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Matter and image: the pharmacology of architecture

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Abstract

In the history of technologies and materials the transfer from soft to hard plays a central role. From a *dialectic* point of view it seems to be a clear-cut matter of one overpowering the other, yet conceptually things are more convoluted. What we call the *chiastic* model of history is driven by the exchange of empowerings where the one inhabits the other. By taking the most antithetical examples of materiality from architectural history, the plastic and the lithic, we begin to understand the psychological aspects of this exchange: a history of dreams, imagination and even hallucination. The technologies involving the plastic offer an enormous array of such imagery, which we start to analyze as part of a fundamental aspect of technology itself. Using the notion of the *pharmakon*, as developed by Derrida and Stiegler, we study its ambiguities: technology by its nature is both remedy and poison, cure and addiction. Accepting this ambivalence is the explicit goal of pharmacology, which makes the history of soft and hard one of prosthetic extension as much as of mimetic absorption. We will be guided by two architectural fantasists to investigate the what we call the pharmacology of architecture, J. G. Ballard's fantasy of a house automaton in the case of the plastic, and G. B. Piranesi's hallucinations of a reversed archeology in that of the lithic.

Keywords Architecture, Pharmakon, Automation, Chiastics, Transfiguration, Poché

In *Earth and Reveries of Will* the French phenomenologist Gaston Bachelard considered our relations with matter within the harshest possible framework of a "dialectic of *hard* and *soft*, a dialectic which governs every image of terrestrial matter. Earth, unlike the three other elements," Bachelard wrote while comparing earth with water, fire and air, the classic themes of his acclaimed series on imagery and matter, "is first and foremost characterized by *resistance*" (Bachelard, 2002). Its profoundly antagonistic thrust can hardly escape the reader; only a few pages later he speaks of a "phenomenology of opposition," where matter is "attacked" with tools considered as "weapons" handled in a "fighting spirit" (Bachelard, 2002). Words like "battle," "hostility," "combat," "violence" even, jump off every page. Though scholars have often classified Bachelard's rendition of dialectics as less confrontational than Hegel's dialectic of lordship and bondage, none of that is true here: our relationship with matter is one of a "will to power" that strives for "domination," that is, pure and simple overpowering. In the world of phenomenology these are unusually brutal statements, though it must be said that they expose this particular philosophy's underlying and unresolved dualism between mind and matter. Whereas for Bergson matter always contained images, and material interactions could not be understood without the exchange of images, the very opposite is the case for Bachelard, who saw himself as the intuitionist's main philosophical adversary: to be formed, matter requires to have images forced upon it by human imagination. And the fact that in *Earth and Reveries of Will* matter never seems able to come up with its own ideas and images, never sharing any bits or fragments of consciousness, must be the reason why the book contains no history. Even though it concerns dialectics, the two

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sides are not capable of alternating their moment of self-consciousness, as Hegel's version of mutual overpowering requires. Compare this, for instance, to the co-evolution of matter, tools and humans that we encounter in Bachelard's main source of inspiration, Leroi-Gourhan's *L'homme et la matière* (Bachelard, 2002), a book where matter invents tools and where tool-using hands directly affect the structure of the brain (and not the reverse) (Ingold, 2013; Leroi-Gourhan, 1971). Bachelard's conception of tools and work remains throughout the sheer administration of force, stripped of any flexibility, relaxation or measure. To be sure, during work we apply force, during the hammering of copper, the kneading of dough or clay, during the firing of ceramics or the casting of red hot iron, yet nothing in that activity is of a dialectic or oppositional nature.

Rather the reverse is the case. When kneading clay we are not on the outside of the material, we are on the inside. We inhabit the things we knead and hammer. How else would we be able to measure the amount of force? How else would we know when to stop? When relying solely on our eyes we would always be too late. Instead of a confrontation of exteriors, our handling of matter often follows more a process of identification, that is, an internalized form of mimesis, not the reflective but an *absorptive* form of mimesis: we have to become hammer-like to be able to hammer, clay-like to form the clay, dough-like to knead the dough, since it is *their softness* that needs to work, not our strength. Through us and our tools these materials knead and form themselves; in a way, it is their consciousness, their self-movement that directs them toward the image. We are merely discovering a softness already present, be it via our hands or via tools, be it in dough or steel, be it while molding car parts or cutting human tissue during complicated surgery. We treat steel as gently as we do flesh. We do extend ourselves, that is, in any specific relationship with matter we do extend the Self—which is the maxim of technology in general—yet this can only occur insofar as we are able to incorporate the Other. The prosthetic nature of tools and work operates via the mimetic route laid out by the material. What happens here is far more convoluted than our hardness opposing the hardness of matter. In the processes of technology it is matter that has to produce the image, not us, and for that to happen matter has to mobilize its softness, its capacity for figuration. The matter-image relationship is not one of dialectical opposition but of kindness and grace, which is by its nature cyclical: via our tools we are able to form matter, but only because matter enables us. And the terms "able" and "enable" are the etymological twins of habit and inhabit.

Still, Bachelard was on the right track when following Leroi-Gourhan's distinction between hard and soft from *L'homme et la matière* to understand the relationship between image and matter, and though treating it as a question of dialectics, the very distinction does raise the issue of history, even if we will view it as a history of empowerings, not of alternated overpowerings. Matter and image knead each other, and that means history, not dialectics, and in our case, that means architectural history. Maybe this is what Hegel called "shapes of consciousness" (*Bewusstseinsformen*), the forms that consciousness takes on during different types of matter-image transformations (Hegel, 1977). Viewed from that perspective, we might call them "styles of consciousness." On the whole I believe history is the history of mimesis, a history not simply of material technologies, but a *psychological history* of carving, casting, firing, pouring, modeling, injecting, and dozens of other soft-to-hard techniques: constant exchanges of images, images slipping between the hammer and the metal, between the metal and the mold; images at the tip of the chisel, mill, or nozzle. Images penetrating matter, slipping between the crystals and particles, enveloping matter and radiating from it. Whatever the material we are bound to seek softness.

For our purposes and for the sake of argument, we should focus on the two, apparently most antithetical material realms of the lithic and the plastic—"antithetical" because that will offer us the best position to argue against a dialectics while advancing an exchange model where softness offers far more than a history of human consciousness conquering comatose matter. The fact it concerns an exchange implies a crosswise model, that is, a *chiastic* not a dialectic structure. From the perspective of both materials each is inhabited by a specific class of images: *lithic psychology* in the case of stone, and *plastic psychology* in its twentieth-century form of synthetic materials. Naturally, stone can take on plasticity, and plastic can become hard, the question is primarily according to which route. What kind of materialism allows for such statements, if any? One of hollowness and porosity most certainly, with its internal parts in a state of not-touching, yet not according to the ancient atom-void model that runs parallel to the classic architectural model where space remains between the walls. No, matter itself—and architecture itself—is porous; it is *the space in matter, the space in the walls* that we will be looking for. As in mimesis, matter is absorptive, that is, absorptive of images. Yet, the lithic and the plastic are both *inhabited* by different images, dreams and nightmares—and, in the end, that is why it is a question of architecture more than of anything else.

In architecture the space in the walls—traditionally designated by the term "poché," the etymological kin of pocket and pouch—is the technical space par excellence,

the space of ducts, pipes, wires, the space of service and support. But as in Hegel's class of servants and slaves, this subservient role is highly ambiguous and ambivalent, in fact immediately chiastically reversible, which makes poché also the space from where the spirits, ghosts and monsters enter the house. (Ghosts enter through the walls). The space where the dead come to haunt us, but also where we play in pockets similar to poché; under the bed, in the wardrobe, in the attic. It is the space of the double, which is the true power of architecture's absorptive mimesis. As we will see, the nature of the styles of consciousness as well as that of the technologies of the respective lithic and plastic realms differs considerably. To investigate this difference, and that means investigating the varieties of porosity, imagery, and technology, we will be following two expert guides—probably best titled para- or crypto-architects—who have historically functioned, so to speak, as the psychotherapists, if not the psychonauts of the lithic and the plastic: G. B. Piranesi in the case of the former and J. G. Ballard in that of the latter.

1 Pharmakon and the Plastic

When we start to contemplate the twentieth century as part of the history of soft-hard technologies the first thing that comes to mind is how the period broadened the range of applications of softness, even how it pushed that history into a state of pure softness, a state that goes beyond the usual preparatory stage to rigidity. The era developed a veritable passion for softness: rubber in all shapes and sizes; grease and jelly; thousands of types of foam and almost as many types of gels; plastics of all sorts; silicones and plastic surgery; cuddly toys and teddy bears; all the way to lava lamps, Slime, Silly Putty, liquid light, liquid crystals, and of course, chewing gum. Nothing explains the twentieth century better than looking at somebody endlessly ruminating chewing gum, be it in the form of short abrupt bites or a slow rotational motion, interrupted by the inflation of a bubble that ends in its popping, with its remains reeled in by the tongue to start the process all over. The accompanying gaze is no accident, the continuous chewing loops one back into oneself. The image of chewing without eating reveals a radicalization of softness, as if it is part of a process that will never reach the stage of product, a softness that may never even reach the mold.

These images give us a hint of the character of plastic psychology. We only have to take one look at the plastic chairs and the chairs made of foam or vinyl, some even inflatable or adaptable in any possible form—all this in the strongest colors and the roundest of shapes—to understand how plastic psychology seeks a form that is virtually performative, rhythmic, and in constant need of mental processing. We can see it even better when looking at the idiosyncratic psychedelic font styles, swirling over posters and psychedelic album covers. The fonts are so shapeless that they are often squeezed between the edges of the paper and the contours of the images, while the images in their turn yield to the fonts, often responding by the staggered copying and offsetting of their contours, filling them with alternating and complementary colors. The psychedelic images contain on the one hand a component of *doodling*, that strange art of absent-mindedly filling sheets with flowers, zigzags, dots, stripes, and spirals in exploding, multiplying contours that are heavily decorated and tightly packed like fruit, while on the other hand maintaining a strong connection to the waving waterplants of Art Nouveau, the style of what Salvador Dalí called the *extra-plastique*, a style of a "terrifying and edible beauty" (Dalí, 1933). It goes without saying that Art Nouveau, with its dreamy underwater plantlife cast in hot liquid iron, is the hallucinatory precursor to psychedelic design, which constantly tries to slip in auras and halos. Yet, unlike their traditional portrayal as ornate, golden disks surrounding things as in the case of Fra Angelico or Gustave Moreau, it shows them as amplified, ever widening contours in vibratory and flickering coloration, ecstatically dissolving their own object. All things seem to exist in a liquid medium, their contours rippling away, just before the moment of disappearance. And this loss of form is inversely proportional to the increase of color and color pattern. The best illustration of such a transfiguration is surely the use of *liquid light*, the ambient multicolor projections used chiefly at pop concerts during the late 1960s and early 1970s. Seeing the colors overlap and seek form while continuously rotating in slow motion is as if we are looking at the apocalyptic end of the rose window, liberating its color from the stone constrictions of tracery. By becoming liquid, color reached a state of pure plasticity.

