angewandt werden können, so schlage ich vor, die Größe S nach dem griechischen Worte $\hat{\eta}$ $\tau \rho \sigma \pi \hat{\eta}$, die Verwandlung, die *Entropie* des Körpers zu nennen." Rudolf Clausius, "I. Ueber verschiedene für die Anwendung bequeme Formen der Hauptgleichungen der mechanischen Wärmetheorie," *Annalen der Physik*, No. 125 (1865): 390.

halt): it makes of it something contained, withheld. The setting of such a relation between variation as potency and a determination of an interiority, or rather the understanding of such potency as a field circumscribed by a horizon, is at the core of how the image is put forward. It is not just a matter of ratio but of proportion: the relationship between transformation and content is always duplicated: as a connection between transformation and content—as the Verwandlungsinhalt of bodies entropy appears in the doubling of their duality, as a double duplication (as an image, a "copy") or as a "quaternity."11 Entropy is, in this sense, what provides a proportional double, a latent image of energy, and Clausius himself chooses the term to establish a certain resemblance (Gleichartigkeit) between the two.

Physics is a point of departure—and of return—of a broader circle that crosses its path with fields that are foreign, if not quite alien, to modern science. Entropy is here a key to understanding the image under the informational paradigm—information as a contingent paradigm, which is deter-

^{11 &}quot;Thus, we have two opposite terms: hot and dry here correspond to the masculine, cold and dry to the feminine. But by means of what mediating dialectic may we proceed from one to the other, uniting the two so as to produce a *quaternity*?" Henry Corbin, *Temple and Contemplation* (London and New York: KPI in association with Islamic Publications, London, 1986), 25.

mining the present condition as much as it is historically determined and, in this sense, constitutes an "age"—and the image becomes, in turn, a key to investigate entropy and to open it up to contamination from concerns that are external to physics. However, the point is not, as some contemporary debates seem concerned with, to counter physics with philosophy or, worse, to use philosophical discourse to explain physics and physics as a tool to legitimize philosophical discourse. Physics and philosophy, materialism and idealism, natural sciences and sciences of the spirit, and all the possible antinomies that can be thought along this line are here conceived instead in architectonic terms: the question is not how to deconstruct or to analyze one with the other, but rather how the picture of the first can be integrated into the latter, and the other way around. The preposition *upon* is to be understood in these terms: as a way to look at a subject matter that is a "detachment" as well as an "erection" of an argument that uses that subject matter as its very ground. The image is here understood in terms of re aedificatoria, as a "matter" (res) of edification. In Latin, aedes facere means "to make a fire," conveying the idea that it is possible to make room and to preserve it by at the same time giving up to an irreversible (thus entropic) process of transformation of matter, of Stoffwechseln.

The terms of such a double process of integration—of such an architectonic edification—always have to rely upon a certain "giving up" of things, something *negligible*, to describe it with the words of Simone Weil. Understood in an architectonic way, the image is a contract, a pact, a sort of domesticating submission to an absolute other over which no complete dominance can be claimed. The science that springs from such a movement is not a belief but faith, a kind of pact (fides and foedus are akin to each other) that endures only in the absence of evidence of the other party's trustworthiness.12 The asynchrony between substance and evidence constitutes modern science as research. It has to continue indefinitely precisely because it cannot be there without a reserve of verification, which is always not immediately present. Reaffirming the image is, in this sense, a way to reaffirm the importance of such a "genealogy" of the modern paradigm, and affirming it architectonically is a way to rediscover and perhaps reinvent the constitutive role of theology in such a paradigm. Theology is here to be understood as a relationship (a logos) with an absolute other, a source of invariance that can never be exhausted or entirely rationalized but accommodated within that "domesticating sub-

^{12 &}quot;Substance of what is hoped for and argument of what is not visible," as defined in the Bible. *Hebrews*, 11:1.

mission" mentioned above. In this sense, theology is not necessarily referring to a determinate god or divinity; theology entails here a relationship not with gods but with *tò theîon*, to what writer Roberto Calasso described as "the divine before the gods":

