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Architectures of Synaptic Passages

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Chapter 10

Ananke's Sway

Architectures of Synaptic Passages

Stavros Kousoulas

Do gods have mothers? The ancient Greeks would respond affirmatively; moreover, they would claim that the primordial deity, the mother of gods, humans, and their fates alike is the goddess *Ανάγκη* (*Ananke*). *Ananke* emerged at the very dawn of creation, in a serpentine entanglement with her brother *Chronos*, the personification of Time. Interestingly, *Ananke* stands for a very particular notion, one that might surprise the reader who wonders why she would be acknowledged as the mother of gods. The etymology of her name stems directly from the noun that stands for ‘necessity’: the mother of gods, the sister of time, is necessity. To make things even more peculiar, the same noun has more meanings, standing simultaneously for necessity, force, and, crucially for my argument, constraint.

From a philosophical perspective, dating from early ancient Greek philosophy up to Sigmund Freud and Norbert Wiener, *Ananke* has often been presented as the personification of determinism. Especially for Wiener, the prominent figure of early cybernetics, *Ananke* always stood opposed to *Tyche*, the goddess of chance and unpredictability, or what he called quantum indeterminacy.¹ Through an architectural reconsideration of necessity, I will highlight that it should be neither conflated with determinism nor opposed to indeterminacy. On the contrary, by connecting necessity with constraints and both with a radical understanding of synapses, as well as by referring to figures such as Gilles Deleuze, Félix Guattari, and Raymond Ruyer, I will propose a Simondonian—and therefore, informational—re-evaluation of architecture that makes constraints a presupposition for the emergence of any sensitivity to what we call indeterminacy.²

THE TRUTH IS DEAD, LONG LIVE THE TRUTH

As the artist and researcher Patricia Reed reminds us, in the most straightforward way, necessity can be understood as that which cannot be otherwise: anything that is not necessary is contingent.³ Reed continues by claiming that

necessity is axiomatic, insofar as what is necessary remains so regardless of situational specificity, and furthermore it is resistant to contradiction, logically speaking. Necessity, writ large, operates as a conceptual and/or material constraint, since it determines what is *not* freely negotiable, nor subject to alterability.⁴

Following Reed, the connection between necessity and constraints becomes more obvious: if something cannot be otherwise, then its resistance to change stands as a determining factor for any potential interaction with it or any system that it is part of. Moreover, for Reed there are two fundamental types of necessities: *alethic* and *non-alethic*, both originating etymologically from the Greek word *ἀλήθεια* (*aletheia*), which stands for truth. In other words, there are necessities that are absolutely true regardless of context and necessities that are non-absolute and context sensitive.⁵ Following this distinction, to claim, for example, that human life depends on nutrition or that plants depend on solar energy is an alethic necessity; to claim that a *good* human life depends on this kind of nutrition or that kind of architecture is a non-alethic necessity, precisely because it essentialises and reifies a particular (any particular, for that matter) understanding of what it entails to live a good life. The ingenuity of Reed is that she makes clear—through a line of argumentation that for practical reasons I will not follow here—that there has been a continuous *naturalisation of necessity*, especially since Darwin's theory of evolution started gaining ground in the late nineteenth century, leading to a biologically based reconsideration of many other disciplines. Put succinctly, there is a constant and deliberate confusion where non-alethic necessities are intentionally taken for alethic ones and serve as the supreme source of legitimacy for diverse contemporary political, economic, and social structures.⁶

Perhaps another way to address non-alethic necessities would be as norms and values: established patterns of action and desired outcomes of actions. Why would one suggest such a twist? Because it is through action itself that the binary between alethic and non-alethic necessities can be dismantled, allowing for neither a naturalisation of necessity nor for all kinds of anthropomorphic reductionisms. On the contrary, by developing an account of norms and values that presupposes only the sheer affective power of action, a different, reverse trajectory may be outlined: how can one de-naturalise alethic necessities, in that sense destabilising the very foundation of any (scientific

or other) determinism? An illuminating—pun intended—example in this direction is given by philosopher Joel White: what if we were to seriously consider that the Sun is actually dying?⁷ By reviving Nietzsche's interest in the heat death of the Sun, White claims that 'if the Sun as a metaphor of the Form of Forms grounds and engenders thought's truth, but it is seen to be dying, then, as Nietzsche argues, epistemological truth inverts into a lie.'⁸ However, White will use the inevitable (?) entropic death of the Sun to take this inversion of truth one step further: it is not only epistemological truth that is inverted, but all kinds of truth, especially ontological truths—or, said differently, alethic necessities. As White writes

the truth of entropic living/dying analogically represented by this living/dying star that we call our Sun, allows us to grasp the truth of entropic form. While heat death cannot be *for us* an object of experience, it is certainly *with us*. The entropy of the universe increases each time we heat our houses, think our thoughts, and let our coffees get cold. Indeed . . . this absolute oblivion is the 'unpalatable truth' at the end of our search for knowledge. It is this truth that inverts all other truths to lies.⁹