Psychedelia is part of a history of soft-hard technologies, which by definition involves the relationship between rigid and liquid on a material level, but inherently also that of work and play on a social level, and of course that of structure and ornament in the context of architecture—all similar couplings from the realm of plastic psychology. Saying that, I would not hesitate to call psychotropic drug use the search for ornament in a time when there was none to be found in architecture. And I am certainly not the first to make this connection. We should recall that Walter Benjamin invents his illustrious notion of the aura—a term he later mainly applied to art historical analyses—during his experiments with hashish. In his book on the subject he regularly denotes aura in German as *ornamentale Umzirkung* (the latter word carrying the meaning of a radiant halo as

well as that of a radial contour) emphasizing the direct connection between mind-altering drugs and ornament (Benjamin, 2006; Hansen, 2008). We find another example of this link in the works of Henri Michaux, who describes the effects of mescaline (peyote) as a form of "ornamentogenesis," a term marking the typically staggered repetition of the ever widening contours of things, while constantly changing their shape (Michaux, 1963). Michaux extensively studied these psychoactive effects in his drawings that, though colorless, consist of waving, vibratory patterns which completely dissolve their object. We never get to know if it is Michaux or the mescaline itself making the drawings: "mescaline is a disorder of composition … inundated with light" (Michaux, 2002). Pure entropy, but luminous—*phenotropy*.

Both in *The Doors of Perception* and *Heaven and Hell*, respectively from 1954 and 1956, British author Aldous Huxley continuously makes similar comparisons between mescaline-induced visions, brilliantly colored patterns, glowing flower arrangements, and forms of adornment: "I became aware of a slow dance of golden lights. A little later there were sumptuous red surfaces swelling and expanding from bright nodes of energy that vibrated with continuously changing, patterned life" (Huxley, 1954). Or, closer to visions of sparkling jewelry while looking at simple everyday objects:

> *The books, for example, with which my study walls were lined. Like the flowers, they glowed, when I looked at them, with brighter colors, a profounder significance. Red books, like rubies; emerald books; books bound in white jade; books of agate; of aquamarine; of yellow topaz; lapis lazuli books whose color was so intense (Huxley, 1954; p. 13)…*

Dances of golden lights, things glowing like gems; indeed, not very far removed from Dante's rivers of living sparks set in banks "painted with wonderful spring flowerings" in the thirtieth canto of the *Paradiso*. And, then, shifting from associations of adornment to those of ornament, Huxley quotes the neurologist Silas Weir Mitchell, who, already in the late 1890s, regularly experimented with mescaline, linking his visions directly to architecture, and like Dante, especially to the Gothic:

> *At his entry into that world he saw a host of "star points" and what looked like "fragments of stained glass." Then came "delicate floating films of color." These were displaced by an "abrupt rush of countless points of white light," sweeping across the field of vision. Next there were zigzag lines of very bright colors, which somehow turned into swelling clouds of still more brilliant hues (Huxley, 1956).*[1]

Weir Mitchell was as often referenced by neurologists such as Heinrich Klüver and Oliver Sacks; the latter who, from his very first book *Migraine* to one of his last, *Hallucinations*, remained obsessed with auras throughout his life, whereas the former in his 1966 study on mescaline, again quotes from the same source:

> *Transparent oriental rugs, but infinitely small … plastic filigreed spherical objects [like] radiolaria … wallpaper designs … cobweb-like figures or concentric circles and squares … architectural forms, buttresses, rosettes, leafwork, fretwork (Klüver, 1966).*

There is something far more fundamental occurring in all these citations—and we could keep on quoting many more of the same nature—than the mere phenomenology of psychedelics coinciding with that of architectural ornament. Truth is, that the ontological structure of plasticity and softness coincides directly with the powers of adornment, which by its nature is one of brilliance, radiance and shining. First, all ornament, by definition, is created in a state of weakness and dependence, a word that literally indicates a position of hanging (*pendere*), as in pendants, tresses, tendrils, earrings, bracelets, necklaces, ties, and so on—all in a position of what Alberti alluded to as add-ons (Alberti, 1988)[2] Weak and soft as well: bendable, flexible, pliant, as in coiling volutes, serpentine meanders, infinite scrolls, and acanthus leaves bending away from their capitals. This first. Second, however, is the transformation of the elements they depend on, because the implied hierarchy of structure and ornament is fully reversed by the effects of softening. The actual direction is reversed: from an application that is added *on to* a structure it turns into an appearance radiating *out of* a structure. And, instead of being secondary ornament is now primary, and takes on all the properties of structure. In Heinrich Klüver's Gestaltist analysis this is theorized as a so-called "form-constant," a pattern of regular self-similarity, which is both radial like Benjamin's *Umzirkung* (Klüver speaks constantly of "tunnels," "funnels," and "spirals") as well as structured and networked like "lattices,"

[1] Huxley is partially quoting from Weir Mitchell's 1896 report on mescaline intoxication. Let us in this context not forget to mention the strange theosophical theories of Annie Besant and C. W. Leadbeater in *Thought-Forms* (Wheaton, IL: Quest Books, 1999 [1905]). At the end of the book (pp. 66–77), in a section titled "Forms Built by Music," the authors discuss three images of Gothic cathedrals emitting massive, synesthetic "color clouds" from their spires in a distinctly psychedelic style, as if the rose windows are ejected in gas form. Walter Benjamin's notion of the aura was directly derived from such theosophical theories.

[2] Alberti's famous description of ornament as "affícti et compacti" in *On the Art of Building in Ten Books*, 6.2.93–94. In the English translation it says: "attached or additional" (p. 156).

"cob-webs," and "filigree" (Klüver, 1966). What seemed to act from a position of weakness and dependence has turned into one of integrity and stability. We have entered a realm of what Huxley called "grace and transfiguration"—and both words could not have been more accurately chosen.

"The mystery of transfiguration" (Semper, 2004) lies, according to Gottfried Semper, at the very origin of architecture, namely at the transition of textiles into stone, the primordial technology of channeling softness into rigidity. These origins are not only to be found in the words from Semper's native language such as *Decke* (meaning both ceiling and blanket), *Zaun* (meaning both fence and seam), and *Bekleidung* (meaning both cladding and clothing). The transfiguration consists mainly of the selection of specific textile *figures* originating from knotwork, weaving and plaiting—which are distinctively structural terms—being transferred to the realm of carving. Above all, it concerns a transition of techniques to make textile *inhabit* stone and to make the hard radiate softness. What goes in as a technique comes out as an appearance. It is very subtle: the stone is not worked in order to take a shape, it is *overworked* to take on an appearance. Labor would generally be defined as giving a thing its contour, but this concerns a form of elaboration; a too-much is done, which allows the thing to reach beyond its own contours. In that sense, a transfiguration is both a technical procedure of one technique being translated into another, and a *procedure of transcendence*: things that would usually be clearly and objectively contoured are now reaching beyond themselves in the same way faceted gems or scintillating jewels do (Simmel, 2000)[3] Yet, by reaching beyond themselves they offer themselves; the reaching-out takes on the form of a gift, which always has the quality of measured surplus or excess. Softness turning into shining—and let us keep in mind that in German *Erscheinung* means both "appearance" and "apparition"—is a technical operation: architecture itself is transfigured by ornament as a result of the soft-hard technology of the textile-stone transfer.

With the aspect of shining as a gift we have entered a world indicated by the other term Huxley mentioned, grace, which at first seems merely an external qualification, but in fact points at the very heart of transfiguration. In a nutshell: the name of the first of the Three Graces, Aglaea, literally means shining or radiance, and the Graces themselves are the personification of gift exchange, the obligatory cycle of giving, receiving, and returning (Spuybroek, 2020)[4] In our context these two aspects are of major importance: (a) that shining is not a metaphor indicating some kind of pleasurable experience linked to the reception of a gift, but demonstrates a far more ontological structure, namely that a thing transcending itself by shining is a form of giving, which is both a recognition and yet the simultaneous inversion of the phenomenological notion of givenness; and (b) that the gift is by its nature ambiguous, since what is owned must be given away, and what is received must be returned. Grace, what in ancient Greece was indicated by the word *charis* (with the "ch" pronounced as in the German *Bach*) is above all to be circulated. We find that word *charis* on virtually every page of the Homerian epics, and though derived from gift culture, it is mostly used in the aesthetic context of adornment and ornament, such as in the description of the tinkling earrings of Hera or Odysseus's shining black locks of hair (Homer). When Aldous Huxley marked the two aspects of grace and transfiguration he was not merely alluding to the transcendental, religious qualities of mescaline-induced phenomena; he actually pointed directly at the ontological structure of the soft-hard transfiguration via ornament.

Marcel Mauss, the twentieth-century theoretician of the gift and gift exchange, regularly discussed the ambiguous, if not ambivalent, nature of the gift (Mauss, 1990), since it as often implies sacrifice and maleficence as beneficence and favor. The necessary ambiguity of keeping and giving, and of receiving and returning, that makes the cycle work may quickly turn into ambivalence: the gift *must* be returned, food *must* be shared, wealth *must* be distributed. And, vice versa, reception can be just as threatening: "to receive from kings is at first honey, at the end, poison" (Mauss, 1990). A word now turning up that is by no means accidental; after all, in German *Gift* means "poison," and as Mauss adds, in many other languages too, such as the Latin *venenum*, which signifies both "poison" and "graceful charm," and is linked to venom as well as *venus*. Or, even more clearly, the Greek word *dosis* as derived from *do*, "to give," carries the same double meaning of medicine and toxin. And here we arrive at that other ancient Greek term, *pharmaka*, a word that Mauss mentions only once (Mauss, 1990) and that embodies the pure ambivalence of drugs with their aspect of remedy as well as that of toxicity, the line between them being blurred, often purely a question of *dosage*. The term *pharmaka* indicates many of the same aspects of the gift, yet with intensified ambivalence and always pointing at

[3] cf. Georg Simmel, "Adornment," in *Simmel on Culture* (London), where he speaks of jewelry, makeup, and adornment: "Besides its formal stylization, the material means of its social purpose is its brilliance. By virtue of this brilliance, its wearer appears as the centre of a circle of radiation in which every close-by person, every seeing eye, is caught."

[4] See my first chapter "The Grace Machine: Of the Figure and the Gap," in *Grace and Gravity: Architectures of the Figure* (London: Bloomsbury, 2020).

reversal: not only charm but also spell, with enchantment meaning both delight and captivation.

Even though there are many different applications to the word *pharmakon*, it is in essence a potion, that is, a drink, a herbal drink of a specific vegetal nature. This is a clear indication of how the gift is absorbed, which is emphasized by the second figure of the Graces, the figure of reception, Euphrosyne ("in good spirits"), who is often depicted as imbibing. By its nature, the gift, and the *pharmakon* emphasizes this, is interiorized via absorption, what I earlier called absorptive mimesis, a phase of intake and incorporation, not one of reflection and distancing. Ernst Jünger, who experimented at least as much with psychotropic drugs as Walter Benjamin and Henri Michaux—and who would dress himself for each mind-altering session in "a long, broad, dark blue-striped kaftan-like garment he had bought in Egypt" (Hofmann, 2005)—directly linked psychotropic effects to the realm of the vegetable: "When we recognize the plant as an autonomous power that enters [*eintritt*] to take root and blossom in us, we move a few steps away from the erroneous view that insists the spirit is the monopoly of humans and does not exist apart from them" (Jünger, 2014). Jünger, a close friend of Albert Hofmann, the chemist who synthesized LSD, uses the word *Eintritt* regularly to indicate the process of interiorization, extending it beyond the realm of chemicals and discussing the topic where it belongs, in the realms of shining and consciousness. Rejecting the view that plants expand *human* consciousness, as is usually proclaimed, he views it as an exchange, even as the absorption of plant-consciousness. On a speculative side note, this may explain the millennia-long obsession of architecture with botany, which, when compared to textile, should be viewed as the alternative source of softness and ornament. For us, at least, it is relevant to note that *pharmakon* did not only mean drug in the sense of either remedy or poison, it also meant amulet, charm, perfume, color, variegation, cosmetics—in short, the connotations with ornament and adornment are plentiful, and fundamental to the term (Rinella, 2011).

