Enactive Realism. A First Look at a New Theoretical Synthesis

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Cognitive activity is rooted in reality, but at the same time represents the necessary means whereby reality can embody itself in an objective way: i.e., according to an in-depth nesting process and a surface unfolding of operational meaning. In this sense, the objectivity of reality is also proportionate to the autonomy reached by cognitive processes.

Within this conceptual framework, reference procedures thus appear as related to the modalities providing the successful constitution of the channel, of the actual link between operations of vision and thought. Such procedures ensure not only a "regimentation" or an adequate replica, but, on the contrary, the real constitution of a cognitive autonomy in accordance with the truth. A method thus emerges which is simultaneously project, *telos* and regulating activity: a code which becomes a process, positing itself as the foundation of a constantly renewed synthesis between function and meaning. In this sense, reference procedures act as a guide, mirror and, canalization for primary information flows and involved selective forces. They also constitute precise support for the operations which "imprison" meaning and "inscribe" the "file" considered as an autonomous generating system. In this way, they offer themselves as the actual instruments for the constant renewal of the code, for the invention and the actual articulation of an ever new incompressibility. Hence the possible definition of new axiomatic systems, new measure spaces, the real displaying of processes of continuous reorganization at the semantic level. Indeed, it is only through a complete, first-order "reduction" and a consequent non-standard second-order analysis that new incompressibility will manifest itself. Therefore, the reference procedures appear to be related to a process of multiplication of minds, as well as to a process of unification of meanings which finally emerges as a vision via principles. Here also the possibility emerges of a connection between things that are seen and those that are unseen, between visual recognition of objects and thought concerning their secret interconnections. Hence, for instance, according to Boccioni: "*la traduzione in forme*

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plastiche dei piani atmosferici che legano ed intersecano le cose". In other words, this is the connection between the successive opening of the eyes of the mind and the metamorphoses of meaning, a meaning which is progressively enclosed within generative thinking and manages to express itself completely through the body's intelligence.

This functional analysis reveals even more clearly, if possible, the precise awareness that, at the level of a cognitive system, in addition to processes of rational perception (categorial intuition), we also face specific ongoing processes of semantic categorization. It is exactly when such processes unfold in a coherent and harmonious way that the "I" not only manages to emerge as an observation system but is also molded by the simultaneous display of the structures of intentionality. Through the intentional vision, I comes to sense the Other's thought-process emerging at the level of its interiority. The drawing thus outlined, however, is meant for the Other, for the Other's autonomy, for its emerging as objectivity and action. This enables me to think of the autonomy of the Nature that "lives" (within) me.

At the level of intuition-based categorization processes, the file is "selected" from the ongoing morphogenesis. When the original meaning manages to express new lymph through a renewed production of forms, the self-inscribing file might express its unification potentialities through the successive individuation of concepts which, however, are selected and molded at an intuitive level. Hence the possibility of an actual "inscription" to the same extent as the morphogenesis, but also the realization of a reduction process, the very laying down of an original creativity within a mono-dimensional and dynamic framework. It is exactly when the reduction is carried out, though, that the procedures of reflection, the identification of limits and completion can be performed on the basis of the constant support to the *telos* activity, of the primary regulation activities proper to the organism taken as ongoing projectuality.

The unification procedures inherent in the nesting process, effected in accordance with precise conceptual constraints depending on the self-inscription of the file, then fit, finding their foundation, in attractors which operate at the level of specific correlation-patterns and organic instrument-systems of measure. These gradually grow up and multiply, giving rise to natural self-organizing modules, activated by an inner-code, which materialise over a period of time as based on precise measure operations encoded in a specific project. The result is an autonomous (and selective) production of forms modulated according to concepts and connected through the *telos,* thereby becoming vision via principles, a production able to articulate according to a specific and unifying intelligence. There thus emerges a "body" acting in conjunction with its intelligence:

> "my" body which at the same time manages to transcend itself and blend with itself in the Other. Hence the very possibility of the "presentation" as *Forma formata* of an original meaning which will simultaneously blend with itself and sub-divide itself in time. While the eyes of the mind manage to observe a *Natura naturata* populated by observers, the brain with its measure operations and net connections manages to "think", moving beyond itself into the Other, a *Forma formata* interwoven by works.