What White essentially claims is that if we agree on the truth of the Second Law of Thermodynamics—what is called entropy—then we are unwittingly abolishing the very notion of truth itself: being able to envision an entropic death is only possible because of the continuous, constant, and stubborn efforts to avoid the inevitable, to avoid entropy itself. How does one avoid the inevitable? By introducing negative entropy. If negative entropy is what makes any form of structural and operational organisation possible—from rocks and houses to our hearts and our institutions—then truth itself is no longer stable and fixed: truth becomes metastable and auto-normative.

THE SPINDLE OF ANANKE

If, therefore, the truth of negative entropy—which, following its use in information theories and for the sake of this chapter's economy, I will call negentropy—is the only viable truth, in the ontological sense of the term, then, recounting Reed's argument, negentropy becomes the primary alethic necessity out of which all our non-alethic necessities emerge. In other words, our norms and values are continuously produced negentropically. This implies a drastic shift: if negentropy is the only truth then no truth is ever stable, or, in terms closer to our interest, pre-determined. Alethic necessities are de-naturalised on the basis of the immanent contingency of negentropic interventions on the very fibres of the cosmos. Perhaps it is not a coincidence

that our primordial goddess, *Ananke*, was always depicted holding a spindle. The spindle of *Ananke* was assembled by a shaft and a steel hook, while the whorl was made of different metals and other materials. Moreover, the whorl was of an unusual kind, being made of many entangled pieces, that in their entanglement compose the cosmos itself. This is how Plato describes it in his *Republic*:

The nature of the whorl is like this: its shape is like those we have here; but, from what he said, it must be conceived as if in one great hollow whorl, completely scooped out, lay another like it, but smaller, fitting into each other as bowls fit into each other; and there is a third one like these and a fourth, and four others. For there are eight whorls in all, lying in one another with their rims showing as circles from above, while from the back they form one continuous whorl around the stem, which is driven right through the middle of the eighth.¹⁰

Each of these whorls stand for different planetary bodies, from the moon and the Sun to Saturn and Mercury, Venus, Mars, and Jupiter, while the largest is the cosmos, the fibrous universe itself. Adding to the list of coincidences, philosopher Raymond Ruyer, author of the seminal *Neofinalism*, has also conceptualised the universe as one of fibrous structure. His approach, nonetheless, prioritises a much more active and immanent entanglement. Ruyer claims that the fibrous structure of the cosmos is one that structures itself in time, with each fibre expressing a continuous line of an individuation.¹¹ With Ruyer, the universe starts to fold, in space and in time, and what is produced in these folds is never separated from the whole itself, even though it allows for the whole to differentiate, to rearrange itself in the particular manner that each fold is actualised and expressed. Besides understanding the universe as fibrous, Ruyer also asks us to understand matter as activity. Doing so, matter becomes inseparable from time, since ‘time can no longer appear as an empty and foreign frame; the time of action is inherent to this action as a temporal melody.’¹² Therefore, for Ruyer, the universe in its fibrous structure is:

the expression of lines of activity and not lines of subsistence. The subsistence of things derives from their activity; it is not required a priori by reason or virtue of a principle such as ‘nothing is lost, nothing is created.’ Activity in its unfolding is not subject to deterministic causality.¹³

The very folding activity of those fibrous individuations generates a rhythm that pulsates through them and potentialises their futural movement: the manner, the style of *Ananke*’s intricate hand movements, her bodily, affective engagements with the spindle itself, express the cosmos as it is, not because it is supposed to be expressed as such, but because the only truth it obeys is the truth of negentropic contingency, expressed in what Ruyer understands

as lines of activity. If we wish to examine the complexity of activity—neither the infinitely small nor the sublimely vast—then we need to focus on the cross-scale interactions between different fibres, between the different whorls, from large to small and back, that in their coming together through constraints eventually produce new constraints themselves. To do so, let us take a basic science detour.