Bernard Stiegler, the late French philosopher who introduced the term "pharmacology" we will be using for our own purposes, made a strong argument for absorption or what he called "adoption" (Stiegler, 2013). While his former teacher, Jacques Derrida, mainly used the term to argue the impossibility to distinguish between dialectic speech and authorial writing in the way Plato did (Derrida, 1981), Stiegler expanded the ambivalent nature of *pharmaka* to the realm of technology and technical objects (Heidenreich & Weber-Stein, 2022). A development that becomes evident when, for instance, thinking of hammers as being able to drive a nail into the wall as well as kill another human being; or, slightly less dramatic, when thinking of the addictive use of TV or smartphones. Or pushing the accelerator pedal of your car all the way, which can be absolutely irresistible, just like endless roaming on the internet or playing video games. Or the blissful moments of comfort when Alexa selects your favorite music, or when she keeps your children busy. Despite the clear-cut intentionality of technical objects shaped by their final cause and their being "for the sake of" other things, there is always a certain ambiguity and indeterminacy to them, especially because they nestle themselves into series of actions. Viewed from that perspective, they are surrounded by the same halo as Huxley's glowing flowers and sparkling jewels—and sometimes as intoxicating. Things are open to a variety of actions—or we could just be more concise and simply say that things are open: they offer themselves.

For Jünger it would be no question if the hammer being used to kill would be a matter of human consciousness forcing itself, dialectically, onto an inert object—it would be a matter of chiastic exchange, not with a hammer desiring to kill, like the knife of Borges waiting in the drawer, but with a hammer offering itself, shiningly yet vaguely, to a whole range of actions, of which a human consciousness selected out a single unfortunate act. It's what Theodor Vischer called "the imp of objects,"[5] not because they drive a person to evil deeds, but simply because they drive a person—period. The thing is absorbed, incorporated by a body already on a trajectory of action. In *What Makes Life Worth Living*, the book that is subtitled "On Pharmacology," Stiegler uses adoption purely as a pharmacological measure—for him the term indicates a form of dosage, the basic expertise of pharmacists—to turn the poison of evil into a remedy for the good (Heidenreich & Weber-Stein, 2022). Without a doubt this is sensible Stoic therapy, though it remains a view solely from the perspective of human consciousness, that is, a phenomenological perspective, while the gift analysis teaches us there is as much consciousness in things. Things shine; not only do they appear, they appear indeterminately and ambiguously. For all the significance of Stiegler's expanding on the *pharmakon* and the concept of pharmacology, the reversal of phenomenological givenness that gift theory offers is dearly missed.

The real question is how such incorporation or internalization works—if "working" is the right word, since it operates on overworking. There have been many theories on the interaction between technical objects and human activity, some even circular as in gift exchange.

[5] Theodor Vischer, *Auch Einer* (Stuttgart: Deutsche Verlagsanstalt, 1879), which speaks of *die Tücke des Objekts*, the "imp of objects."

Samuel Butler's "man with a spade" (Butler, 1985), or very similarly, Gregory Bateson's "man with an axe" caught in a loop of what he called a "total system" of "tree-eyes-brain-muscles-axe-stroke-tree" (Bateson, 2000). Of course, both theoreticians of technology—and both of considerable influence on Bernard Stiegler—advocated a prosthetic analysis of tools, of extending the body and extending the Self. Yet, both of them also implicated the diminishing of human consciousness occurring during such extensive processes, which they both termed "grace," that is, a tendency toward subconscious automatism for which McLuhan (1964), the other theoretician of the prosthetic, used the term "narcosis." All true, but can we say tools extend themselves into us in the same way we extend ourselves into them? Does the tree extend itself into the eyes in the same way the arm extends itself into the axe? Well, only via absorption and mimesis: we become the hammer, we become the axe, and we become the car. It works in both ways, but not in the same way. Extension in one direction, absorption in the other. Prosthetic in one direction, mimetic in the other.

And with the mimetic the technical *pharmakon* reaches a plane where visions, dreams and hallucinations reign—anything that shines can be true or false. It is the very reason why Plato hated the *pharmakon*, and the very reason why the term "pharmacology" is so well chosen, even though Stiegler's analysis lacks the gift structure and the transcendent psychotropic aspects. There is undeniably a narcotic effect to absorption; the technical object is as the pool of Narcissus, a *deep mirror* that in all its love and beauty tends to completely immobilize us.

2 Pharmacology and plastic architecture

What better form of architecture to study the *pharmakon* of technology than the everyday environment of our house? Stiegler emphasized its everyday nature (Heidenreich & Weber-Stein, 2022), and that must be because the everyday itself has proved to be the most ambivalent of all *pharmaka*, turning the most blissful and happiest of habitats into one of boredom and numbness, and that is not only because "habitat" contains the word "habit." At this point a part of architectural history will unfold itself to us that again is guided by plasticity and soft-hard technologies, but of quite a different nature than Semper's transfiguration by ornament. A history in this case not of figural but of *literal textiles*—the history of cushions, carpets and curtains, that is, a technology of softening architecture itself, the technology of comfort and service. Of course, such a history would be far broader and longer than chronicling the influence of textiles on domesticity; a history of service would be a social as well as a technological record of sewers and servants, butlers and maids, appliances and air ducts, electrical wires and water pipes, all the way to the internet of things and smart homes. It would be as much a story of the house absorbing us as one of us absorbing the house; after all, comfort means one thing yielding to another. Therefore, the physicality of its main driving force would be perfectly exemplified by the figure of the cushion. Perhaps, precisely because of its physicality the powers of transfiguration are even stronger than in the case of ornament. There is no denying of its plastic psychology: nothing is more fascinating than looking at the cushions left on the couch after an evening with visitors, it's like the ghosts have stayed behind, still drinking the wine marked by the rings on the table. Don't think the realm of comfort and service is less psychoactive or narcotic, or even narcissian; just look at the imprint of your own body left in the creases of the bedsheets in the morning.

We will not be making an attempt here to write such a history; it would be far longer—probably the length of a book—than the space of an essay allows. Besides, our topic is of a slightly different nature: the pharmacology of architecture, that is, as Stiegler defined it, the attempt to transform the toxic qualities of the *pharmakon* into curative ones. And that is what makes domesticity such a radical subject, because it is precisely the architecture of the house, as the realm of cure and care, that is capable of becoming addictive and dangerous. Nevertheless, we should be returning regularly to aspects and examples of the history of service, since it is so deeply ingrained in the ambiguity of architecture. Comfort, as a soft-hard technology, is driven by a plastic psychology which Stiegler sharply contrasted with adoption, namely *adaptation* (Heidenreich & Weber-Stein, 2022), which relates directly to yielding, submission, and passivity. That is true, of course, but that doesn't mean that the pharmacological reversal of adaptation to adoption—something we theorized as absorptive mimesis—can rid us from the inherent images, dreams, and nightmares that inhabit such plasticity. In fact, precisely for therapeutical and pharmacological purposes we would need to embrace and *adopt them*, that is, as Stiegler would stress, *to find the right dose for them*. That is, at every point in time during that history of service and comfort we would need to stress the moments of ambiguity, turning Hegel's master–slave dialectics into a *master–slave chiastics* by persistently trying to reinstall the powers of gift exchange and its mechanisms of reversal.

Therefore, any formal plasticity of architecture will be of no interest to us. We should be investigating precisely those dreams of a soft-hard technology during the Plastic Age that attempted an pharmacological reversal. To use the technology of transformation and absorption, not for the purposes of comfort, but to investigate and adopt its images, to in fact magnify and exaggerate such

images, matching exactly with the psychoactive nature of the *pharmakon*. A considerable number of architects during the period were involved in such experiments, which unfortunately only rarely led to actual buildings, though going beyond the representationalism of drawing is wholly consistent with visionary imagery and fantasy. This is probably why we find the best example of such a pharmacological architecture not in a work by an architect or film maker, but in a work by a science-fiction author, namely the short story titled "The Thousand Dreams of Stellavista" written in 1962 by J. G. Ballard, the self-proclaimed surrealist.[6] It involves an automated, transformable house and though during the period many soft houses were conceived by architects, mostly in the form of inflatable structures or architectures of a continuous, "endless" geometry,[7] Ballard's model still stands out as wholly original. The story follows the involvement, if not affair, of the protagonist, a young lawyer named Howard Talbot with his "PT-house," an acronym for a "psychotropic house" (Ballard, 1962).

At the beginning of the story the actual mind-altering effects are not fully clear, since initially the house is described more in terms of a biomechanics of actions and responses. The house, constructed mainly of a fictitious material called "Plastex," allows for certain parts of the architecture to be movable in the sense of local displacements and transformations such as the "sudden deflatus of a corridor," the "dilating and contracting" of the ceiling, and various deformations of the walls (Ballard, 1962). At this point we might start to think that Ballard's fantasy is a technological, even a high-tech variant on the textile literalism of domestic architecture. However, the author does not turn it into an ultra-serviceable "house of the future" with self-closing curtains and the matching amenities, nor does the house transform according to direct manipulation by the inhabitant. The house cannot be steered or controlled. A built-in memory system records movements and habits via "sensocells," what we today would call proximity sensors, enabling the house to constantly register the physical location of its occupants and by doing so create a map of the inhabitant's mood and character. Gradually, it becomes clear that for Ballard textile literalism in the form of an upgraded soft-hard technology turns ever so quickly into a figuralism of ghosts and imprints. Since the house, located in the suburb of "Vermillion Sands" with the address of 99 Stellavista, is one of the older PT-houses, it still contains the character of its previous inhabitant, Gloria Tremayne, a once-famous actress, now deceased. With her spectral presence the psychotropic powers of the house start to become evident. And the relationship between house-Gloria and inhabitant-Howard at first seems to evolve quite smoothly:

> *It's always interesting to watch a psychotropic house try to adjust itself to strangers, particularly those at all guarded or suspicious … Hidden rifts began to distort the sphere, ballooning out one of the alcoves like a bubble of over-extended gum … The plastex swam and whirled like boiling toothpaste, then extruded itself into a small ledge (Ballard, 1962).*

Our resident, who once was a junior lawyer defending the famous actress on trial for the murder of her husband (an architect, as so often in Ballard's stories), slowly becomes entangled in a more complex relationship with the house, and even divorces his wife because he finds himself gradually falling in love with the house-movie star:

> *Blissfully, her presence would be everywhere in the house, a thousand echoes of her distilled into every matrix and sensocell, each moment of emotion blended into a replica more intimate than anyone, apart from her dead husband, could ever know (Ballard, 1962; p. 196).*

Throughout the story, however, it remains unclear if Talbot falls in love because the actress has now transmuted into a house, and is therefore to be viewed in the narcissian dream of falling in love with one's house—which tends to reflect the inhabitant's own image—or whether the former affections that Talbot felt for the actress when he was a young lawyer have simply been revived. Although at this point in the story he lives alone *with the house*—quite something else than living alone *in a house*—the liaison does not progress very blissfully and slowly turns sour. The walls "stiffen and darken in a vortex of anger" (Ballard, 1962; p. 203) and close to the end, during what Ballard describes as a "convulsion" and a *grand mal*, the house starts to vibrate rapidly:

> *Sure enough, the corridor wall began to retract. The archway, usually a six-inch wide slit, rose to admit*

[6] J. G. Ballard, "The Thousand Dreams of Stellavista," in *Vermilion Sands* (London: Jonathan Cape, 1971). First published as a short story in the American SF-magazine *Amazing Stories*, vol. 36, no. 3 (March 1962). In 1993 Maurice Nio and I published a Dutch translation of Ballard's short story in our capacity as editors of the journal *NOX*, in *NOX C: Chloroform*, "De Duizend Dromen van Stellavista" (Amsterdam: 1001 Publishers, 1993), p. 55–87. Deeply influenced by Ballard's story, we created a video titled "Soft City" showing buildings and objects in a state of continuous transformation. This seven-minute long video was broadcast on national television (VPRO) in the Netherlands on March 28, 1993. See also: Lars Spuybroek, *NOX: Machining Architecture* (London: Thames and Hudson, 2004), p. 14–17. See also: Branko Kolarevic and Vera Parlac, eds., *Building Dynamics: Exploring Architecture of Change* (New York: Routledge, 2015), p. 2–10.