In a context of this kind, the forms of intuition (as well as, on the other hand, the categorial apparatus) cannot be considered impermeable to the conditions of external

evolution. In the meantime, it appears increasingly necessary to recognize that the Darwinian external selection will co-exist with an internal selection connected to the successive deep-level unfolding of meaning. It then becomes mandatory to refer back to the procedures of categorial intuition as postulated by Husserl, but also to anchor these procedures to a particular conception of the relation between organism and environment which is both dialectical and co-evolutive. The reference procedures, like those of simulation, are never neutral, and never regard the human realm alone, but are able to act as a guide, mirror, and canalization for the primary information fluxes which gradually inscribe themselves in the form of codices, constraints, and modules-forms in action: natural simulation modules which govern, at the basic level, the structuration processes articulating at the level of the living (and cognitive) organism. In this sense, the operational logic of intellect and simulation must also be considered in combination with a deeper logical level concerning the articulation of life itself, also requiring us to map out their co-operative and functional interdependence. The procedures of reference, far from being external to reality, lead, on the basis of an ongoing interdependence with the evolutionary paths in action, to the progressive (inner) constitution of individuals who finally act as autonomous entities and posit themselves as the real source of neural creativity (at the level of knowledge construction). The reference procedures thus give rise to a complex dialectical exchange between action, thought, and meaning, producing, in particular, an evaluation and exploration of the contents and limits of the original information-fluxes. This exchange leads to new forms of autonomy, and the extension and recovery of the conditions of primitive creativity: hence the primary source of that continuous "addition" of new nuclei of creativity characterising the logic of the living (being) which Bergson speaks of.

True invariance, life, can exist only within the framework of ongoing autonomous morphogenesis and vice versa. Concepts would thus appear to be linked to the invention and a continuous activity of selection and "anchorage" realized on semantic grounds. It is the work of invention and generation (in invariance), linked with the "rooting" of meaning, which determines the evolution, the leaps and punctuated equilibria, the conditions related to the unfolding of new modalities of invariance, an invariance which is never simple repetition and which springs on each occasion through deep-level processes of renewal and recovery. The selection perpetrated by meaning reveals its autonomy above all in its underpinning, in an objective way, the ongoing choice of these new modalities. As such it is not, then, concerned only with the game between the possible and the actual (F. Jacob), offering itself as a simple channel for pure chance, but with providing a channel for the inscription of the file in the *humus* of meaning, to prepare the necessary conditions for continuous renewal and recovery of original creativity. In effect, it is this autonomy in inventing new modules of incompressibility which determines the emergence of new (and true) creativity, which also takes place through the "narration" of the effected construction. *Pace* Kant, sensibility is not a simple interface between absolute chance and an invariant intellectual order. In this sense, the reference procedures, if successful, are able to modulate canalization and create the basis for the appearance of new frames of incompressibility through morphogenesis. This is not a question of discovering

and exploring (according, for instance, to Putnam's conception) new "territories", but of offering ourselves as the matrix and arch through which they can spring autonomously in accordance with ever-increasing levels of complexity. There is no casual autonomous process already in existence, and no possible selection and synthesis activity via a possible "remnant" through reference procedures considered as a form of simple regimentation. These procedures are in actual fact functional to the construction and irruption of new incompressibility: meaning considered as the promoter of *Forma formans,* offers the possibility of creating a holistic anchorage, and is exactly what allows the categorial apparatus to emerge and act according to a coherent "arborization". In this way a time of invention can be assured, but not a time of repetition: a time characterized by specific processes of renewal and recovery which continuously reveal themselves as possible in proportion to the effective real-ization of the "work". What determines the ongoing selection each time (at the level of the primary informational fluxes) is the new incompressibility that arises. This requires that the reference procedures posit themselves as arch between the two selections: between invariance on the one hand, and autonomous morphogenesis on the other. In other words, they are only able to nurture new incompressibility where there exists a process of nesting of pure virtuality's original space. The important aspect is not, then, the remnant *in itself* but the successful "narration". It is effective inscription giving rise to new incompressibility which necessarily bypasses me. I will, then, ultimately be able to observe a new incompressibility which reveals itself as the ongoing fusion of emergent nuclei of creativity within the unity of an operant signification. The new invention which is born then shapes and opens the (new) eyes of the mind: I see as a mind because new meaning is able to articulate and take root through me (and only proportionately as this occurs).

