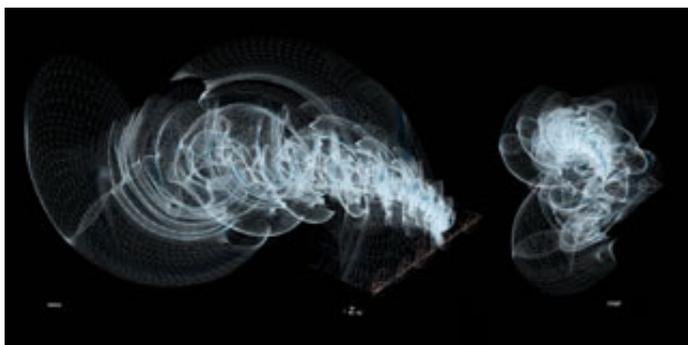


Karl S. Chu: **Genetic Space**

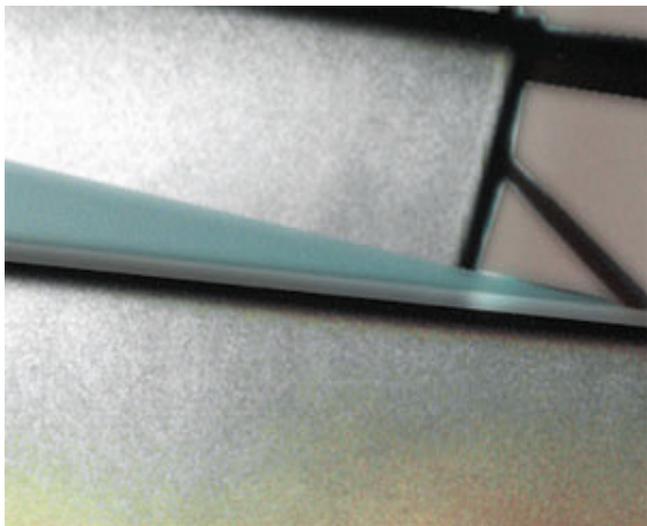
Hourglass of the Demiurge

"Music is the hidden arithmetical exercise of the soul unconscious that it is calculating."

Leibniz



The twentieth century is the century of convergence. No other century has witnessed the development and profusion of new ideas as the twentieth century, and no other century has experienced the range and scope of events that transpired globally to the extent as this century. Various historical formations and discoveries, unleashed by the Enlightenment, have profoundly changed and transformed the course of human civilization and lead to the maturation of the idea of modernity in this century. With two years left to the start of the next millennium, we are experiencing the effects of modernity that have channeled powerful innovations into the dawn of a new era that could lead, potentially, beyond modernity. More than anything, it signals one of the major premises of the enlightenment to radicalize the substance of nature through the substance of reason and, thereby, altering the modality of the cultural universe of humanity into a genuine cosmopolitical concept. The synthesis of energy, matter and information into a three-parameter system of explanation has created conditions that allow us to think the unthinkable and extend our imagination to the limits of the conceivable. Modernity, from a metaphysical standpoint, brings to light the concept of a transcendental reason that aims to clarify the conditions of possibility for reason as an apriori given. As a consequence, it paved the way for a systemic constitution of a cosmic concept of reason that partakes in the arrival of alien intelligence and one that seems destined to project itself into an ontological domain of its own making. If modernity is an unfinished project, as claimed by some, its program is, nonetheless, being transformed into a cosmogenetic principle where synthesis is the pre-eminent outcome of a return to a second nature, i.e., a transcendent concept of nature. Even though the transcendental dialectic of critical reason is directed towards the timeless unity of the unconditioned, the genitive logic implicit within cosmic reason, itself a form of recursive self-propelling intelligence, appears to be animated by a projective force capable of engendering and pro-creating in the evolutionary sense of the term.