[7] As, for example, in Frederick Kiesler's "Endless House," Antti Lovag's "Bubble House," or the inflatable, pneumatic structures of David Greene or Jean-Paul Jungmann.

> *someone. Nothing came through, but the room expanded to accommodate an additional presence, the ceiling ballooning upwards … The pressure zone paused at the foot of the bed and hesitated for a few seconds. But instead of stabilizing, the walls began to vibrate rapidly, quivering with strange uncertain tremors, radiating a sensation of acute urgency and indecision … A second later, as I lifted myself up on one elbow, a violent spasm convulsed the room, buckling the walls and lifting the bed off the floor. The entire house started to shake and writhe (Ballard, 1962; p. 204-5).*

After the crisis Talbot decides to disconnect the system, saying that "one day soon, whatever the outcome, I know that I shall have to switch the house on again" (Ballard, 1962; p. 208).

Though the latter sentence makes it sound as if the switching off constitutes the pharmacological crux of the story, it is not: it is that Gloria is the *anti-Alexa*. Alexa is simply the reflection in the electronic pond that Narcissus is stuck gazing into, she does whatever you want, and she does it so perfectly that she does it *instead of you*—up to the point of replacing you as the inhabitant. (And like Narcissus you might die of immobility, the very image of obesity.) I don't think that the fact both figures are female has anything to do with projection of the male gaze or desire as in Duchamp's mechanical bride, Theweleit's *Männerfantasien* or a Deleuzian desiring machine, which would be the custom analysis a few decades ago. Nor is there anything of repressed fantasies projected onto an automaton, such as in Freud's analysis of Olympia, the mechanical, "hard" robot in E. T. A. Hoffmann's *The Sandman*, though it plays a similar role of automated domesticity as she plays the harpsichord at a home where the male protagonist, Nathaniel, falls in love with her to only later find out she is a robot. For Freud the uncanny character—as in *das Unheimliche*, the un-homely, the ideal of deconstruction—of Olympia is inextricably linked to castration, a notion that turns a theory of the double and mimesis into one of loss. Freudian prosthetics is not linked to mimesis but to pure lack; he even viewed the *Doppelgänger* as a fetishized stand-in for missing members (Freud, 1980).

Gloria is indeed an automaton, but in the form of a *soft robot*, and mimesis hardly plays a role in the story. She is wholly Other, and in the end that was always what Narcissus fell in love with. That Narcissus is narcissistic is a myth, the mirror of the pond is not the flat mirror of identification; as said, it is a deep mirror, warped and concave that returns a transformation—the young god would be mad to fall in love with himself. Gloria, then, is the image of absorptive mimesis, Alexa that of reflective mimesis; the first narcissian, the second narcissistic. The fact that Narcissus is stuck is because of the spatial construct: the pond creates an unmoving, fixed double, not the tutelary double that moves with you. Yet, the plastic psychology of the PT-house is perfect, because it offers a *dynamic between soft and soft* that takes the process of mimesis to the level of mobility. The story presents us with two "soft machines," to borrow William Burroughs's term: the human with its automatic habits and the automatic robot-house interacting crosswise. In all our softness we humans seek repetition and regularity, while the robot in all its hardness seeks unique and individual behavior.

In the case of Hoffmann's Olympia, the hard robot, we should ask ourselves if she shouldn't be considered more a part of the house, whereas with Gloria, we should ask ourselves if the house is not more like another inhabitant. It is as if house and inhabitant are cushioning and molding each other, continuously looping the Other back into their Selves. Where does this process end exactly? This is precisely the central question in the myth of Narcissus: How deep is the mirror? Or: What is the depth of the water? Does the Other merely appear on the surface or does he or she live in the depths? When the water returns more than mere reflections, that is, gives more than immediate responses to external incentives of a Self, how much delay or change is needed for it to become Other? How much memory is needed?

Automated architecture is generally understood as purely reflective, as the instant gratification of needs, as the uninterrupted extension of the Self, even in the concept of "controllable environments" proposed by Reyner Banham in 1965, which was merely based on the reversal of control: instead of mechanical units programmed to control the climate of the space Banham proposed to hand more of the controls over to the inhabitant—but such a type of manipulation would still result in the reflective mirror of adaptation.[8] While from the same period, Ballard's house takes us in a diametrically opposed direction: it is purely the memory of a previous inhabitant, not of the current one, and therefore wholly Other. When a house is technologically capable of becoming an Other, that is, capable of self-movement according to Hegel's definition, at what point does it start to alienate? For a technical form of mimesis this is an essential question: it needs to find a position between the

[8] A reference to Reyner Banham's famous article "A Home Is Not a House," that distinguishes between a controlled and controllable environment, where the first indicates a purely external conditioning of the environment and the second one that is more open to "personal needs and desires," as Nigel Whiteley formulates it in his *Reyner Banham: Historian of the Immediate Future* (Cambridge, MA: MIT, 2002), p. 212.

reflective Self and the alienating Other. Find that point and you will find love. For any type of robotic architecture it is—will be—essential to understand that it cannot simply be reasoned from the viewpoint of comfort and prosthetics; robots or automatons are mimetic, but that mimesis can only be healthy and curative via the route of internalization and depth.

At this point Hegel's history of self-consciousness must dissolve, yet not that of self-movement. Automation is the result of shared consciousness, that is, the circulation of images via mimesis, not of self-control, free will or mind-independence. The conceptual core of dialectics, the opposition between *Herrschaft und Knechtschaft*, generally translated with lordship and bondage (Hegel, 1977),[9] but more simply put as *Herr und Knecht*, master and servant, can never be resolved dialectically, only chiastically, because they are bound to absorb each other mimetically. The historical project of self-movement being dependent on absorptive mimesis, should be read as a history of mutual empowering instead of Hegel's history of alternating overpowerings. Traditionally, the dialectic of master and servant translates in architecture directly into that of the inhabitant as the master of the house and that inhabitant being served, what the architect Louis Kahn called "served" and "servant" spaces, where the latter could mean literally the space for servants and storage, but also that of liftshafts, ventilation and sewerage, as well as the hollow walls and ceilings where architects hide support structure and plumbing (Twombly, 2003; Tyng, 1997)[10] Surely, it is no accident that the word "domination," like "domestication," is derived from the Latin *domus*, "house." This archetypal form of bondage follows a history that runs from house slaves to domestic servants such as butlers and housekeepers, to then be taken over by a plethora of household technology such as refrigerators, ovens, washing machines, microwaves, alarm and air conditioning systems, leading seamlessly to Alexa, the household deity spirited by algorithmic search engines, and ubiquitous computing. Hardly a history of emancipation, but certainly one of self-movement.

Yet, when we ask ourselves at every stage of this development who in fact dominates who, we invariably get ambiguous and chiastic answers. Who exactly is the master of the house when the butler brings the scotch a second before it is ordered? What exactly goes on when a servant has adapted so perfectly to the master? Is that still serving or is it nursing? Who lives whose life? (A question so poignantly raised in *The Servant*, the British 1948 book and 1963 movie that end with completely reversed roles of master and servant.) And what about that perfection being developed in its modern technological form, e.g. when the air is automatically conditioned? What or who is then being conditioned? We should keep in mind that from a psychological viewpoint the hollow spaces of technology, which architects traditionally draw as monolithically solid and indicate with the Beaux-Arts term poché, are regarded as highly ambiguous, as often functioning as the space of daydreams—the attic being a room of play, for instance—as that of nightmares: virtually no horror or science-fiction movie goes without the monsters entering the living quarters via sewers or air ducts. The ambiguity of serviceability reaches its apex in the electronic form of the smart home saturated with real-time computing, which appears more and more like a life-support system or a form of intensive care: the inhabitant as patient, with the house claiming more and more of its mobility.[11]

When our version of pharmacology tells us that no technological system attempting to extend the Self should ever be considered from a solely prosthetic viewpoint, but as part the history of mimesis, then technology, and especially the technology of automation, is responsible for an increasingly vital part of that project, and cannot be understood through the meager rhetoric of servitude and support. Ballard's story, like most of his work, shows that by definition any technological justification of technology is inherently flawed. Just imagine a smart home in a future, more extreme, form. The fully automated house of comfort would close its own curtains, wake you up on time, fill the bathtub with warm water, order your books and replenish the groceries, clean the windows, and maybe keep your children busy; in short, it would gradually have taken over to live your life. While offering comfort, the house automatically starts to replace its inhabitant. Unwittingly it would realize the myth of the *Doppelgänger*, yet without the myriad of mimetic imagery that has always accompanied the double. And we should keep in mind that the myth of the *Doppelgänger* always tells the story of meeting our deaths. The dream of the purely prosthetic ends like Edgar Allan Poe's story "The Man That Was Used Up": after removing the last of many prostheses nothing much is left.

[9] G. W. F. Hegel, *The Phenomenology of Spirit*, trans A. V. Miller (Oxford: Oxford University Press, 1977), p. 111–19. In Miller's translation the German terms Herrschaft and Knechtschaft are rendered as "lordship" and "bondage" respectively.

[10] The division between "served" and "servant" spaces probably originated with Anne Tyng. See: Anne Griswold Tyng, ed. *Louis Kahn to Anne Tyng: The Rome Letters 1953–1954* (New York: Rizzoli, 1997), p. 192.

[11] cf. "Comfort Issue," Forum, quarterly of the society Architectura et Amicitia, vol. 38/1+2 (May 1995), ed. Roelof Mulder, Winy Maas, Wim Nijenhuis, Lars Spuybroek, and Jurjen Zeinstra.

It leaves us with only one viable pharmacological option: adopting and developing automation not as a project of comfort but as one of mimesis, that is, deep, absorptive mimesis. Gloria's automation needs to meet Narcissus' mimesis *halfway,* in a gap that can never be fully closed: such a house would require just enough otherness to enable the Self. It's a matter of dosage. Precisely at this point Ballard's house faltered as well, not so much because it absorbed the psychology of an actress who slowly descended into madness, but mainly as a result of failing to sufficiently absorb its *current* inhabitant, Howard. The PT-house all too easily tilts over to a house of discomfort and alienation. There is automation, yet not enough mimesis—with more mimesis the story would have developed more into a game, a constant back and forth, not unlike tennis where one player mimics its opponent to suddenly deviate to score a point. Such a halfway-meeting means the gap needs to be of a particular size: automation neither as the extension of our own automatisms and habits nor as the pure installation of otherness and alienation. Somewhere between these two, between pure reflection and pure memory, there should be enough delay and change that records our activities and returns them slightly altered, unsettling us enough without throwing us in the abyss of uprootedness. Above all, it would mean not replacing the house of perfect workings with one that does not work, but with one that allows technology and automation to *appear*, instead of just doing its job. The fact that Gloria is, ultimately, a techno-mythological *figure*, is the main achievement of Ballard's pharmacological project, where the technical responses amount to and accumulate into a self-telling story, even a self-generative game, instead of just a bunch of dispersed effects—a line of thought we will be resolutely pursuing in the next section. The narrative lets her presence wander through the house, change her moods where needed while challenging and intervening in everyday routines, as well as suddenly disappear and remain silent. (It's always a sign of storytelling when the absence of a character adds to the continuity of the narrative.)