I must transform myself into an arch and then offer the arch (and myself) to other through multiplication. I will thus be able to fulfill myself as a form of new creativity and achieved autonomy. This is the means to step outside myself while affirming my objectivity as creator-artificer: the donation of the drawing-thought to the other, an assimilation of the other for the other, to make it, too, a creator again in his coming out of self-abandonment. It is this that will then reveal itself as true possession, to merge with the inner broadening of the basis of creativity. I neither capture nor order nor replicate simply: I simulate to allow the advent of a new life, but to do this I must pass through the arch of creation and "disincarnation", effecting the link between the two ongoing selections and managing to close the circle by opening and laying down myself as a grid (Tiziano, The Martyrdom of St. Lawrence, Venice).

As a collating mechanism I must give voice to the two selection-processes (at the two different levels of vision (the mind) and revisable thought (the brain)), becoming, in my turn, a creator and a source of life and coagulum for the Other and in the Other, at the same time as the Other posits itself as a source of meaning and truth for me. Hence the need to shape-create the drawing and offer it up for the realization-thought process of the other. I offer up the vision of myself (which is ultimately the result of a self-organizing process) for the thought-process of the other: for the measure operations effected by the other, to allow it. To posit itself again as a creative and autonomous being.

As W. Dean correctly remarks, Tennenbaum's Theorem can be understood to illustrate that: "although in classical mathematics we can demonstrate that non-standard models of arithmetic exist, the theorem intervenes to show that we can never hope to go beyond linguistic descriptions such as 'let $\mathcal{M}$ be a model of T_0' so as to characterize the structure of $\mathcal{M}$ explicitly".[1] Actually, given that $\mathcal{M}$ is countable we can characterize the substructure $\langle M, < M \rangle$ constructively up to isomorphism as the order type $\omega + (\omega * +\omega) \cdot \eta$.

However: "the fact that we have still gone on to develop a rich theory of such structures and their interrelationships is testament to the fact that the development of model theory often does not require us to fully extensionalize descriptions of models which we have introduced by such means".[2] In fact, we can easily realize that our ability to refer to non-standard models must be understood as mediated by descriptions which are not only indefinite but which we know can never be made fully constructive. In other words, we are obliged to adopt a different understanding of 'model' inspired by Constructivism. Hence a possible confluence, at first, of the computationalist view with Putnam's 'nonrealist' semantics, with the attempt, that is to say, to identify the reference of an expression with its sense understood as an appropriate type of verification procedure. 'Objects' in constructive mathematics are *given through descriptions*. Those descriptions do not have to be mysteriously attached to those objects by some non-natural process … Rather the possibility of proving that a certain construction (the 'sense', so to speak, of the description of the model) has certain constructive properties is what is asserted and all that is asserted by saying the model 'exists'. In short, *reference is given through sense and sense is given through verification procedures and not truth conditions.*[3] (Putnam, 1980, p. 479) (emphasis original). According to the theoretical perspective proposed here, let us remember that according to Benacerraf any set of objects with the ω-type ordering can be a model for arithmetic. However, next to this property we must also consider other important properties: actually, a basic feature of natural numbers is given by the fact that humans normally utilize them to count. Specifically we learn what natural numbers are while learning to count. But learning in the case of an autonomous agent (the Minotaur) is necessarily linked to the realization of an embodiment, an embodiment that, in turn, presupposes the encounter of the Minotaur with Ariadne as well as the full unfolding of his imagination. The agent must also take into account the use and the conditions of the exercise concerning his very self-identification: the properties relative to ω-ordering alone are not enough to identify the real exercise on the mathematics. In other words, the model is intended (and exists) when it adequately reflects our intuitions. "We learn what are natural numbers while learning to count. Consequently, we argue that an intended model for arithmetic should be such that one can perform basic arithmetical operations (addition and multiplication) on elements of this model (numbers from this model)".[4]

In this sense the model does not present itself simply as a construction characterized by certain properties: the model must also allow specific operations to be performed on its own elements and must have a privileged relationship with the use of certain abilities as operated by the autonomous agent at the level of the embodiment process at play. It is only if I prove myself capable of operating successfully on

elements of the model that I come to understand: i.e. to exercise a specific skill such as that, for example, relative to counting. It is in this way that Ariadne can illuminate and that the construction of I, in its turn, can be pursued.