It is perfectly possible to live without gods. This, according to the criteria of the scientific community, is the state that corresponds to *normality*. Gods are not accepted there, inasmuch as they are unverifiable. It is their privilege and a rule of their etiquette. If gods were verifiable, they wouldn't be gods. It is more difficult, however, to live without the divine. [...] The divine is perpetual, in that it is woven into all that appears. Within what appears, it is that which allows access to what does not appear.¹³

The rediscovery of the architectonic qualities of theology can, therefore, be pursued even from an agnostic perspective: in the *complexio* of the quantum age, atheism and theism are antinomies that articulate but *one* categorical position. ¹⁴ On the other hand, agnosticism stands as a way of not stepping into the logical game of such an antinomy, levering instead on the gnoseological aspect without mak-

¹³ Roberto Calasso, "The Divine before the Gods," in *The Celestial Hunter*, trans. Richard Dixon (London: Allen Lane, 2020), 337.

¹⁴ A complexio that is in itself already "foreseen" in some readings of Christian theology: Ernst Bloch, Atheism in Christianity: The Religion of the Exodus and the Kingdom (London: Verso, 2009).

ing it a personal issue, as a gnosticism would, but rather—in the "open void" instituted by the alpha privative—an ethical and political one.

The current book does not have one line of argumentation but, instead, proceeds through different stages that do not necessarily follow one after the other. The underlying themes are looked at through quite different perspectives and with the help of sources from a broad disciplinary spectrum, if not beyond the notion of disciplinary spectrum itself. This peculiar form is due to a couple of reasons: the first being that this book has been, for its large part, compiled using work developed over the last four years or so in articles, essays, lectures, and conference presentations. This partly explains the heterogeneity of the content, as the interest or the themes of the book have been, on these occasions, turned to "serve" scopes other than the one of the book itself. The book's core has been kept absent or suspended on the one hand—as a hypostasis rather than a hypothesis—and exposed to the contingencies or chance the different calls brought onto it. From the beginning, the book refused to conceive itself systematically, planning itself in advance and executing itself accordingly by systematizing linearly and progressively whatever it finds on its path. Instead, it has been conceived closer to a garden, as something in which the moment of planning cannot be extricated from the contingencies presented by the weather and whose execution is not linearly derived from its planning, but in which these two moments keep on overlapping and calling upon each other, providing an image that is stable only upon the perpetual instability provided by this contract struck with chance.¹⁵

The other reason for the refusal of an analytical and "logocentric" argumentation and in favor of proceeding instead through a sort of rhapsody—articulating the content in different episodes that can be considered independent from each other—is the attempt to provide the book with a certain degree of autonomy from the question or the personal interest from which it sprung. The outcome of the book is, therefore, not a solution to a problem but rather the articulation of an issue through a different set of lenses. In this sense, the form of the book is coherent with its content: its "image" is a transparent, absent one that is concerned with outlining its transcendental nature and that, to do so,

^{15 &}quot;In regard to architecture, the making of a garden blurs the traditional distinction between design and construction that since the Renaissance has ruled the discipline. [...] The design of a garden can thus be seen as a paradigmatic example of a working process that develops in time: it does not happen all at once but is constantly performed as the garden evolves across years and seasons. It is possible to say that gardening is more about maintenance than execution." Pier Vittorio Aureli and Maria Shéhérazade Giudici, "A Concise History of Gardens," *Accattone*, October 2019, 216–223.

must free itself from a utilitarian, solution-oriented paradigm. It is an *instrument* rather than a *tool*.