What Ballard's story proves is that *every house is a double house*: the space we inhabit and the space the house itself inhabits in the pockets of poché, and that is why we are never sure if our mood is not that of the house. Yet, the PT-house would need an upgraded version where the things surrounding us come to life alright, even confronting us spectrally with our own deaths, yet not going so far as to bury us on the spot or chase us out of the house. I am just wondering what it would mean, figuratively speaking, to see our earlier examples of the creased bedsheets or the rings left by the wine glasses take shape in an automated form. Like Ballard's PT-house, it would involve a definite shift back towards architecture's origins—from the hard back to the soft—by moving all the technology generally dedicated to structure and stability to the domain of textile with its curtains, carpets, cushions, including all of their plasticity and polychrome ornament. True, the bedsheet creases and rings on the table are trivial, quotidian instances, yet they indicate the possibly variable depths and layerings of memory that would be able to bridge the chasm between the pure immediacy of our daily actions and the memorizations architecture traditionally makes use of in the form of preprogrammed spaces such as bedroom, living room, kitchen, and the like. It would involve an electronic house of imprinting, as if Narcissus now stares into thicker, *slow water*, water that would also have the power to change images, substantiate them and create new figures that would stay with us to suddenly disappear and to reappear again. Maybe even create an individuated mythology.

What kind of imprints could those be, and how long should they last? Maybe some ought to last very long, staying over many generations, like ancestors. Such a viscous, electroplastic, or in Dalí's terms, extraplastic—if not psychoplastic—architecture would continue to be an art of slowness, a medium that abhors immediacy, though without too much difficulty we could imagine a whole variety of speeds. Fast gifts and slow responses. Speeds of recording and speeds of playing: an architecture thus affected by the quality of play and games would open up a whole new field of possible figuration techniques. From that moment on appearances would immediately start to function as spirits: are we moving them or are they moving us?—that would be the only question remaining.

3 Pharmakon and the lithic

Imagine any possible thing in stone—a car, a camera, a book, anything—all detail perfectly there, but perfectly unusable; it would look like a model, yet at the same time like a remembrance, like the tomb of a thing now gone. Or think of Ovid's myth of the sculptor Pygmalion, who fell so deeply in love with his own sculpture of a woman it forced Venus to make her come to life: surely the sculptor would never have been able to rid himself of the idea that the living creature he now shares his life with is still a statue, and still dead. Stone shows the *pharmaka*, the fundamental ambiguity of things. And such ambiguity cannot be explained purely by the notion of form; it coexists with its opposite, what we should maybe call "unform," the unformed as a form. Of course, such an idea would not be unrelated to that of the mold, the antiform, the hollow shape of a shape, the tomb as the womb of a thing, a hollow that creates it. This is what Mircea Eliade would have called a *matrix* (Eliade, 1997), the Latin for "womb," as much a reference to molding as to mother, *mater*, and matter, *materia*, both sharing their

etymological roots with the word matrix (Lyotard, 1996). Eliade elegantly denoted it also with the *Petra Genitrix*, the "Mother Rock," that is, the stone itself viewed as generative, permeated with a hollowness and porosity. Or think of Salvador Dalí's 1948 painting *Leda Atomica* with its horizontally floating stones miraculously forming a vertical seat for Leda, who comes in the shape of Gala, Dalí's wife. The surrealist painter, who we knew so well from his extraplastic shapes—of things relaxing their shape while sleeping—had shifted from plasticity to porosity: what made things flexible first, now made them hollow. Matter is suffused by the images slipping between its atoms.

> *in accordance with the modern "nothing touches" theory of intra-atomic physics. Leda does not touch the swan; Leda does not touch the pedestal; the pedestal does not touch the base; the base does not touch the sea; the sea does not touch the shore (Dalí, 1947).*

Is it the loose stones that produce the image of Leda-Galatea, or are the stones little images sliding along one another to create a stable seat, miraculously following the vertical axis of gravity? Two models of lithic psychology fully coincide: loose stones creating one image and multiple images floating through a single stone block.

We recognize this ambiguity again from architecture where there is simply no single solid-void model that might substantiate the existence of walls and space. To illuminate this ambiguity we employed the Beaux-Arts term poché, an investigation that quickly showed how the ambiguity was forged by the far more fundamental link between technology and imagination. As a reminder, poché is a hollow space that architects as a rule draw as solid. For instance, if it concerns a hollow wall the space in that wall is not indicated on the architect's drawing, yet it exists, similar to the spaces between ceiling and floor or so many other in-between spaces that create the pockets Louis Kahn called "servant" spaces, spaces of hidden structural support or technical services in support of the "served" spaces. The reason why poché is a term from Beaux-Arts architecture is that especially in this style the architects experimented with living spaces of a wide range of geometrical variation, which made it impossible to fit the rooms as tightly as the modernist rectangular shapes we are so familiar with today. The resulting loose-fitting left many pockets that could easily fit hidden stairs, cabinets or even secret passageways for servants to access the main rooms.[12]

When using Kahn's dialectic, that is, Hegel's dialectic of *Herrschaft* and *Knechtschaft*, it is not difficult to expand the notion of poché. Attics, for instance, are the spaces of roof structure filled with trusses and beams, yet at the same time large enough for us to store old trunks and suitcases, something that occurs in a more organized fashion in that other servant space, the basement. Then again, if we were to take a closer look at the spaces in the technical support systems themselves we would find even more poché: in the air ducts, in the sewers below the house, in the piping, in the chimneys. The more you look at it the more it seems that there is as much space in the walls as between them. At that point—the very point where the contradictory concepts of space and matter evaporate—a fundamental ambiguity takes hold of architecture, an ambiguity that proved essential for architecture to perform its true function: to be a *pharmakon*, that is, to bring us in contact with the specters roaming on the other side of the wall. That ambiguity was not only the cause of empowering the reversibility of master and servant where the served became as much a marionette of the serving as the other way around, it mainly opened up the gap between habit and inhabitation by offering room for play and dreams, dreams that as often turn into nightmares. As noted before, there is no horror movie that does not have the monsters enter the house from the ducts, from behind the walls or via the sewers below. In similar vein, we play and dress up in the attic, we play hide and seek in the closets, all by suspending the final cause of those spaces.

Let us, instead of collecting evidence of the above by listing hundreds of possible stories, dreams, and movies in the way Bachelard would do so well, concentrate on our central argument: when the technical spaces are the spaces of the imagination the rule of ambiguity tells us that *spaces of imagination are by definition technical spaces*. And let us for a moment broaden this statement, and put it as paraphenomenological as possible: the more creative humans become the more nonhuman and technical the procedures. For Bachelard only the hidden nature of these spaces would count, while for us it comes down to the opposite: the *pharmakon* of technology. The stone pervaded by poché turns the house not into a refuge or retreat, but into a matrix of images. Our question should be: can we increase the amount of poché? Can we make the ambiguity of space a zero-sum game, where the loss of habit becomes the gain of play? Can we balance the amount of space between the walls and in the walls? What would happen if we link the two? How far can we go?

To answer such questions we should conduct a pharmacological experiment. Let us take a look again at one of these large, Beaux-Arts houses made of stone and

[12] When visiting the bedroom of Marie-Antoinette in the palace of Versailles one might notice the barely visible door—drawn as if with a single line on the wallpaper—which offered access for servants.

stucco, with its large variety of room types: oval, rectangular, square rooms rounded off at the corners, lined with columns and pilasters, embedded with niches for sculptures that articulate the walls, which seem heavy and thick, outlined with a different profile on each side. And let us look especially at the drawing of the ground floor plan: all the walls are defined as solid, perfectly hatched with parallel, diagonally drawn, fine lines indicating their false solidity. Now, let us redraw this ground plan: instead of drawing the walls as solid, we draw them hollow, indicated by double lines, one line on each side of the wall. For the moment we skip doors and windows by extending the lines of the walls, making the rooms appear like closed boxes with all kinds of shapes. When looking at these double lines not as indicating the two sides of monolithic walls but as two separate, thin membranes, we start to view the outline of the house as a distinct, closed volume that envelops all the volumes of the rooms now isolated from each other like islands, each again with their own outline. Since we are doing this on a computer screen, let us now delete some of the rooms: click, click, click—gone. With those three rooms deleted we immediately start to see that the outer skin of the house is now far too large for the rooms that are contained in it; in other words, the amount of poché has increased considerably. Since we have so much space left between the paper-thin walls, we can start moving some of the rooms about, make them float in the extra-large outer periphery.

Let's throw a few more rooms out—in fact, let's try to make sure that the amount of space in the rooms is the same as that of the space between the rooms. And let's start moving them around again. The left-over space we created by deleting a few extra rooms starts to take on very different qualities when we move the isolated rooms over the plan: when the rooms close in on one another the space in between turns into corridor-like spaces, when moving the rooms further apart the left-over space itself starts to take on the quality of a room. We can start rotating the rooms, which works well with some of the rounded geometries; or we can keep a few of them aligned and connected by a door, as if nothing had changed; or we can nest them together like fruit in basket; or disperse them, with some trying to find a spot close to the big windows, while others look for the middle area. The layout could be anything, and all because the outer wall is too large, creating this enormous surplus of poché.

In Hegelian, if not Marxian terms, we could say that we have just liberated the poché. Now the amount of servant spaced is as large as that of served space, we cannot keep them apart as such. However, since the rooms have kept their classical symmetries their regularity still agrees fully with habit: the positioning of chairs and tables, of carpets and curtains would still reflect that regulated, if not aristocratic lifestyle of the Beaux-Arts. But the space in between, formerly known as servant space, increased to a size as large as the total area of the remainder of the rooms put together, is far less regular—to live here would challenge any type of fixed lifestyle. It would need an explorative, playful approach to invent a way to live, and the moment you seemed to have found it, it is being challenged again—because of the not-fitting and not-touching the tension is never resolved. And we have just started.

While moving the rooms about on our screen it starts to dawn on us that the design process slowly takes on the characteristics of a game. Rule sets would have to be developed and limits would have to be set: which room moves at what moment, and how much? And how do other rooms respond? Could their be rules for deletion? Could rooms overlap and be subtracted from one another? Could rooms reassemble into new shapes? We should keep in mind that games are always *games of pieces on an oversized board* or table—Scrabble, Go, chess, checkers, Tetris, Mahjong, and so on—and that the game we are playing with our floating rooms is near infinite. The ground is no ground in the philosophical sense; nothing takes root here, everything slides and floats. It has turned into a smooth board, like an open field, which in sports would be called a pitch or a court, a field highly schematic in character, divided up by lines that are indicative of its abstraction, like the lines we draw in sand.