The First Law of Thermodynamics postulates the conservation of matter and energy, claiming that neither can be either created or destroyed. While they shift from one form to another, the total amount of matter and energy within the universe will always remain the same. Consequently, the Second Law claims that all energy tends gradually to more diffused and less structured forms. Even though the certainty of the Second Law is *almost* inevitable, it is this *almost* absolute certainty that allows for the emergence of any form that has a degree—even a minimum degree—of structural and operational coherence and consistency. This movement against the grain is what we have already called negentropy. At this moment things take an interesting turn: what assists in the preservation of the Second Law (increase in entropy) or what contributes to its disrespect (negentropy) is *how* different constraints—from different scales as well—are coupled together. How the large-scale constraints of *Ananke* couple with the small-scale constraints of her hand movements as well as with the constraints of the spindle itself determine—as in produce—the very activity of the cosmic whorls, and, in doing so, stick out their tongue to the Second Law. What, however, do constraints do?

Following neuro-anthropologist Terrence Deacon, constraints can be colloquially understood as an external limitation that acts as an imposed factor that reduces options and possibilities.¹⁴ Deacon immediately suggests that we should refrain from referring to constraints as external, since any extrinsic account of constraints assumes that there is always an $n + 1$ dimension that imposes them. Instead, as Deacon claims, it is useful to have in mind the etymology of the term: it comes from the Latin *constrictus*, past participle of *constringere* and standing for ‘that which binds together.’¹⁵ In other words, constraints bring strings together, binding fibres of individuation while *Ananke* spins her spindle. Consequently, one way to understand constraints is as reduced variety that, however, allows for the emergence of novelty. This might seem contradictory, since reduction in variety implies a decrease in attributes. However, as Deacon underlines

when some process is more constrained in some finite variety of values of its parameters or in the number of dimensions in which it can vary, its configurations, states, and paths of change will more often be ‘near’ previous ones in the space of possibilities, even if there is never exact repetition.¹⁶

This is the entry point in understanding constraints, especially in their connection to synapses: much to the satisfaction of philosopher Gilles Deleuze, constraints allow for a difference to repeat itself, forcing itself to differ so as to cross through the fibrous spinning of the spindle. Consequently, by forcing itself to differ, difference generates the capacity to intensify activity, precisely because it generates the need for the creation of new constraints that will regulate its passages. As Deacon explains

it is only because of a restriction or constraint imposed on the release of energy . . . that a change of state can be imposed by one system on another. It is precisely by virtue of what is not enabled, but could otherwise have occurred, that a change can be forced. . . . So, the nature of the constraint . . . indicates which differences can and cannot make a difference in any interaction. This has two complementary consequences. Whenever existing variations are suppressed or otherwise prevented from making a difference in any interaction, they cannot be a source of causal influence; but whenever new constraints are generated, a specific capacity to do work is also generated.¹⁷

Through activity—wild and free from anything external to it—constraints are imposed on one another, folding onto each other, being of the whole while allowing the whole to rearrange itself precisely because a constraint at one level will assist in the emergence of a constraint on another. It is in the manner which constraints fold that a negentropic stubbornness allows for the synaptic passage of an intentionality that is dependent only on its sensitivity to indeterminacy; and that manner, that specific style that each negentropic effort expresses, is what allows for the passing through of an intensity that literally informs the cosmos.

ONE TECHNICITY AWAY

One might wonder what this has to do with architecture proper. The response will not be clear—it is not meant to be clear—but it involves a radical re-evaluation of architecture itself. The reason for such a re-evaluation is not discursive, not confined in the all-too-rigid boundaries of architecture as a discipline. On the contrary, by understanding architecture otherwise, we will be able to get further attuned with *Ananke's* delicate movements. The first and most crucial step is to pluralise the architectural act itself and position it in terms of what philosopher Gilbert Simondon calls technicities. If we aim to avoid reductionism, we should, Simondon advises us, take our study beyond technical objects to the technicity of these objects as a mode of relation between humans and world.¹⁸ In this sense, one can move from architectural

objects to architectural technicities that operate in terms of reticularity: the immediate relation of events and actions that occur in a given structure, which is, however, understood in terms of its potentials for action and has to be studied in affective terms. In his contribution to this volume, Andrej Radman briefly and accurately claims that technicity could be understood as 'evolution by means other than life.' Simply put, technicity deals with how humans relate to and transform their environment through technology and how these relations transform each in turn—humans, technology, and environment.¹⁹ As such, thinking with technicities is a radically immanent way to approach the coupling of different constraints—from anatomical to technological to environmental—without imposing any $n + 1$ dimension; in this regard, architecture—in the very act of architecting—is privileged with an extremely valuable insight into both the folding of constraints and in the negentropic rearrangement of the cosmos.