We are far beyond Putnam: the model not only exists because it is identified through abstract structures, constructive properties and verification procedures, but also because it refers to the conditions proper to an actual embodiment of which, for instance, a specific learning process is an integral part. Thus, at the level of the intended model for arithmetic we have the convergence of recursivity, first-order induction and ω-type ordering (Tennenbaum theorem): the intended model necessarily takes shape in reference to specific recursive processes, to what is, from a general point of view, the landscape of Reflexivity. A convergence, in any case, that takes place in the context of the detachment operated by the Minotaur. What happens, however, when we enter the arena of metamorphosis in all its breadth? When, that is to say, we take into account the entire journey of the Minotaur. In such a case, as Picasso clearly shows in the painting "The flute of Pan" (Museum Picasso, Paris), a further element enters the scene: the score relating to the inheritance of Pan, i.e. the original set of the eigenvalues on the carpet. We are now in the realm of non-standard models where the reference to the ordering is to vary as shown by Henkin in 1950. We will no longer only be faced with ω-ordering but, for instance, also with the order type $\omega + (\omega * + \omega) \cdot \eta$ and so on. The imagination at work at the level of the embodiment (as, indeed, shown by Picasso in his painting) is guided by eigenvalues and not by eigenforms. Let's imagine now to recover, in the footsteps of Carsetti (1989),[5] a suitable model for a given process of metamorphosis and self-organization. Having to refer, initially, to a set of eigenvalues, it will be necessary to refer not only to recursive processes and standard models but also to both non-standard models and simulation and invention procedures. Hence the entry into the scene of a new theoretical perspective: the perspective related to set-theoretic Relativism. Now, we must adopt, as Skolem does, a different understanding of 'model' inspired by Constructivism and set-theoretic Relativism. The object-construction to which Putnam refers is now replaced by a process of self-organization, by the very decline of a metamorphosis process such as that so well illustrated by Picasso or Ovid. We are faced with a dialectic at play between imagination and invention and not only with the presence of specific relations between objects. In the light of this new perspective, we should maintain that to find out which algorithms really correspond to the references relative to some specific constructive operations it should mean for the autonomous agent that undergoes the metamorphosis to be able to make Nature speak (constructing in the right way the oracle as a new Oedipus) in order to come to feel the solution of the problem in its coming to flow at the level of his own veins. In this sense, only an effective renewed embodiment can, therefore, tell us what the algorithms in question should be. It is the new life and with it the new arising mathematics that will come to condition the self-organizing fibers of the Minotaur along the course of his own evolution starting from the actual giving of the irruption as it arises from the sacrifice of Marsyas. A life, in particular, that will, then, extend itself along the profiles of a new invariance (up to the self-organizing of a Road, but in the silence, a silence interrupted only by the flowing and fading away of the sound related to

the stiletto heels of Echo). The reference for an autonomous self-organizing agent is given by the achievement and verification (but on his own flesh) of his autonomy, the autonomy proper to an agent that manages to handle the algorithmic schemes at work in accordance with his inner transformation thus resulting able to prove that he exists to the extent that he places himself at the root of the fulfilment of metamorphosis.

The new autonomous agent who will thus be born will therefore be able to look at the ancient remains of the first observer thus realizing, as Skolem himself states, that many ancient figures which inhabited the theoretical universe of the first observer (such as the ancient infinities) no longer show themselves in accordance with their original characteristics (i.e. as true infinities) with respect to the new arising horizon (the horizon relative to the new observation that is born). We are, in effect, faced with a new embodiment and the conditions relating to the model will now undergo a radical change. If we set ourselves from the point of view of a radical Constructivism, an effective semantic anchorage for an observer system such as the one, for example, represented by the non-trivial machine as imagined by H. von Foerster, can come to be identified only to the extent that the evolving system itself proves able to change the semantics. This, however, will result in our being able to realize an expression of ourselves as autonomous beings, as subjects, in particular, capable of focusing on the same epistemological conditions relating to our autonomy. A creative autonomy that expresses itself above all in the observer's ability to govern the change taking place. Only the Minotaur operating in these conditions will actually come to undergo the new embodiment. Here is the passage on one's shoulders to which Skolem refers, namely that continuous passage from the first to the second observer that marks the very course of natural evolution.