Let's then add a crucial step: instead of playing around on our screen by moving the rooms about in the hope to at some point conceive the best possible "poché house," let's decide to build it in a way that preserves the quality of the game. Instead of constructing a single frozen state of this machinery, we should build it *as an automaton*, that is, with an oversized, yet static outer wall and actual, mobile rooms. Machines always consist of intricate relationships between mobile and immobile parts, with between the two: room, which in our case means *room between the rooms*. (We have to remind ourselves of the double meaning of the word "room" in various languages: sometimes it signifies an open field, sometimes a closed chamber). The moving around of parts, the trying out of different configurations, in short, the job that architects usually do before a house is built, is now part of how you live your life. Design has become part of life, initially because the design process itself was constituted *as a design automaton*, that is, as a matrix of possibilities and variables, but now because the design automaton has remained present in the final house as an apparatus offering livable (and unlivable) options. Conversely, the periodic rearrangements and refurbishings you tend to do when living in a house, the moments you change your

mind in life, or more radically, when you feel you must change your life, have now become part of the design. Just imagine what this could mean for Roland's notion of idiorrhythmia where each inhabitant lives in his or her own rhythm, a form of sharing a house he theorized in *How To Live Together* (Barthes, 2013). In a way, the book presents us with a variation—what he calls "a fantasy … a scenario"—on Charles Fourier's phalanstery, which was intended for over a thousand people. Despite its smaller size, our *house automaton* would generate a strong communal effect of designing our lives together, and the variety of its rhythms would constantly change the form, or, when put in the two ancient Greek terms that ambiguously signify "form": the *rhythmos* would constantly change the *schēma* of the house (Petersen, 1917; Pollitt, 1974).[13]

To be sure, our house automaton is technically somewhat challenging and speculative—though not as speculative as a PT-house—but it seems feasible enough when imagining this house as a single story, ground-floor house with a smooth floor that has rooms—which again would need to have their own floors—sliding over it, probably not on wheels but on a film of air as is customary in theater productions or factories, having the rooms hover just enough above the ground floor enabling them to move around gently and quietly.[14] Naturally, to become a real house automaton the rooms would need to be automated; they would literally need to move by themselves, and very probably the movements would need to be integrated, they would need to know of each other's positions, responding to each other, generating rhythms as well as unexpected effects—all this in a way that starts to raise new questions. At what point would the house seem to be alive, like Pygmalion's sculpture? (When the movements are both independent and responsive.) At what point would we give it a name, like Ballard's Gloria? (When the movements seem to reflect character.) At what point do the moving blocks align and create a seat, like for Dalí's Leda? (When that character starts to fascinate us.) And, last question, at what point do we fall in love? (When the figure starts to look just enough like us.)

To make the house robotics work conceptually the rooms would need to move very slowly, at the speed of architecture almost, sometimes only a few inches per month, sometimes faster. The displacements would need to be distributed over the various parts, only some would move, others not at all. Then, the movements would need to be periodic and alternated with standstill, in order for habit to settle as well as enable play to develop. In short, the slowness of the house would need to be structured and articulated. The house—the *Domus Matrix*—would require a memorization system: the motions, the patterns of behavior and isolated actions of its inhabitants would need to be captured electronically as a tracing and mapping structure, as if being followed by a reluctant *Doppelgänger*, not to fully stabilize the inhabitant's habits and slowly settle into a final configuration, but to only partially do so. It would be like the chiastic tennis game—in slow motion—we mentioned above where your adversary is both mirroring your moves and diverting from them. Architects as a rule materialize habits and the relationship between them, putting sequences of behavior in the desired order, but here that system is turned into a game, and play is by definition what transcends habit. Play is the ultimate pharmacological therapy, the reason why Stiegler was so interested in the writings of psychologist Donald Winnicott, especially his notion of the transitional object that, like the primal teddy bear, can be both addictive and comforting (Winnicott, 2005). Play goes *beyond work*, similar to what we theorized as elaboration and overwork: it explores and experiments. Play is a highly structured form of wasting and spilling (as in the German word *Spiel*), as Johan Huizinga argued so forcefully (Huizinga, 1955). The game board of the machine constantly offers a too-much. The house is now a *pharmakon-automaton*; not the reflective automaton that always returns the same image of your behavior, but lets you reinvent your life, or in the words of Stiegler, *What Makes Your Life Worth Living*, a title so close to Barthes's book. If the house automaton would be alive like Pygmalion's sculpture, or like the thinking and talking automata of Hephaestus—the clubfooted smith god married to Aglaea, the first of the Three Graces—it would be because we would feed it with our own behavior, with our own lived lives. And vice versa: it would consist of a chiastic exchange between us and the house; some of our actions responded to, some of its actions in response to; some mixed with other inhabitant's actions, some stored to return later.

The house matrix memorizes as well as *fantasizes*—there is no other word for it. It is not hard to imagine the tension between the machine and its inhabitants; surely an unpredictable game would develop from their interactions, and doubtless cyclical patterns too alternated with periods of pure chaos. Probably rooms would sometimes exchange functions, change from bedroom into living room, for instance, depending on their position relative to other rooms. As a final step in the exercise it would not require a lot more imagination to think of rooms that would themselves change, change their form maybe

[13] Roland Barthes, p. 7, and a similar argument from Emile Benveniste's "The Notion of 'Rhythm' in its Linguistic Expression," in *Problems in Linguistics*, trans. Meek M. E., (Coral Gables, FL: University of Miami Press, 1971), p. 281–88.

[14] These pneumatic lifting devices are called "air casters."

or separate in different pieces, or rooms might change their light conditions, change their color even or their color patterns. Rooms might create new rooms or keep their shape stable for longer periods while quicker and smaller changes articulate their surfaces. The machine would always have to manage between no changes, slow changes and sudden changes, between pure memory and pure fantasy, that is, between the habitual oscillations of a life and its invention. What would certainly change, is the notion of what architects call "program," the list of activities linked to their required square footage that they use to plan the spaces of the house; such a change would result into something very different than program, something far closer to storylines, to dreams and fantasies. Since we would not be able to differentiate between designing a house in advance and living in it afterward, the imaginary would become fully part of the real.

4 Pharmacology and lithic architecture

Oddly enough, the mobile house matrix is not as experimental as it sounds; historically, there have been similar explorations, unsurprisingly from the same period as Ballard's story, for instance Constant's *New Babylon* and Cedric Price's *Fun Palace*,[15] both projects from the early 1960s. The most radical example, however, stems from the Italian mid-eighteenth century architect and engraver Giambattista Piranesi (Wilton-Ely, 1978; Wallis de Vries, 2014; Vogt-Goknil, 1958),[16] the Venetian who idolized stone and who, next to his work as an architect, also worked as an archeologist—that is, somebody who studies the gaps between fragmented stones—and who remains an absolute enigma in the history of architecture.

The title is telling enough, *Carceri d'invenzione*, the imaginary prisons, a series of more than a dozen etchings, published in two different states, one in 1750 and the other, heavily reworked and dramatically darkened, in 1761. To say that many essayists, novelists, art and architecture historians have studied and discussed the *Carceri* would be an understatement. The critical corpus is extensive, which we are going to draw from in only a few instances, not because there are no valuable insights to be found, but mainly because our work is of a pharmacological nature. A first look at the series of plates confirms the generally accepted views of the work. We see enormous spaces—halls would not even be the right word—consisting of structures built out of colossal, rough stones, column-like structures spanned by immense arches with wide stairs forever climbing and descending between them. But we don't see anything that resembles walls; in fact, the space could hardly be called a prison at all because we don't see any closures, no rooms, hardly any doors, though there are many barred windows. The views are always diagonal and never frontal, so we see space leaking away in all directions, with more and more arches and bridges and stairs in the background. Between all this, heavy wooden structures are interspersed, sometimes in the form of trusses, sometimes as platforms, but as often bridges, even half-open drawbridges. Also in wood, we see many wheels, spiked wheels reminiscent of instruments of torture, and massive cogwheels, or wheel-like beams that seem to suggest the remnants of machinery. Then, lighter elements such as ladders, pendant lamps, but especially pulleys, chains and ropes hanging everywhere, either straightened by an object hanging from it or curved when attached to something immobile and bending under its own weight. A number of scenes include some form of smoke that seems to rise up from local fires, sometimes from an explosion. And on almost every plate we see people often walking alone, sometimes in pairs or little groups, but we have no idea where they are going. Some seem to be undergoing torture, but we can't really make out if they are stone sculptures and part of the architecture; some are gargantuan, like giants. Most disturbingly, we have no clue whether we are inside or outside.

At first sight, the *Carceri* seem a classic example of the sublime: gigantic scales, chiaroscuro everywhere, sheer darkness sometimes, the presence of the uncanny, if not actual terror, and of course an overwhelming sense of the infinite, what Kant labeled the mathematical sublime. All this is true, and yet … not at all. Let's look again, but now not at what the etchings might depict and represent but, technically, at how they were made. In some of the plates—and this has been extensively studied by the Turkish-Swiss art historian Ulya Vogt-Göknil in her 1958 book on the *Carceri*—there is something crooked in the construction of the perspective. While saying this we should keep in mind that Piranesi was from Venice, a city that produced numerous experts in creating *vedute*, "views," and that he himself created the well-known series of etchings depicting Roman street scenes, the *Vedute di Roma*. Architects were trained to create perspective views from ground plans: one would pick a location on

[15] For some excellent discussions of the work of Constant, see *The Activist Drawing: Retracing Situationist Architectures from Constant's New Babylon to Beyond,* ed. Catherine de Zegher and Mark Wigley (Cambridge, MA: MIT Press, 2001). See also: Simon Sadler, *The Situationist City* (Cambridge, MA: MIT Press, 2001). On Cedric Price, see: Stanley Matthews, *From Agit-Prop to Free Space: The Architecture of Cedric Price* (London: Black Dog Publishing, 2007).

[16] The books I have consulted on Piranesi include: John Wilton-Ely, *The Mind and Art of Giovanni Battista Piranesi* (London: Thames & Hudson, 1978); Gijs Wallis de Vries, *Archescape: On the Tracks of Piranesi* (Amsterdam: Thousand & One Publishers, 2014); Ulya Vogt-Göknil, *Giovanni Battista Piranesi "Carceri"* (Zürich: Origo Verlag, 1958). Some intriguing research into Piranesi's *Campo Marzio* can be found on www.quondam.com.

the plan, define the horizon by choosing an eye level to then start projecting the viewing lines radiating from the eye and construct, while working against a horizon with one or more vanishing points, the perspective geometry with all its distortions and foreshortenings. Conversely, when starting with an existing perspective drawing such as Piranesi's an expert could easily reverse-engineer the plan, which is exactly what Vogt-Göknil did. Instead of leading to an unambiguous ground plan she found that in several etchings multiple different plans had been combined. A stunning discovery, which from a theoretical viewpoint can only mean one thing: the *Carceri* have no plan, that is, no ground.

If we link that analysis back to the figure-ground problem of architecture—of which Piranesi was an expert too, since he worked on the most famous figure-ground diagram in the history of architecture: Giambattista Nolli's 1748 plan of Rome—we can only conclude that Piranesi radically collapses space onto the plane of the drawing. There is no depth of space, no horizon to hold onto, no perspective that can contain its subjects. And we should realize that this specific role of perspective was precisely the goal of Nolli's plan of Rome: to create a city ruled by visually and perspectivally interlinking monuments and façades of governmental and religious buildings, which is revealed clearly in its figure-ground model: we see how the white ground-space penetrates the public buildings, the churches and the courtyards, but not the dark, figural urban blocks and the private houses therein, which are hatched as if made of solid stone. The *Carceri* do not follow that model; not only is there no distinction made between incarcerated individuals and free citizens, there is also none to be found between urbanism and architecture, nor between figure and ground.

Thus far our discussion has not differed essentially from scholarly standards; indeed, it could easily be taken for the start of an essay in deconstruction where the collapse of perspective added to the initial "gothic" descriptions of the dark, endless, terrifying atmosphere only strengthened the sense of sublimity. But let us take another look. What exactly occurs here, when viewed from an architectural viewpoint? We see a stone architecture that is broken in every sense of the word: there are just pieces of architectural stuff that don't fit, and the continuous realm of perspective cannot put the pieces back together again. To be sure, Piranesi was obsessed with ruins, a passion shared by many during the period of early Romanticism, and in that sense we are witnessing the end stages of the Enlightenment and of Classicism—all very well. But Piranesi does not stop there, as his contemporaries would have done. They would break up the Cartesian structure of space and stare down into the existential abyss between the cracks, right into the *Ungrund des Unbewusstseins*,[17] the abysmal unconscious that according to the painter Francisco Goya invariably releases monsters. The sublime is always an art of awe and anxiety, of fascination and immobilization. That is exactly *what does not happen* in the *Carceri*.