Let us examine an architectural technicity: the process of tiling a floor. Strangely, this humble example explains, in an astonishing manner, the coupling between constraints. It does so because it responds to the most basic cohomological problem: how do modular quantities, distributed under only local constraints, fit together globally over the manifold that they attempt to cover? Moreover—and this is where any technicity emerges—how might the shape of the manifold be remodelled so that previously ill-fitting modules now cover it perfectly?²⁰ If we assume that there is a limited number of tiles (First Law), the problem is how to cover a floor with given dimensions using that exact number (Second Law). In this sense, 'the cohomology problem is how to find a distribution function by which the tiles will exactly fit the room without being added to or subtracted from.'²¹ The initial condition is always constrained by what the final condition must be, while the boundaries set by the First Law can be satisfied or violated by the Second Law only to give birth to radically unexpected boundary conditions.²² This is what the problem of cohomology—and architecture's capacity to resolve it—teaches us: the cosmos might be materially and energetically closed, but it always remains relationally open. One can always relate the tiles differently (in a different manner, a different style) in order to go against the Second Law while respecting the necessity of the First. In other words, while no matter or energy can be introduced or disappear, there is literally no limit when it comes to the potential differential relations between them: the cosmos has an infinite potential for individuating otherwise precisely because its motor is information. Novelty is always one technicity away.

What I argue is that architecture, in its technicities, harvests differential relations and therefore produces information. Simondon claims that information—far from its unfortunate confusion with data—is a universal process that concerns all being, and is the formula for individuation, the sense according

to which a system individuates.²³ It is a requirement for individuation, but it is never a given thing to be measured in bits and bytes, words or numbers. In simple terms, information is a difference that can make a difference.²⁴ In even simpler terms, it is the potential that can energise a potential: what sort of and how much intensity in the differential relations between matter and energy is needed for a transformation to occur. As such, for Simondon information becomes synonymous with significance, with meaning. Nothing is informational out of birth right, nor does anyone get to be informed in the same way. What matters is neither the emitter, nor the message, but a particular state of the receiving system that needs to be metastable enough in order to make becoming-informed possible. A metastable system ‘is transversed by potentials and powers, or by energy gradients and inherent tendencies,’ so that at any moment ‘the most minute imbalance, or the most fleeting encounter, can be enough to set things in motion’ and lead to a systemic transformation.²⁵ Therefore, as Simondon writes:

information is never relative to a single and homogeneous reality but to two orders in a state of *disparation*: information . . . is never deposited in a form that is able to be given . . . it is the *signification that will emerge when an operation of individuation will discover the dimension according to which two disparate reals can become a system*.²⁶

It is for this reason that Simondon asks us to replace the notion of form with that of information, and to suppose the existence of a system in metastable equilibrium that has the energetic potential to further individuate.²⁷ Systems that are governed by linear causality, systems that are full of comfortable and familiar alethic necessities, are ultra-stable, and, simply put, do not evolve; they merely succumb to entropy. On the contrary, stubborn systems, those that *Ananke* has blessed, are metastable, and, because of that, full of information: no longer supposedly pregnant geometrical forms—those that all architects are familiar with—but *significant* forms that establish a transformative order within a system that has the capacity to transform both itself and its world.²⁸ In a system of stable equilibrium, the tiles match the floor perfectly and therefore make the whole fully homogeneous. In such an exhausted (and exhausting) homogeneity there is no activity precisely because it is not needed: stable systems are systems where there are no necessities; *Ananke* no longer sways and weaves her whorls. It is for this reason that Simondon will claim that evolution has nothing to do with perfection—which is just a fancy word for absolute homogeneity, and therefore a system’s death. For Simondon, evolution is an informational integration, the maintaining of a metastability that settles more and more upon itself and, in doing so,

accumulates potentials for further structural and operational individuations.²⁹ To counter death, to fight the inevitable, Simondon suggests that:

from the *ἀπειρον* [apeiron] before individuation to the *ἀπειρον* after life, from the undetermined of the before to the undetermined of the after, from the first dust to the last dust, an operation is carried out that does not break down into dust; life is in its present, in its resolution, not in its remainder.³⁰