At this juncture, an authentic dimension of machinic virtuality has emerged along with a new conception of genetic space that is poised to erupt out of its conceptual nascency. Virtuality, in formal terms, defines the domain of the set of possible relations contained within the structure of a given condition. Genetic space, by extension, is the domain of the set of possible worlds generated and mitigated by the machinic phylum over time. This is the zone of emission radiating out from the decompression of reality, a supercritical explosion of genetic algorithms latent with the capacity to exfoliate out into genetic space. This is not a passive receptacle but an active evolutionary space endowed with dynamical properties and behavior of the epigenetic landscape. Not since the times of ancient civilizations when the real virtuality of myth permeated all levels of human life are we confronted with the possibility of being thrust into a twilight zone where the sublime and the fantastic co-mingle in an electronically induced ethereal space. According to Kant, space and time are universal forms (manifolds) of intuition, or conception, of phenomena and therefore as a priori or inherent in human reason. Consequently, any modification of our ideas of space and time was not only unnecessary but 'unthinkable.' Unthinkable as it may seem, profound change in world views or paradigm shifts almost always accompanies themselves with a re-evaluation of the epistemology of space and time. The notion of genetic space extends beyond our intuition of Euclidean space through a projection into higher dimensions of hyperspace. It is a consequence of the cone of bifurcation splitting off into two stratas of life-world relations, the physical and the machinic sphere of virtuality forming a topology of an hourglass. At the level of formal implementation, it is an artificial ecology: a convergence of biology and logic in the form of a cosmographical glass nourished by the digital monad. This machinic concept of genesis is not merely a doubling or a simulation of biomimesis but an active, albeit, creative modeling of genetic structures instantiated by evolutionary systems. These are generative systems endowed with self-modifying and self-organizing capacities, and their potential for unfolding into object-structures is already implicit or present within the universe of possible states of affairs contained within formally induced sets of dynamic configurations. As such, genetic space is the logical outcome of the convergence of a cosmic concept of reason and a transcendent concept of nature, thereby, pointing to a creative principle that is demiurgic in spirit.

Early signals and radiation emitted from this phylum has already begun

to tunnel out to form a pregnancy, the formation of a cloud of virtuality. Its metaphysical status, however, remains concealed, and, unfortunately, it is liable to be confused with the populist notion of virtual reality. The dark side of this quasi techno-romantic exuberance of virtual reality as cyberspace, referred to negatively as the "Great Aquarium of the Possibles" by Gilles Chatelet, is about to become, if remains unchecked, the zone where the ghosts of departed quantities and qualities released from the repressed energy of Capital find a strange form of communion in and through its own delirium amidst the emerging ocean of binary codes. However, the ontological supposition of genetic space is different in that it is essentially an extension of a cosmic conception of reason, and, as such, it is the disclosure of infinite potentiality for differentiation and individuation contained within reality itself. Therefore, its metaphysical status is radically different from the conception of cyberspace as augmented space, a mimetic, albeit, interactive simulation and transfusion of the universe of images that are already in currency along with an hyper-infectious desire for immersion into an hallucinogenic landscape. Genetic space, on the contrary, is a tapping into the creative logic of evolutionary systems where the possibility for recursive generation of intelligible structures, as expressions of machinic orality, is folded into complex variables and functions. As such, it is an entry level modeling of a possible world that is still in its embryonic state. It will eventually become obvious that this is a prelude to a more profound genitive logic of modal space engendered by the now obscure will of the demiurge, no longer the god of the cosmos as in Plato's *Timaeus*, but the autopoietic will that underlies all emergent phenomena in the universe.

It is not apparent that the world has a modal structure to it. It may seem inconsequential in relation to the brute facts of physical existence. Counterfactual events pertaining to possible histories and possible futures are deemed fictional and, therefore, are merely construed as figments of the imagination. However, from the standpoint of the metaphysics of modality, the possible is a function of possibility and necessity implicit within any given set of correlations before it is actualized as a specific branch among a myriad number of possible branches. At the deepest level, modality is a property of the universe itself. Leibniz had already, in the seventeenth century, speculated on the possible existence of other worlds. In doing so, he was led to the idea that this is the best of all possible worlds due to it being endowed with the principle of sufficient reason. Based on this premise, Leibniz believed in the absolute transparency of all predication derived from reason. Correspondingly, he proposed the idea for an abstract machine, a universal calculus that has become the precursor to the modern theory of combinatorics. In his 'De Arte Combinatoria,' he invented a system of 'universal writing' or 'universal polygraphy' based on the 'alphabet of human thought.' This machine, in conceptual terms, is a universal computing system capable of calculating all possible modalities of signification, and, presumably, of simulation, as long as they are formulated in accordance to the laws of reason. This notion of a universal combinatorial system that can generate possible solutions or structures, and, by extension, possible worlds, is to find concrete incarnation only in the early middle of the twentieth century in the form of a Universal Turing Machine.