The only suggestion of such a hypothesis we find in Joseph Rykwert's 1980 *First Moderns* where he describes the *Carceri* as a combination of

> *two separate architectures: a timber one which follows its own xylological laws, and a stone one following those of lithology (Rykwert, 1991).*

A view that Rykwert links to one of Piranesi's contemporaries, Carlo Lodoli, who neatly distinguished between wood and stone as following their own structural principles in architecture. True, but that is not what defines the conceptual content of the *Carceri*, which is far more profound. What occurs is that, while the stone structure is broken, leaving gaps wherever possible, it is the wood that *explores*—the word we used for the design automaton and the house automaton—those gaps. The wooden structures seek and connect, disconnect and turn to make other connections, in all directions—and it's clear to see that Piranesi himself saw this happening, because the changes between the first and second state of prints mainly concern the addition of wood. So, yes, we see an architecture that is half-stone and half-wood, but far more decisive is that we see *a half-architecture made of stone and a half-machine made of wood*. Generally such etchings, even when they use non-perspectival views, would show only architecture and people, two things, but here we see three: half-architecture, half-machine and people.

On a side note it might be helpful to mention that the same occurs in Constant's *New Babylon* project: a similarly proliferating structure, similarly "desurbanist" in scope, similarly developed by an artist-architect, and similarly with the same purpose in mind. When looking at the countless drawings Constant created over the years he worked on the project we see the same three things returning: bits of architecture, mostly in the form of floors or corners, all very angular and broken up; people, often depicted by exuberant curvature; and thirdly, wheels, ladders, bridges, and dozens of mobile parts often drawn in multiple positions to suggest

[17] In terms of the sublime, we recognize this as Kant's *Abgrund* ("abyss") and Schelling's *Ungrund* ("nonground"): "… wie können wir es anders nennen als den Urgrund oder vielmehr *Ungrund*?" […what else can we call it than the primordial ground, or better, the non-ground?] Friedrich Wilhelm Joseph von Schelling: *Werke*, 3 vols., ed. Otto Weiß (Leipzig: Fritz Eckardt, 1907), III, p. 501. The literal meaning of the word "abyss" is "bottomless."

changes of position. Here again we encounter an unfinished, fragmented architecture that is not healed or finished by another structure, *but inhabited by it*, a structure that is unfixed and introduces mobility, that responds to the opportunities created by the gaps, a machine-like structure of loose parts enabling multiple connections between the fixed parts. And we should not forget to mention that Constant was a passionate reader of Huizinga's *Homo Ludens*, the manual of play theory and the introduction to the term "ludic," a term almost as loaded as the French *ludique* with all its psychedelic connotations. Now, obviously we are not going to declare the *Carceri* a ludic project (that would be ludicrous), but there is certainly a form of play at work, a form of what Huizinga called serious play.

It is quite evident that by destroying Nolli's figure-ground model Piranesi is multiplying the poché and liberating it from its hidden quarters; still, that does not mean he is creating "habitable poché," the term used by Colin Rowe and Fred Koetter (1993) in their *Collage City* from 1978. The truth is we cannot, by deploying our habitual patterns, "use" the poché, which by definition would suspend use and turn activity into play, yet is it clear from looking at the *Carceri* this is not a form of joyful play or fun. No, the play we find here should be appreciated more as forms of Callois's *alea* and *ilinx* categories, respectively games of chance and games of vertigo. Chance especially because of the mobile elements that continuously create new connections and block old ones, opening and closing routes; and vertigo because of the *Carceri*'s no-ground paradigm, creating a sufficient lack of reason and an uncertainty that establishes the rule of chance, that is, of searching, seeking, and exploring. It is a world of figure-no ground, which is the most concise description we can give of the stone matrix.

Where the *Carceri* use the flatness of drawings, etchings or engravings—all surfaces of inscription—to show the hallucinatory machinery of the stone automaton, the other, at least as famous project by Piranesi, reverses that connection: it uses a design machine to produce sheer flatness, yet of the same hallucinatory quality, bathing in a strange light that shines directly from a golden past. I speak, of course, of the *Campo Marzio*, the nonidentical twin of the *Carceri*. Where the *Carceri* have no plan, the *Campo Marzio* is only plan. It is quite remarkable how two projects can look so different while based on the same mechanism and the same conceptual aspects. The project grew from Piranesi's archeological research into ancient Rome, which had resulted in a series of publications titled *Antichità Romane*, and turned into a full-blown reconstruction of a large quarter of Rome along the Tiber, the Campo Marzio, the Martian Field. Its publication consisted of a large body of text, a number bird's-eye views (*scenographia*) and a large and immensely detailed ground plan, the *ichnographia*, of the area with all its buildings.

The very first thing that strikes us when looking at the plan is that we can hardly speak of a city, or better, that we can hardly speak of any urbanism; it's a collection of floating buildings turning in every possible direction, in a manner so dense that one would expect a system of wide roads between them to enable the masses of Rome—the *vulgus*—to move from one area to another. Yet no such infrastructure, no such skeletal network, which Piranesi knew so well from his work on Nolli's plan, can be found. So, again figures and no ground. The second thing we notice is that, indeed, the buildings have taken on the quality of figures; they haven't been drawn as solid black blocks, quite the reverse, they are extremely detailed configurations of walls and space. Yet, we quickly realize they don't look like buildings at all, but like complex crystalline aggregates of variously shaped smaller geometries that are nested together, grouped by alignment or even penetrating each other. These aggregates, often combined with large courtyards, gardens and pools, only adapt slightly to local conditions; as a rule they are organized completely upon themselves, relying on complex symmetries or elaborate radial geometry. Then, in direct opposition to their high level of organization, these entities seem to blindly bounce into each other, leaving what one can only call *urban poché* between them. They seem to behave so accidentally that the whole looks like tessellated ice floe or as if scattered over the ground, like fallen leaves. No higher order binds these elements together.

The coexistence of accidental, yet nested packing and symmetrical crystalline geometries is the most dramatic in the whole history of architectural design—nothing comes even close. The game and art of unfitting we encountered in the *Carceri* as the primary tool to turn the stone into a matrix of mobility reaches its apex here. To be sure, modern reconstructions of ancient Rome based on archeological evidence show a high level of accidental organization too, yet nothing like Piranesi's *Campo Marzio*. And that is not just a matter of mere interpretation of existing remains, or a matter of unsupported historical assumptions of the time. Piranesi elaborated, extrapolated, fantasized, fabulated. We see an aggrandized Rome, crowned with two enormous mausoleums, one for Augustus and one for Hadrian, endowed with numerous circuses, far more than ever existed in Roman times, a great variety of theaters and brothels, tombs, cemeteries, bathhouses and libraries, all perfectly detailed, so obviously moving away from Roman architecture as it existed that we quickly start asking ourselves what exactly is going on here.

Something so dreamlike and exuberant takes hold of the architecture that everything seems to be bathing in a magnificent light, the glorious light of imperial Rome, yes, *but a psychedelic version of it.* Though meant figuratively, this last remark is not meant metaphorically: the complex geometries often multiply their contours, adding extra canals, extra stairs with hundreds of steps, double rows of trees or rows of columns, creating the vibrating contours we recognize from Michaux's mescaline drawings. In the same train of thought, we should note the dozens of radial, flower-like plans in different shapes, sizes and configurations, some of them spiked, others with curved petals, either standing alone or nested in more rectangular structures. Several of these radial configurations seem to reverse their vibrating contours, turning them inward—like a film clip of water ripples played backwards—so as to completely dissolve the last bit of internal consistency, leaving only sets of rings and passageways leading nowhere. Piranesi gives the impression of wanting to literally build halos. There is no proof of it, but sometimes it seems the project is secretly dedicated to the sun, to Sol Invictus, the invincible sungod who played a central part in the later Roman military's Mithraic cult; so obvious is the intimacy between sunlight and death. While one of the most beautiful projects in architectural history, the *Campo Marzio* is virtually impossible to fully grasp—at least with the usual historical methods—because of these qualities. We know of many hallucinatory drawings in architecture, but without exception they concern perspective drawings, never city plans. It is as if Piranesi invented a psychedelic Classicism. The Martian Field is like *Strawberry Fields Forever*.

So what is going on? When writing the introduction afterwards, Piranesi himself was quite taken aback by the overt hallucinatory nature of his project and added an uncharacteristically insecure defense to the text, being quite aware that the question of what exactly goes on in the *Campo Marzio* would surely arise in the minds of his contemporaries:

> *I am rather afraid that parts of the Campus which I describe should seem figments of my imagination and not based on any evidence: certainly if anyone compares them with the architectural theory of the ancients he will see that they differ greatly from it and are actually closer to the usage of our own times. But before anyone accuses me of falsehood, he should, I beg, examine the ancient plan of the city.*

Naturally, there has been extensive scholarly debate on why Piranesi allowed himself so much leniency, some going in the direction of failure and what Manfredo Tafuri called a negative utopia, others in the direction of artistic freedom, inspiration, or creativity. Certainly, the project is experimental and imaginary, but to ascribe the imaginary simply to specifically individual and idiosyncratic qualities of Piranesi's mind does not even start to address the question what precisely allows for such exuberant imagination or how its images are mobilized. I think the answer lies not in an exclusively human psychology and its specific talents, but in a shared, lithic psychology that does not view stone as a solid material to carve our projected shapes from, but as a matrix, as an open machinery full of gaps that immediately evoke fantasy, storylines and imagination. Therefore, we need to take one more look at the plan, and look in the way we did the second and third time when studying the *Carceri*: not at what it might represent or mean, but at how it was made and what from. That is, we should look at the automaton and its pharmacological workings.

First of all, we should take a hint from the Vitruvian terminology Piranesi employed to denote the plan: *ichnographia*, a word derived from the Greek *ichnos*, "track" or "trace," and *graphein*, "to write with characters" or "by lines drawn." Naturally, the plates that were used to print the plan of the Campo Marzio are engravings, "inscribings" that are carved into a surface, which means, from the viewpoint of the machinery, that the procedure operates from a diametrically opposite direction than archeology: instead of emerging from the ground they are inscribed into it from above, not dug up but fallen onto the ground. This highly ambiguous relationship between archeology and engraving might also be the reason why the plan is so intriguing and why the bird's-eye views, the *scenographia*, so disappointing. While the *ichnographia* follow the proceedings of figuration, the *scenographia* never exceed representation. Frankly, it would have been much better to leave them out, they add nothing to the specific qualities of the plan, and indeed they added too much, namely elevations, complementing the plans to a level of proper building designs. (And thank goodness Piranesi only did a few, and did not take the trouble to draw perspectives of every component.) Offering plans and elevations and combining them into perspective views might seem a sensible thing for an architect to do, but it places the *Campo Marzio* project needlessly in the typical reconstructive mode of historical representation; in short, a visualization of how things might have been. But that's exactly not what the project is about. *Campo Marzio* does not try to reconstruct a past, but projects the past into the future.