Life is in its negentropic activity, in its present that is informationally meaningful, because it allows for yet another and yet different attempt at tiling the cosmic floor. However, once again we are in for a surprise: something is meaningful only when it is constrained. As biologist Stuart Kauffman writes, ‘constraints are information and information is constraint.’³¹ One of architecture’s greatest lessons is that in order to enhance life, in order to make it meaningful, you need to negentropically constrain it. From gathering around a fire in the middle of the night to erecting skyscrapers or arranging the placement of our everyday furniture, architecture is always a process of cohomological floor tiling. In the architectural coupling of existing constraints, new constraints are introduced that get to become informative—get to be meaningful—by reducing our options (from infinity to infinity minus one) and, ironically, proliferating our affective capacities in doing so. It is with architecture—what Deleuze calls the first Art—that constraints are acting for what they truly are: synapses.³²

OF NORMS AND VALUES

As hinted, one way to understand non-alethic necessities—everything that the alethic constraint of negentropy produces—is as norms and values: established patterns of action and desired outcomes of actions. For Simondon, it is the act itself that produces and is simultaneously produced by norms and values. As he claims:

values are that through which the norms of a system can become the norms of another system through a change of structures; values establish and make possible the transductivity of norms, not as a permanent norm that is nobler than the other—for it would be quite difficult to discover a norm that was already truly given—but as a meaning of the axiomatic of becoming that is conserved from one metastable state to the next.³³

Close to Reed’s argument against the naturalisation of alethic necessities—which is essentialist and therefore moralistic—Simondon examines

individuation only on the principle of individuation itself, developing an ontogenetic account of the acts, norms and values that propel it. To do so, he clarifies that:

[N]orms and values do not exist prior to the system of being in which they appear; they are becoming, instead of appearing in becoming without being part of becoming; there is a historicity of the emergence of values, just as there is a historicity of the constitution of norms. Ethics cannot be recreated based on norms or based on values, no more than the being can be recreated based on the forms and matters to which abstractive analysis reduces the conditions of ontogenesis. Ethics is the requirement according to which there is a significative correlation of norms and values. To grasp ethics in its unity requires that one accompany ontogenesis: ethics is the meaning of individuation, the meaning of the synergy of successive individuations.³⁴

In the coming together of norms and values that the act of any technicity implies, a sheer affective power emerges: a technicity's *potentia* and *potestas*. As philosopher David Scott explains when summarising Simondon's argument, *potentia* is operational and pre-individual power while *potestas* is structural and actualised power.³⁵ In his words, 'structural power (*potestas*) organizes operational power (*potentia*) by structuring it; however, *potentia* is the engendering determination of a determinable *potestas*, structure.'³⁶ As such, Simondon will claim that, similar to the way that *potentia* informs *potestas* and vice versa, norms and value possess no moral degrees. This will allow him to claim that even if there was such thing as an alethic moral constraint, then it would be neither in the norms or the values alone, but in their differential relation—their intensive informational exchange.³⁷

In an informational account of non-alethic necessities, Simondon highlights the importance of what he terms auto-normativity.³⁸ To explain what auto-normativity stands for, Simondon uses the example of a hiker in a forest. Each step a hiker takes when walking in the woods is its own consequence: it is self-constitutive. The act of walking itself does not include any intrinsic directionality, any form of inherent compass that will orient the hiker.³⁹ Likewise, if the hiker gets lost, it is not possible to depend on any familiar and recognisable exterior norm. In other words, for a hiker in the woods there are 'no norms, no set rule of direction, every step, in every direction, is equiprobable and equivalent at once.'⁴⁰ From an infinity of directions, the first step—as the act of hiking-in-the-woods—becomes the norm itself: every step that follows it builds on the relation of the step before it, one after the other leading the hiker to the edge of the forest. This is what Simondon has in mind when he claims that 'the norm is derived from the act. . . . Every act, anomic

from its absolute origin, valorises itself in an autogenous fashion because it continues and rests, consequently, more and more on itself.⁴¹

As such, the norms and values of any technicity—including those architectural ones that dictate how to tile the cosmic floor—are not merely co-determinable; they are fundamentally contingent. What is crucial, however, is how the act itself will allow for the synaptic passage of a mnemonic theme (a memory of the future) that will fold constraints upon constraints and, in doing so, will produce novel necessities that in their informational intensity demand a new rearrangement of the cosmos. Therefore, the act of any technicity in its eventuating power becomes the *a praesenti* principle of individuation, the moment where the given *a posteriori* becomes the giving *a priori*. The mnemonic theme that synaptically crosses through is a virtual theme (in the Deleuzian use of the term) and as such a theme of *potentia*, of operational power. Consequently, what becomes crucial is the act of the step itself: the moment where the cosmos is still undecided as to what it was and what it will be, the moment where *Ananke* blinks for a second. If every step in the dark cosmic forest is equiprobable and equivalent at once, it is because every step is equipotential. It is not yet what it will become when it is put in circuit with a virtual mnemonic theme, with the rhythms of the technicities in the *a praesenti* of their inventive capacities. Nonetheless, what is at stake is the question of how to be placed in contact with this virtual theme and its productive contingencies. How can we approach the synaptic passages of this cosmic futural memory and, out of them, intuit the lines of individuation that they catalyse?