We will then be able to place ourselves as witnesses (but at the level of the new embodiment) of what in the past has been the ability on the part of the first observer to govern his own growth process. Here is the flourishing of an intentional logic based on the ineliminable relationship with other. At the outset there is no ability to count, in fact the eyes of the Minotaur as painted by Picasso are not open from the beginning: they come to open as genuine eyes only to the extent of the construction in progress of those structures of imagination that allow the correct articulation of the schemes and, therefore, the same birth in the round, but by *bricolage*, of the activity of counting. Biological and cognitive activity is always in reference to the evolution at work and the construction of a Temple intersected by perceptual acts (within the framework of the ongoing dialectic between incompressibility and meaning).

The reference for an autonomous self-organizing agent is given by the achievement and verification (but on his own flesh) of his autonomy, the autonomy proper to an agent that manages to handle the algorithmic schemes at work in accordance with his own transformation thus resulting able to prove that he exists to the extent that he places himself at the root of the construction of the properties that identify his very creativity: true existence is given by creativity at work (but in the agent's awareness of this same creativity).

The categorial is in me, in the inwardness of my being, in my own coming to mould myself as a creator: *Noli foras ire*. Here is a categorial that emerges at the level of Nature (Pan) and that manifests itself, then, following the conception of

Marsyas, along with the giving of a simulation activity which occurs in the kingdom of Culture according to the dictates of a specific DNA. On the opposite side, the God (the environment, the reality that surrounds me as a craftsman and that selects me, the S. V. Mountain that every time upsets me as a Painter and craftsman (Cezanne) following what is the manifestation of its apparently inviolable complexity) is the one who arouses, who proceeds with the selection and who consoles, the one who gives impressions of excruciating beauty and who, however, open to the possibility for the craftsman to manage his own conceptual apparatus in order to grasp the meaning of such impressions. Hence the encounter between the craftsman and his environment, but in dependence on a coupled metamorphosis. Apollo and Marsyas: creativity and simulation. There is a creativity in Apollo expressing itself through an inspiration that is declined for subsequent impressions involving the subject and there is a simulation activity in Marsyas that comes to be expressed through successive exposures of his DNA. Apollo expresses himself as creativity in life through an inspiration that emanates, Marsyas instead gives rise to a Work in accordance with the truth. Apollo inspires the craftsman's activity, while Marsyas, for his part, allows the God to express his selective activity. Pan is the Mountain that through Syringe transmits its inheritance thus opening to the birth of the M. Marsyas is the conceived that opens to the Painter of abstraction, to Cezanne as craftsman and Painter. Cezanne, coming to undergo the impressions, develops that conceptual network that will lead him by means of the categorial intuition, to hear the speech of the Mountain flowing in his veins. Pan as creativity and Nature which then gives rise to new conception and Marsyas, instead, as the Lord of the Garlands which comes to decline himself as simulation and Work, thus determining the new irruption. If there were not the Minotaur who, at first, is added to the Temple in determining each time the right fixed points and if there were not, therefore, Marsyas who presides over his extroversion, thus coming to undergo the selection by the God, there cannot be that co-evolution which alone can allow the meeting between creativity and simulation to take place. A co-evolution which, in any case, will be tailored to the channeling of the God at the level of what is the subsequent emergence of impressions. Here is the Mountain which will accompany the Muse and here is the Painter who will come to inhabit his brain. Here is a DNA that will express itself in a fabric of actions coordinated by a brain and here is a web-network that will be channeled through the emergence of impressions synthesized in themselves by operating intentionality. When I grasp the reality of the web (when I contribute to "making" the environment) I offer the necessary support, at the biological level, for the establishment of ever new intentionality. When I contribute to "model" from the inside the craftsman, I offer the necessary support at the intentional level (not at the level of function, that is to say, but of the meaning) for the constitution of a cognitive organism. From Nature to Culture: from the Minotaur to Marsyas-Painter (through conception). Once we start from a thought (creativity) considered as the matrix of an emerging Nature (and, therefore, from Pan) and once we start from a pure simulation activity on a cultural level (and from Marsyas). From Apollo's own creativity to impressions, from Marsyas to a computational and simulation activity through concepts. Indeed, I can only grasp impressions through the proper construction of concepts. Here is the simulation-creativity circle