Leibniz's faith in the possibility of developing such a machine is reflected, two centuries later, in David Hilbert's prophetic call, made at

the Second International Congress of Mathematics held in Paris in 1900, to axiomatize and complete all of mathematics as a formalist project. As it is now well known, Godel's response to Hilbert's call not only shattered his dream of ever completing the field of mathematics but also showed the impossibility of proving the completeness and consistency of any relatively complex axiomatic systems. Since then, various ideas have been formulated regarding the limits of computability and solvability of functions as well as the existence of upper bounds to our capacity for deductive reasoning. There are mathematical truths that are true for no reason, claimed Chaitin! He has shown that no amount of deductive reasoning will ever arrive at certain mathematical truths. The paragon of deductive systems such as arithmetic has proven by Chaitin to be random without structure or pattern, and, therefore, reason alone is incapable of arriving at certain mathematical truths. Reason can fathom only where there is structure or pattern in any given phenomena or system. The only recourse, according to Chaitin, is to resort to a view of mathematics as an experimental science not unlike physics. A few decades earlier, Stanislaw Ulam also speculated on the possibility of generating a self-organizing mathematics played out on computing machines to derive "novel abstract mathematical schemata." At a time when evolutionary basis of computations are being conceived by him and John Von Newman, Ulam coined terms such as "pazonomy" to refer to the combinatorics of contesting reactions, and "auxology" for a yet-to-be developed theory of growth and organization including the "growing tree of mathematics itself."

Notwithstanding Voltaire's caricature of Leibniz's notion of this world being the best of all possible worlds, the twentieth century has rediscovered the germs of a Leibnizian metaphysics at a time when the intellectual climate is still saturated with the cloud of suspicion for metaphysics. Nevertheless, we have arrived at the dawn of a new world order that would profoundly change and eventually alter the conceptual and physical landscape of existence itself.

The topology of the emerging order is an "hourglass". It is composed of two inverted funnels involuted at the apex to propagate information back into each other. Since the two funnels are formally nested within each other, there is an inframince (infrathin) separating every infrastructure, the plane of content, from a hyperstructure, the plane of expression. Inframince is a term coined by Duchamp to designate a subtle phenomenological differential to that which almost appears not to have an indiscernible difference. It is the interval or delay between cause and effect where reciprocal forms of interactive transactions seems instantaneous. Somewhat analogous to the two floors of the Baroque house described by Deleuze in his book 'The Fold', the top half correspond to the emerging sphere of virtuality projected by the generative mechanism of the lower cone. Its destiny is to exfoliate out into the expanse of the hypersphere while evolving a complex web of epigenetic landscapes to form the multi-layered fluxstratums of virtual ecologies over time. The bottom cone is the abstract machine of the physical world acting as the progenitor of chromogenic patterns that permeate throughout the virtual cone of the upper half. There is a reciprocal effectuation of the two cones with each other through metronomic secretions composed of affective intensities dissipated throughout the metabolic web of each cone. Autocatalytic simulations of autonomous agents would be generated by and for agencies that have their own fluctuating economy of homeorhesis. Event horizons, in

this context, are boundary conditions governed by the logic of computability, transmissibility and translatability among information-theoretic systems. The mechanism that allows for this channeling out into this conic sphere of virtuality is none other than the Universal Turing Machine (UTM), the modern equivalent of Prometheus's gift of fire and the soul of a new breed of bio-mechanical species evolving at an exponential rate within the machinic phylum of the lower cone. Duchamp already had premonitions of a somewhat homologous structure expressed through his Large Glass. The division of the Large Glass into upper and lower levels is symbolic of the slippage of the finite into the transfinite induced by desiring machines. Whereas the Large Glass is a semiotic machine that unfolds the alchemy of desire through a transmutation of allegories, the genetic space of the hourglass is a spectral economy instantiated by what may ultimately prove to be the obscure logic of the demiurge, an autopoietic system dynamically evolving and synthesizing into an alchemy of chronogeometry.

Architecture has, since time immemorial, privileged space over time. The history of architectural forms testifies to the history of spatial morphologies rather than temporal morphologies. The normative conception and practice of architecture is determined largely by classical metaphysics: a mechanistic paradigm that is universal, deterministic, timeless and objective without any reference to the observer. Everything is decomposable through formal reduction, and axiomatic systems are deemed unequivocally decidable, consistent and complete without any inherent paradox whatsoever. "Absolute, true and mathematical time, of itself, and from its own nature, flows equably without any relation to anything external, " proclaimed Newton. Time and space are conceptual tools to measure the intervals of change, and, therefore, are not devoid of metaphysics. Time, like space, is normally construed as continuous. According to John Wheeler, time, among all concepts, has shown the greatest resistance to being dethroned from ideal continuum to the world of the discrete, of information, of bits. In his paper "It From Bit," Wheeler remarked that reality, at bottom, has an immaterial source and explanation that is information-theoretic in origin. And that of all obstacles to a thoroughly penetrating account of existence, none looms up more dismayingly than 'time,' exclaimed Wheeler. "Explain time? Not without explaining existence. Explain existence? Not without explaining time."