SYNAPTIC PASSAGES

Simondon will claim that what one perceives is neither outlines nor shapes, but thresholds of intensity, pointing out that sensation is simultaneously intensive and differential; sensation is the 'grasping of a direction, not of an object.'⁴² But the question remains of how we can examine the sensation of a direction that does not address the present but rather that which is yet to come. To do so, one can approach it as an issue of synapses. A synapse is a junction, an almost imperceptible gap through which an impulse of intensity passes by. Beyond the modal temptations of placing it in space or time, the synaptic moment (or the synaptic location) is nothing but pure action and, therefore, pure relationality: both a material object and a figure of thought, the complementarity of an actual brain and a virtual mind.⁴³ As such, synapses manage to capture both the passage of an intensity (as a synaptic moment) and the formation of an extensity (as a synaptic location). We would

therefore be correct to describe them as electric thought.⁴⁴ As philosopher Félix Guattari writes:

a-signifying synapses, which are simultaneously irreversibilizing, singularizing, heterogenesizing and necessitating, push us from the world of memories of redundancies embedded in extrinsic coordinates, into Universes of pure intensive iteration, which have no discursive memory since their very existence acts as such.⁴⁵

In other words, synapses can be understood as a constraint: they delimit the field of the possible while reinforcing the virtual.⁴⁶ To understand this, we can follow Guattari in the manner that he connects the function of the synapses with speed. Guattari claims that synapses not only bring together the *Chronic*—as the time of lived experience—and the *Aeonic*—as the time of pre-individual potentials—but they also formulate a bridge that connects molar extensivities with molecular intensities.⁴⁷ It is therefore a matter of a disparate relation between the finite speed of the molar and the infinite speed of the molecular, and how through a synapse the two are bound together, or, true to the Latin etymology of the term, how the two are constrained. As such, synapses are essentially constraints that act as intensity regulators. They determine how much, how fast, and how intense a play of limits can be sustained before crossing the threshold that demands a new differential relation between matter and energy. Therefore, having in mind our previous definition of information, synapses can literally be understood as informational constraints. As Simondon explains:

the regime of information is what defines the degree of individuality; in order to appreciate it, we must establish a rapport between the propagation speed of information and the duration of the act or event to which information is relative.⁴⁸

In the synaptic location the speed of information is determined, while in the synaptic moment the duration of its intensive passage is regulated. In the relation between the two that any technicity catalyses, architecture turns into something much more significant than the simple construction of space: it becomes a synapse in its own right. It allows for both the formation of an extensive space—to be lived, experienced, destroyed, praised, and condemned—and for the very possibility of intuiting a space yet to come, and, consequently, a subject yet to individuate, precisely because architectural technicities allow for a certain degree of indeterminacy. As Simondon writes:

the true progressive perfecting of machines, whereby we could say a machine's degree of technicity is raised, corresponds not to an increase of automatism, but

on the contrary to the fact that the operation of a machine harbours a certain margin of indeterminacy. It is this margin that allows the machine to be sensitive to outside information.⁴⁹

Therefore, architecture transforms information into forms by allowing its technicities to affectively open up to the indeterminacy of a differential influx. This influx of differences is nothing but an influx of intensities; it is the gathering of memorial traits of earlier states of existence. Within architectural technicities one can locate a dynamism, especially regarding the capacity of architecture to invent anything novel. This dynamism entails the reticular synaptic relation between an actual architectural technicity and a virtual architectural product: between the limited number of cosmic tiles and the unlimited ways of placing them next to each other, between *Ananke's* spindle and her seductive swaying. Paraphrasing Simondon, for an architect to invent is to make one's thought function as architecture might function, not according to causality, which is too fragmentary, but 'according to the dynamism of lived functioning, grasped because it is produced, accompanied in its genesis.'⁵⁰