but preceded by the function-meaning circle. If the concepts do not come to express themselves in the right way along with the construction of the filters, the impressions will not be able to come to reveal their (hidden) meaning. If impressions do not come to work properly, concepts cannot come to articulate in depth in harmony with operating self-organization. Here is the backbone of the process of categorial intuition. The channeling by the Mountain represents the channeling of Nature itself as a function (but together with its meaning). The channeling by Marsyas represents, in turn, the channeling by Culture as simulation at work (but together with its creativity). Nature (Pan) as thought and as the arena of the function-meaning dialectic versus Culture (Marsyas) as simulation and as the arena of simulation-creativity dialectic. Apollo speaks by impressions (at the level of semantic categorization), Marsyas expresses himself by computations (at the level of categorial intuition). On the one hand, impressions + concepts, on the other, an intellectual vision in the God. The God thinks in (and through) the craftsman, the craftsman feels in (and through) the God. I feel the God flowing in my veins. The craftsman contemplates the God sensing him in his own light by making himself light. Here is Kitano Takeshi leading the Ecclesia into the light although he is no longer able to see (cf. the ending of the film: Zatoichi). The function is carried out by fixed points, the intentionality by the carving operated at the level of the Work. Once the constellation in the sky and once the nesting of Eurydice in the abyss. Apollo (the Mountain) speaks by impressions, Marsyas elaborates his inner vision by computations and models. When this happens it is because specific filters have allowed the DNA of Marsyas to "expose" itself in the appropriate way, in adherence, that is to say, to the information content present in the original "impressions" that characterize the mysterious message of the Mountain (Apollo). That's when Clio can appear. Hence, then, the fractal articulation of Pan. Marsyas-Painter has brought his work to completion and his DNA has proved capable of exposing itself in the right way (the way, that is to say, that allows the content of the impressions to be represented and channeled at the craftsman's level) thus allowing the craftsman to explore new forms of incarnation. The God, in other words, thinks in the craftsman to the extent that the craftsman himself reconstructs the message of God in himself, making it operative at the level of the exposure of his DNA and the consequent incarnation. In other words, the Painter, by painting the very presence of the God (in Clio), comes to represent, at the level of the Work, the impressions that characterize this very presence and reconstructs in himself the selection put in place by the God having identified the correct software. Extroversion > selection > reconstruction at the genetic level > incarnation. Marsyas dies but in the meantime, he comes out of absence thus preparing for a renewed realization of the enthusiasm and for the new irruption. If the God comes to think in him he comes to fully feel his presence at the level of the Work of art. Hence the new break-in and the emergence of Pan. Hence, again, the detachment, the journey of the new Minotaur, the function-meaning dialectic up to the very giving of the new conception of Marsyas and the new dialectical relationship between creativity and simulation but in a new ambient. When the categorial proper to Marsyas gives rise to new forms of incarnation (thus embodying the Other), when the Painter feels the new presence of the God in the Muse (at the same time that he paints this very enthusiasm), this