The refusal of a systematic character and embracing the garden paradigm entails a further unusual feature of the book, especially compared to the established academic practices: the renunciation of the claim to the possibility of drawing an exhaustive picture of the state of the art. On the one hand, because a "state of the art" would be here hard to assess: which "art" is this state belonging to? Is it architectural history, philosophy, physics...? Nevertheless, even beyond this question, which could perhaps more or less be answered in some way, the renounciation of such a claim stems from a precise ethical stance. A work that deals with the "age of information" cannot ignore that an evident feature of such an age is a copiousness and superabundance of sources. This sole fact makes the claim to exhaustiveness not only destined to fail but is also blind to that "lack of ground" that, according to Lyotard, characterized the postmodern condition. Instead, I propose to adopt a canonical attitude towards sources, an explicit act of filtering and selection. Such a canonical attitude implies the awareness that the sources will determine the argument as much as the argument will determine them. To write architectonically means to keep in mind the articulation of this quantum, of this incalculable "as much." To write architectonically means to reintroduce the possibility for an ethical and political form of writing that acknowledges the responsibility of decision as the ethico-political act par excellence and refuses to demand its legitimization to a "state of the art."

The relationship with the sources does not only change in their selection: such a paradigm shift entails that their treatment must be rethought. The analytical approach, in which references are brought in and analyzed—repeatedly cut apart "to the bone" in order to turn them into the evidence of an intellectual trial that unveils what really happened—and the exegetical one—that tries to be as faithful as possible to what the author really meant, following the ideal of the possibility of recovering an original meaning—cannot, in this setup, be kept. If the image interferes with the possibility of understanding the world in terms of original and copy, this means that also the dealing with the sources has to follow a much more "dirty" approach. I tried to exercise such an approach through the commentary format in the book. Unlike analysis, commentary is a form of writing that does not claim to speak in the name of its source. It sits next to it; it parasites the source while at the same time declaring its cosmetic, decorative character; it affects its object and, by doing so, it is both determining to it and determined by it. It proves that the connection between *cosmos* and *cosmetics* is more than an etymological one. ¹⁶ Like the image, commentary opens a space in which the predeterminate becomes simultaneous with the indeterminate and where the relationship between the two can be endlessly rethought.

The references through which the book flows are the product of the encounter between its guiding hypostasis and the different occasions through which it has been articulated, a confrontation of personal interest with objective chance. Such conjugation between foreign characters is replicated on a higher level, as the accumulated material is accommodated in an organization that is in principle

16 On the "cosmic" nature of the ornament, see Ananda K. Coomaraswamy, "Ornament," The Art Bulletin 21, No. 4 (December 1939): 375-82. The correspondence between commentary and image is one of the carrying themes of Emanuele Coccia's doctoral dissertation, a significant reference in this book. Coccia writes: "In the commentary, a completed writing seems to regain its poetic possibilities: in it, poetry coincides with its passing on and tradition regains all its poetic faculties. This peculiar inversion can be compared to the change of aspect that in the Hebrew language the vav determines in the verb on which it relies: it passes from designating an accomplished fact (perfectum) to an unfinished fact, one that has not yet taken place, and vice versa. [...] Like a writer who enjoys placing a vaw conversivum next to each text, each commentator, without changing the letter in any way, overturns the state and appearance of the language of a work and transforms what is written into something that is yet to be said and formulated, reverses tradition into the highest poetry of memory." Emanuele Coccia, La trasparenza delle immagini: Averroè e l'averroismo (Turin: Bruno Mondadori, 2005), 6 (here translated from the Italian).

alien to such content and that follows the mechanics of the *tetraktys*, the same exploited by Vitruvius in the *De architectura*: ten books, collected in four sections; the books collected in even numbers (I–IV; VIII–IX) are divided into three chapters each; the books collected in odd numbers (V–VII; X) are divided into four chapters each.

The first section, *Bildverlust* (literally: the "loss of the image"), deals with the modern attempt to gain a transparent, crystalline view over the world, one in which the image, as I try to conceive it, would no longer play a role. It deals with references such as German philosopher Hans Blumenberg and his lecture on world images and world models, in which Blumenberg describes the shift from pre-modern to modern precisely as a shift between the first and the latter; it engages with the work of Italian philosopher Massimo Cacciari, particularly his essay on the project as a sort of modern political device able to overcome political theology and to throw the political in a programmatic domain. A further essay by Cacciari on the work of Walter Benjamin serves as a way to unravel the intricate relationship between the technical domain of language and the symbolic one of names. The section concludes with Tafuri's work on history not as progress but as a *space*. This is important because it fore-