It is on the basis of this lived functioning that Simondon will define invention. For him, invention will appear as the discovery of a way to restore the continuity of action.⁵¹ Take two simple examples: an organist that needs to both play the instrument and turn the score's pages and a rockfall that blocks one's journey. The first entails an intrinsic incompatibility, and the latter an extrinsic incompatibility.⁵² In both cases, the incompatibility is resolved by the invention of a technicity that acts as synapse in constraining formerly distinct sets of actions and binding them together into a novel, continuous dimension. Finger technique and hydraulic winches are both expressions of a synaptic passage that introduces a novel constraint which provokes a qualitative change in an operative system, restoring the compatibility between sensory-motor subsets of action as well as between action and the environment.⁵³ Consequently, Simondon claims that:

invention is the appearance of the extrinsic compatibility between the milieu and the organism and of the intrinsic compatibility between the subsets of action. Detour, instrument crafting, collective association are different ways to restore the intrinsic and extrinsic compatibility. . . . Solutions appear as continuity restitutions allowing the progressivity of operative modes, according to a progression previously invisible in the structure of a given reality.⁵⁴

In the schism between lines of action, a virtual and pre-individual pool of potentials is expressed, making invention a matter of degrees of openness to it. After all, what does that schism consist of but a disparation between

norms and values that invention attempts to resolve. In the moment that an established action (a norm) encounters an obstacle that disrupts its dynamic continuity, then the intention of a desire (a value) that wishes to overcome it emerges. As a matter of fact, more than a wish, it is an issue of a demanding necessity, the Spinozian *conatus* of restoring the active entanglement of the cosmic fibres and furthering individuation according to its own immanent potentials; our primordial goddess reigns in full force.

Therefore, one needs to be affectively sensitive to the indeterminacy that any discontinuity of action implies, since there is simply never one and only solution; there is never one and only manner to constrain action back into its dynamic and differential flow. As such, to be sensitive to indeterminacy means to be able to first of all localise it. Simondon is explicit about this: to receive information (and therefore be susceptible to change) one needs to be able to localise its indeterminacy.⁵⁵ Synapses are crucial in this, not only because they allow for a memory of the past to pass through, but also because they catalyse transduction: the informational exchange of the intensive with the intensive, of a synapse with another synapse. Consequently, a synaptic constraint belongs:

neither to the domain of potential energy nor to the domain of actual energy; it is truly the mediator between these two domains, but it is neither a domain of the accumulation of energy, nor a domain of actualisation: it is a margin of indeterminacy between these two domains, that which brings potential energy to its actualisation. It is during the course of this passage from potential to actual that information comes into play; information is the condition of actualisation.⁵⁶

Following *Ananke* in her indeterminate whorls, the future is allowed to inform the present: a virtual affair of states informing an actual state of affairs. Through synaptic constraints, the certainty of the one is exchanged for the uncertainty of the other, without assigning primacy to any of them.

It is perhaps time to come full circle and think again of our dying star. Is the heat death of the Sun inevitable? If we follow *Ananke's* sways, then we might hesitate to respond. Our best answer would be that the death of the Sun is *almost* inevitable. In this *almost* certainty lies the very reason—and the motivation—of making it yet another day, of constraining the cosmic fibres differently, of intensifying the synaptic passages of a virtual memory in a different manner, of always being one technicity away. After all, every day we rotate around this dying star with the help of small, actual synapses, almost insignificant to the eye. Bizarre as it sounds, of literally everything else we know in the universe—from our Sun to an aeroplane, from our brains to our cars—a computer chip is what can conduct the most energy flowing through a gram of matter per second.⁵⁷ The narrower the synaptic passage, the denser

the folds between constraints, the greater the differential between matter and energy; consequently, the more potential for a difference to make a difference, for an informational rearrangement of the cosmos. If we trust *Ananke*, then we can only keep on moving our steps, one after the other, building upon themselves in the cosmic forest. In other words, there can never be a certain past and an uncertain future (nor the other way around), but rather a constant synaptic exchange between indeterminate constraints that belong to the present of activity itself. The memory of that ongoing activity cuts both ways. It plunges toward the past, questioning any norm; simultaneously, it takes a leap to the future, enunciating values that will literally change the cosmos. Thankfully, how we bring them together will always be up to us, escaping any alethic burden besides the truth of our negentropic determination.

NOTES

1. Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine* (Cambridge, MA: The MIT Press, 2019).

2. See also Radman, 'Allagmatics of Architecture: From Generic Structures to Genetic Operations (and Back),' and, with another perspective on Simondon, information, and *Ananke*, Woodward, 'Information and Alterity: From Probability to Plasticity,' in this volume.