The sphere of machinic virtuality is similar to the plane of consistency, in Deleuze's terms, where the permutations of chromomorphic arrangements oscillate, develop and evolve in higher dimensional phase space. The passage from the possible to the actual occurs within virtual time and is determined by the convergence of intensities within the virtual matrix of infrastructures that reside within nested stratas of the mechanosphere. The effects of this transition will bring about a reconfiguration of the relationships between man, nature and machine within the context of a digital cosmology based on information. The evolution from small to large has already in a few decades forced on the computer a structure reminiscent of biology by reason of its segregation of different activities into distinct organs. At the most basic level, the technological embodiment of a UTM, the computer, is a virtual time machine. It produces and processes one of the most abstract of substances, the discrete logic of bits. It has increasingly come to assert itself as a primitive form of bio-mechanical species with a potential temporal dynamics of its own.

Virtual time is the time of indeterminate synchronicity. Its oscillation can be modulated and channeled to form the internal constitution of power time. Power time, in turn, is propelled by currents of information flow that becomes the inner pulse of emergent computations. As complex as is the coordination of bio-ecologic time with abstract time, virtual time could operate within a cybernetic framework of adaptive modulation in relation to external stimuli. Virtual time is engendered by machinic heterogenesis, its pulse determined by the relative flux of differential iterations and phase transitions within machinic arrangements. The diversity of temporal rhythms that inhabit ecologic time could be mirrored by the diversity of machinic rhythms that inhabit the machinic phylum. This heterogeneous influx of differential oscillations, each with a relative degree of autonomy and adaptability, would have to be mediated through a chronodynamics of complex adaptive systems. The interactive coordination of multiple temporal dynamics based on massive non-linear processing of information could trigger bifurcations of space-time topologies and hyperstructures. Probability measures and statistical formations could, in turn, modulate the geometro-dynamical systems of the mechanosphere.

From the standpoint of a phenomenology of internal time consciousness, existential time is experienced by a human subject as the emergent feeling engendered by the complex dynamics of a chronobiologic time. It is in consonance with the dynamic pulse of ecologic time within which the subject is embedded. Tension arises when existential time is subjected to the external modulations of abstract time which is in dissonance with the subject's experience of duration as conceived by Bergson. Abstract time, therefore, is an instrument of the politics of time invested with the authority to arrange and organize human actions. It remains a question whether virtual time can adapt and modulate to achieve and sustain a chronodynamics of dissonant harmony in order to do justice to the complexity of collective rhythmicity within the socius of a chromorphic arrangement.

The linkage of the awkward adjustments of human actions to the demands of power time raises the question of "just time" that arises at the intersection of subjectivation and temporality. If potential time is construed as the pure force of time shaking off its subordination to the world's movement provoking aberrant movements of all kinds, as suggested by Eric Alliez, then, virtual time and its determination as power time could also converge into potential time, creating a potentiality for the differentiation of power into diverse modalities of being. Such a diffusion of temporal orders could facilitate toward the emergence of a new world of architecture permeated by differential harmonics and anharmonic vibrations. The potential effect is the likelihood of engendering a kaleidoscopic orchestrations of multiple space-time topologies projected as the gift of music onto the ever-changing fluxstratums of reality: the collective body of self-generated organs of a self-synthesized information system within demiurgic space. demiurgic space of the hourglass is space opened up by the absence of myth. "Absence of myth is a myth; it is the coldest and truest myth," remarked Georges Bataille. It discloses a reality devoid of foundations and is a consequence of reason becoming conscious of its own insufficiency in addressing the fundamental question "Why is there something rather than nothing?" Myth rises out of this opacity to exfoliate itself as its veil. As a mode of real virtuality it infuses a demiurgic presence into the brute facts of existence. Absence of myth

is the dissolution of veiling, of the impossibility of masking in the face of pure absence. If there is any myth induced by the absence of myth, that myth lies suspended between myth of the possible and the impossible. It's destiny is to oscillate between these two poles and, in doing so, the anonymity of the demiurge discloses, inadvertently, insurmountable dimensions that exist between myth and the other of myth, its metaphysical other that resists encapsulation, encryption, and embodiment.

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