means that he has captured in himself the creativity (Thought) of the God himself and can, therefore, die by the very hand of Apollo and following what is the consequent irruption. The Silenus now comes to contemplate the God through the action of Painting: the artist feels the God, contemplates him in his own light, the light that now also emanates from him to the extent that he was added to himself by the God as a creator. He who, as a Painter, reveals himself capable of embodying the Other through the action of Painting (cf. Lucien Freud) comes to feel the presence of God (in the Other) by coming himself to be added as creator (as Painter in truth). Cezanne who realizes himself as a Painter by dying on his battlefield (the clearing in front of the S. V. Mountain he had chosen as location) comes to be illuminated through the Work by the very light of the God. His DNA came to "expose" itself in harmony with the software which animates the creativity of the God. The impressions bring into play their informational (and intentional) value by means of the filters, thus inducing those changes at the level of the exposure of the DNA of the craftsman that mark that metamorphosis of Marsyas that occurs when he comes to be added to himself by the God The impressions now speak in his flesh, in his own veins: God thinks in him in his own metamorphosis. Cezanne tracing the very archaeology of the Mountain and placing himself as a stool for it in view of the renewed expression of its creativity will come to be added as a creator by realizing himself as a Painter in truth. He will come to reconstruct in himself the paths relating to the incarnation in him of the original impressions. He will become flesh and renewed computation for a God who will thus be able to come to think in him. Cezanne will act as software for the hardware represented by the God. The Father recovers himself through the Son but following the sacrifice put in place by the Son himself as well as following the help he gave to the Father who fell prey to the self-abandonment. Marsyas will thus be able resurrect as an added creator. Here is the action of Painting and here is the real presence of the God in Clio as Work and as Muse of History. Cezanne-Vermeer to the extent that he embodies his Muse-model according to the truth, recovers in himself the creativity of the God by coming to be added as a Painter but in his own death and in his exit from absence along with his coming to become pure light in the God. The impressions will now come to speak from his own bosom, he will feel them articulated in himself: *Noli foras ire.* Here is the sense of the Simulation- Creativity dialectic. From the Simulation- Creativity dialectic to the renewed dialectic between Function and Meaning. From the irruption to the conception. When Vermeer paints the Muse again, his DNA will have come to expose itself in harmony with the impressions coming from the Mountain: he will, therefore, added, but only to the extent of his success, of the success, that is to say, of the very action of Painting, an action he tenaciously pursued. The meeting between creativity and simulation takes place in the arena of Schematism and is articulated through the construction of specific filters. Marsyas receives the message of the Mountain to the extent that he reveals himself capable of inspiring and channeling his own growth on a biological level according to the impressions coming from the Mountain itself to the point of coming to feel the original creativity (the God) coming to dictate to him in what are his own veins. Here is the miracle operated by the filters but on the basis of the ongoing process of self-organization.

Apollo and Marsyas, creativity and simulation. Apollo (the S. V. Mountain) thinks of the craftsman (Cezanne), engraves it, and selects it for excruciating impressions on the basis of his mysterious creativity. The moment in which the Painter dies, thus sanctioning the victory by Apollo, (his success in truth) is the presence of the God (the enthusiasm of which Clio bears witness) that comes to affirm itself through the action of Painting. The God thus comes to think in the Silenus but at the cost of the Painter's exit from absence. The Silenus, however, to the extent that he will have had the opportunity to witness Clio's emerging enthusiasm, will be able to identify (and determine) the same coming to "flash" of new Nature. Hence, in fact, Pan's scream. Pan comes to be born because the Painter through the action of Painting has become pure software, leaving the absence but in the very manifestation of the presence of the God (in Clio). The Painter consumes himself in the praxis of art, he hears the God speaking in him but by resorting to his own brush. He becomes a stool for the God and for his resurrection, and in this way comes to be added. Here is the dialectic between software and incarnation. It is the action of the software which, by embodying the subject of Painting (to the point of identifying, at the limit, the very presence of the God in Clio) allows the Painter who becomes a stool for the divinity to be added in creativity. Here is the one who paints in the creativity thus opening to new Nature. Hence a Nature that comes from a Work of art. Hence, then, the new emerging Minotaur. The realization of the software is always within the boundaries of a sensibility and of the ever renewed dialectic between Simulation and Creativity. Both the God and the creator participate in this sensibility. Without these limits and without the passage preached by Skolem there is, therefore, no real life. In this sense, the passage for disembodiment as advocated by Chaitin is fundamental, just as it is fundamental the recourse to the identification of the software's path. However, it is necessary to open, at the same time, to the dialectic between Simulation and Creativity, as well as to the procedures of a real self-organization process, to the passage each time to new Nature, etc. Equally fundamental is the relationship between Nature and Culture, just as the intuitions of Skolem regarding the metamorphoses of the observer. Moreover, we must always open up to new Semantics. All this, however, would not be possible without recourse to that Theory of complexity created by Chaitin and without the connection of this theory with the doctrine of morphogenesis as identified by Turing and with the theory of self-organization (cf. H. Atlan, S. Kauffman, A. Carsetti etc.). Only a careful exploration in the regions of Chaos like the one carried out by Chaitin, by Turing etc. can help with that. In particular, it is Chaitin's studies on Omega that have led to the possibility of a better understanding of the rules of engagement of the software at the level of the constitution of those peculiar skills that intersect life.