That makes it not a project of nostalgia, not some futurist vision of a new Rome, but a vision of the old Rome. It is about ghosts and ancestors. One has to dig up the dead, dig up the archeological fragments in all their looseness and brokenness, and start making new connections, keep on exploring their extraplastic character

and not work towards a single solution but uncover the whole speculative range of look-alikes by multiplying the results and extrapolating the details. The stone *pharmakon* can generate a million Romes, *Pseudo-Romes*. (Is not each city a double city in the way that each house is a double house?) The automaton is purposefully a *pseudological machine, a fabulist machine*—a drug. What Piranesi's work proves is that the imaginary, the fabulism that we know so well from literature and storytelling, is not a question of design but of a design automaton, that is, not a question of forms, of solid stone shapes, but of broken forms, forms that have fallen apart, which then, in the larger machinery of the matrix, through procedures of recombination, interpenetration and permutation start producing an endless array of images.

The imaginative qualities of *Campo Marzio*, then, lie precisely in the flatness of the *ichnographia*, the plan-images, flattened by the pressures of stone, and made plastic, mobile and transformable because of the cracks, made visible too by what in paleontology is called *ichnology*, the study of prehistoric fossil tracks. Generally, architects attribute the image-like qualities of architecture to the elevation, i.e. the walls and the façades of buildings, but here it lies in the plans. The plans are the end product of the project, there really isn't anything else. (Piranesi's *scenographia* are just one possible interpretation of his plan, like so many other architects after him have tried to do.) I think that is why the project reminds us of a paleontological and not an archeological quarry. We are looking at fossils, at some very early architectural zoology, like the Burgess Shale in the west of Canada, a deposit of the strangest, half-a-billion-year old animals. These weird Cambrian fossils—far stranger than the Jurassic fossils of dinosaurs, for instance—seem at the same time very old and very new, and Piranesi's *paraclassical* Roman creatures bear similar characteristics. The ground floor plan, like the ground floor of our house automaton, is *where everything immediately transfigures*. It is as if plan and ornament, the two aspects of architecture that are the furthest apart, suddenly coincide. Like with fossils the whole volume that separates internal layout and outer appearance has collapsed, as if the building has been squeezed out between its plan and its exuberant ornamentation, linking the two antipodes of architecture through ultimate flattening. (Now I think of it, the plan does look like an enormous, and an enormously skilled, exercise in *doodling*: the multiplied contours; the cumulative addition of stripes, waves and dots; the randomized aggregation of figures; the exclusive use of lines; the flicker between black and white; the manifest sense of elation, etc.) Surely this must be why the plan-images bear such figural qualities, not because of their intricate geometry that we tend to associate with the word figure, but because *the plans turn into appearances*, a turn that in architecture usually only happens by transforming the downward directed stance of the building into its sideways directed ornamentation.

An ichnological, fossile analysis of the *Campo Marzio* might also explain why death plays such an overt role in the project. Rykwert called Piranesi's work in general a "necrophiliac passion for the glory of ancient Rome," and when applied to the *Campo Marzio*, this would be its best possible characterization. At least half the city is occupied by the dead. Sepulchers in every possible location, massive monuments dedicated to the fallen—after all, the area is called the Martian Field—and the two gigantic mausoleums, one fan-shaped dedicated to emperor Augustus, and a far larger and more complex one to emperor Hadrian. The latter is the first thing one notices when looking at the plan, it consists of a rectangle that covers at least a square kilometer with at one end the *Bustum Hadriani*, Hadrian's Pyre, and at the other the *Sepulchrum Hadriani*, Hadrian's Tomb, a high, round and stepped tower that uses the existing, and already gargantuan Castel Sant'Angelo merely as its base, with in between the two ends: colossal dining halls, an extensive garden covered with pergolas, two elongated circuses for chariot races and two reflection pools on each side. The conclusion is indisputable: *death and sunlight belong together*. (In our terminology: death and radiance belong together.) Death is of a different order here than in the *Carceri*; there, the broken ruins were transformed by the wooden machine, converting petrification into mobility; here the actual workings of the design machine are invisible and we only get to see its final images. In the *Carceri* series we are offered images of the machine, in the *Campo Marzio* the machine has produced the plan-images, the "arche-fossils" (Meillassoux, 2009) for us to marvel over.

The *Campo Marzio* is a *spectral city*, not just half of its occupants are dead, all of them are; yet they inhabit it joyfully, enjoying its uselessness and its lack of walls and roofs; a spectral city drenched in perpetual golden sunlight inhabited by the specters walking in large processions over the Triumphal Way (Via *Triumphalis*). The cheering phantom crowds shower the endless stream of armor-plated legionaries with a flurry of pink rose petals, escorting them all the way to the Temple of Mars, the *Templum Martis*, the conceptual core of the *Campo Marzio* where the risen meet the fallen and the dead meet the dead.

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References

Alberti, L. B. (1988). *On the Art of Building in Ten Books* (pp. 123–156) Translated by Rykwert, J., Leach, N., and Tavernor, R. (Section 6/2/93–94). English translation: "attached or additional".
Bachelard, G. (2002). *Earth and Reveries of Will: An Essay on the Imagination of Matter*, trans. Kenneth Haltman (pp. 7–33). Dallas: Dallas Institute Publications, [1947].
Ballard, J. G. (1962). *The Thousand Dreams of Stellavista* (pp. 187–208)
Barthes, R (2013), *How To Live Together: Novelistic Simulations of Some Everyday Spaces*, trans. Briggs, K. (p. 7). New York: Columbia University Press, 2013 [1977].
Bateson, G. (2000). *Steps to an Ecology of Mind* (p. 317). Chicago: University of Chicago Press, 2000 [1972].
Benjamin, W. (2006). Protocols of Drug Experiments. *On Hashish*, trans. Howard Eiland et al. (p. 58). Cambridge: Belknap Press, 2006.
Butler, S. (1985). *Erewhon* (p. 223). London: Penguin Books, 1985 [1870].
Dalí, S. (1933). "De la beauté terrifiante et comestible de l'architecture modern' style." *Minotaure, Revue artistique et littéraire*, no. 3/4 (pp. 70–73). Paris: Éditions Albert Skira, 1933.
Dalí, S. (1947). Art: And Now to Make Masterpieces. *Time Magazine.* December 8th, 1947.
Derrida, J. (1981). Plato's Pharmacy. *Dissemination*, trans. Barbara Johnson (pp. 165–172). London: Athlone Press.
Eliade, M. (1997). *The Forge and the Crucible: The Origins and Structure of Alchemy*, trans. Corrin, S. (pp. 38–57). Chicago: University of Chicago Press, 1997 [1956].
Freud, S. (1980). The Uncanny. *Art and Literature: Jensen's 'Gradiva', Leonardo da Vinci and Other Works*, vol. 14 of *The Pelican Freud Library*, trans. James Strachey (pp. 356–58). London: Penguin Books, 1980 [1907].
Hansen, M. B. (2008). Benjamin's Aura. *Critical Inquiry*, vol. 34, no. 2 (pp. 336–75). Winter 2008.
Hegel, G. W. F. (1977). *The Phenomenology of Spirit,* trans. A.V. Miller (p. 102, 113, 115). Oxford: Oxford University Press.
Heidenreich, F., & Weber-Stein, F. (2022). Bernard Stiegler: Elements of Pharmacology: An interview with Felix Heidenreich and Florian Weber-Stein. *The Politics of Digital Pharmacology: Exploring the Craft of Collective Care* (pp. 83–116). Bielefeld: transcript Verlag, 2022.
Hofmann, A. (2005). *LSD, My Problem Child*, trans. Jonathan Ott (p. 169). Sarasota: MAPS, 2005 [1979].
Homer. *Iliad, 14*, 182–83.
Huizinga, J. (1938). *Homo Ludens: A Study of the Play Element in Culture*, trans. Hull, R. C. F. (p. 38, 45). Boston: Beacon Press, 1955 [1938].
Huxley, A. (1954). *The Doors of Perception* (pp. 10–13). London: Chatto & Windus, 1954.
Huxley, A. (1956). *Heaven and Hell* (p. 20). London: Chatto & Windus.
Ingold, T. (2013). *Making: Anthropology, Archaeology, Art and Architecture*. London: Routledge, 2013. Chapter 3: "On making a handaxe."
Jünger, E. (2014). *Annäherungen: Drogen und Rausch* (p. 42). Stuttgart: Klett-Cotta, 2014.
Klüver, H. (1966). *Mescal and Mechanisms of Hallucinations* (p. 21). Chicago: University of Chicago Press.
Leroi-Gourhan, A. (1971). *Évolution et techniques*, vol. 1: L'Homme et la matière. Paris: Éditions Albin Michel, 1943–45.
Lyotard, J. F. (1996). Les Immatériaux. In R. Greenberg, B. Ferguson, & S. Nairne (Eds.), *Thinking About Exhibitions* (pp. 114–25). New York: Routledge, 1996.
Mauss, M. (1990). *The Gift: The Form and Reason for Exchange in Archaic Societies*, trans. W. D. Halls (p. 59, 122, 152). London: Routledge, 1990 [1925].
McLuhan, M. (1964). *Understanding Media: The Extensions of Man* (p. 51). New York: Signet Books.
Meillassoux, Q. (2009). *After Finitude: An Essay on the Necessity of Contingency*. London: Continuum.
Michaux, H. (1963). *Light Through Darkness*, trans. Haakon Chevallier (p. 9). New York: Orion Press, 1963.
Michaux, H. (2002). *Miserable Miracle*, trans. Louise Varèse and Anna Moschovakis (p. 62). New York: New York Review Books, 2002.
Petersen, E. (1917). "Rhythmus," *Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, Philologisch-Historische Klasse*, Band XVI, nr. 5. Berlin: Weidmannsche Buchhandlung.
Pollitt, J. J. (1974). *The Ancient View of Greek Art: Criticism, History, and Terminology* (pp. 143–53). New Haven: Yale University Press.
Rinella, M. (2011). *Pharmakon: Plato, Drug Culture, and Identity in Ancient Athens* (p. 237). Lanham: Lexington Books, 2011.
Rowe, C., & Koetter, F. (1978). *Collage City* (p. 79). Cambridge: MIT Press, 1993 [1978].
Rykwert, J. (1980). *The First Moderns: The Architects of the Eighteenth Century* (p. 370, 375). Cambridge: MIT Press, 1991 [1980].
Semper, G. (2004). *Style in the Technical and Tectonic Arts; or, Practical Aesthetics*, trans. Mallgrave, H. and Robinson, M. (pp. 248–49). Los Angeles: Getty Publications.
Simmel, G. (2000). Adornment. In D. Frisbee & M. Featherstone (Eds.), *Simmelon Culture* (p. 209). London: Sage Publications, 2000 [1908].
Spuybroek, L. (2020). The Grace Machine: Of the Figure and the Gap. *Grace and Gravity.*
Stiegler, B. (2013). *What Makes Life Worth Living: On Pharmacology*, trans. Daniel Ross (pp. 35–45). Cambridge: Polity Press, 2013 [2010].
Twombly, R. (Ed.). (2003). *Louis Kahn: Essential Texts* (pp. 49–51). New York: W. W. Norton. passim.
Tyng, A. G. (Ed.). (1997). *Louis Kahn to Anne Tyng: The Rome Letters 1953–1954* (p. 192). New York: Rizzoli.
Vogt-Göknil, U. (1958). *Carceri* (pp. 26–36) Origo-Verlag.
Wallis de Vries, G. (2014). *Archescape* (pp. 49–127) Duizend & Een.
Wilton-Ely, J. (1978). *Mind and Art of Piranesi* (p. 76). Thames and Hudson [1988].
Winnicott, D. W. (1971). *Playing and Reality*. London and New York: Routledge, 2005 [1971].

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