3. Patricia Reed, 'The Valuation of Necessity,' in *Block Chains and Cultural Padlocks*, edited by Jesse McKee (Vancouver: 221A, 2021), 124.

4. *Ibid*; emphasis in original.

5. *Ibid*.

6. *Ibid*, 132.

7. Joel White, 'Analogy of a Dying Star: Entropic Formness,' *Pli* 32. See also White, 'Outline to an Architectonics of Thermodynamics: Life's Entropic Indeterminacy' in this volume.

8. *Ibid*, 94.

9. *Ibid*, 112; emphasis in original.

10. Plato, *Republic*, translated by Allan Bloom (Philadelphia, PA: Basic Books, 1968), 299–300.

11. Raymond Ruyer, *Neofinalism*, translated by Alyosha Edlebi (Minneapolis: University of Minnesota Press, 2016), 142.

12. *Ibid*, 149.

13. *Ibid*, 152.

14. Terrence Deacon, *Incomplete Nature: How Mind Emerged from Matter* (New York: W.W. Norton & Co, 2012), 192.

15. *Ibid*, 193.

16. *Ibid*, 195.

17. *Ibid*, 198.

18. Gilbert Simondon, *On the Mode of Existence of Technical Objects*, translated by Cecile Malaspina and John Rogove (Minneapolis: Univocal, 2017), 162.

19. Stavros Kousoulas, *Architectural Technicities: A Foray into Larval Space* (London: Routledge, 2022).

20. Peter N. Kugler and Robert E. Shaw, 'Symmetry and Symmetry-Breaking in Thermodynamic and Epistemic Engines: A Coupling of First and Second Laws,' in *Synergetics of Cognition*, edited by Hermann Haken and Michael Stadler (Berlin: Springer, 1990), 324.

21. *Ibid*, 325.

22. *Ibid*.

23. Gilbert Simondon, *Individuation in Light of Notions of Forms and Information*, translated by Taylor Adkins (Minneapolis: University of Minnesota Press, 2020), 12.

24. Gregory Bateson, *Steps to and Ecology of Mind* (New York: Random House, 1972), 453.

25. Steven Shaviro, *Discognition* (London: Repeater, 2016), 197.

26. Simondon, *Individuation*, 11; emphasis in original.

27. *Ibid*, 16.

28. *Ibid*.

29. *Ibid*, 237.

30. *Ibid*; emphasis in original.

31. Deacon, *Incomplete Nature*, 392.

32. Gilles Deleuze and Félix Guattari, *What Is Philosophy?*, translated by Hugh Tomlinson and Graham Burchell (New York: Columbia University Press, 1994), 186.

33. Simondon, *Individuation*, 375.

34. *Ibid*, 377.

35. David Scott, 'How Do We Recognise Deleuze and Simondon Are Spinozists?,' *Deleuze Studies*, 11, no. 4 (2017): 569.

36. *Ibid*.

37. Simondon, *Individuation*, 377.

38. Scott, 'Spinozists,' 571.

39. *Ibid*.

40. *Ibid*.

41. Gilbert Simondon, *Sur la Technique: 1953–1983* (Paris: Presse Universitaires de France, 2014), cited in Scott, 'Spinozists,' 571.

42. Simondon, *Individuation*, 287.

43. Hanjo Berressem, 'Degrees of Freedom: Félix Guattari's Schizoanalytic Cartographies,' in *Schizoanalysis and Ecosophy*, edited by Constantin V. Boundas (London: Bloomsbury, 2017), 142.

44. *Ibid*, 142.

45. Félix Guattari, *Schizoanalytic Cartographies*, translated by Andrew Goffey (London: Bloomsbury, 2013), 178.

46. *Ibid*, 165.

47. *Ibid*, 177.

48. *Ibid*, 211.

49. Simondon, *On the Mode of Existence*, 17.

50. Ibid, 151.
51. Emilien Dereclenne, 'Simondon and Enaction: The Articulation of Life, Subjectivity, and Technics,' *Adaptive Behaviour*, 29, no. 5 (2021): 453.
52. Ibid.
53. Ibid.
54. Gilbert Simondon, *Imagination et invention* (Chatou, France: La Transparence, 2008), 139, cited in Dereclenne, 'Simondon and Enaction,' 453.
55. Simondon, *On the Mode of Existence*, 153.
56. Ibid, 155.
57. Kevin Kelly, *What Technology Wants* (New York: Viking, 2010), 59.