The procedures of extroversion and the identification of the software are in sight of a new and deeper incarnation. I must not only optimize the software, I must, first of all, submit myself to the selection by Apollo in view of an opening on his part to new Nature and new possible forms of creativity. This is the key role played by the simulation activity and the consequent extroversion, the role that Marsyas plays starting from his conception. The path of Marsyas is that relating to the construction and use of new software but in view of the opening up to new creativity. The Painter

of Abstraction poses himself as Lucien Freud, like a Hermes, that is to say, who reveals himself capable of embodying his subjects to the extent that he has become the conscious master of the software relating to the praxis of art he has put in place. I have to offer (in extroversion) my cortex, the software as it has materialized in my body, for the incision by the knife of the God until it is shaken. Hence, then, the rising of a new Minotaur in view of the new conception of Marsyas as Prince of simulation and the successive constitution of the Painter of abstraction. From the Minotaur to the Painter, from Pan to Marsyas. When I identify the software through the extroversion operated, I come to fix a body as hardware allowing the God to affect and dictate me inside. This is the way to get the God into my veins. In other words, this does not open only to the possibility of a better organization at the level of the existing software but also to the opening itself relating to the flow of new creativity. Here is the creative song of Apollo, here is the enthusiasm of the God which manifests itself in me, in my own passing away but through Clio. This is the Work (the action of Painting) with which I assure my inheritance and my ascent (my exit from absence), the final recognition that annihilates and exalts me (cf. Picasso's sculpture that compares with the conception by the Goddess and does so through poor materials and the result of recycling). Here is the Other who returns to life in me but through my work, the Other in which I "enlighten". It is starting from the irruption of the God that it will therefore be possible for a new categorial to come to rise; here is the very emergence of Pan as new Nature from which the path relative to the new incarnation along the detachment will spring. From the wild ferinity of Pan to the opening of the eyes of the Minotaur but in truth. Hence the wayfarer and natural evolution but in view of a renewed cultural evolution and the role that the new Painter will play in it. The new incarnation thus appears linked to the realization as existence and autonomy of a new body, a body inhabited by a renewed (visual) cognition and which constitutes itself as prelude to the subsequent revelation of a soul. The Minotaur that is born is new compared to the ancient observer. He makes reference to the climbing on his very shoulders by the ancient observer but to the extent that cultural evolution and the passage for the Painter will be given (with consequent irruption). This is the path that is missing in Chaitin, the path, in fact, concerning the reality of a biological being that is both life and truth, life and cognition (in truth). Without via there is no new incarnation and vice versa: the absence of real development actually hibernates life, freezes every possible emergency. God speaks only through the praxis of art, only with reference to my Work, to my making myself a stool. Therefore, the mere offering of my body is not enough, intelligent preparation is needed. Oedipus-M needs to prepare for his death so that there can be the resolution of the labyrinth. Hence the importance of the studies on omega but also the role played by the taking charge of the meaning, by the love (intellectual yet embodied) that in Caravaggio wins everything, by the emotion that if guided by the intellect illuminates with its light every aspect of reality. Here is a God who is reborn from his own viscera because the Painter (De Nittis) has revealed himself able to know all the secrets of the air and has conquered the arena of the intellect. The real optimization is the one that opens to the scream of Pan passing through Clio and the renewal of the primeval emotion itself but through the Work and the autonomous creation by the Painter, that creation

that is balm and gift for the exit by the God from self-abandonment. Father, can't you see that I burn? Why have you forsaken me? Why have you, in fact, abandoned yourself? Accept the flames that surround me in order to regain your creativity. If Clio excites me, the God is at work. The success of the Work is the way to salvation. The hand of the Painter that portrays Clio is the hand that opens to the new mathematics of the emerging world. The creativity that overwhelms everything is creativity that operates in the viscera of the nucleus, changing the very way of being of the rules. Here are rules that change the rules: God comes to speak in me as he plays the role of Vermeer, Caravaggio, Cezanne etc. So I must not only promote Pan's scream but also the new detachment starting from the *Sylva*. A new language will therefore be necessary with the invention of new words at the level of the vernacular (Dante). I am reborn to myself according to my story but in view of conception and following the irruption linked to the presence of the God in the Muse (Clio), a presence that passes through my hand (the hand of a Painter) but that transcends me, that I cannot contain in me and by which I cannot limit myself to being contained where the irruption is to be true. The life that talks about you is still too short if it contains you (if it only contains you). If it is true it can only shake you up and it will be with reference to the grammar of the new irruption that you will only be able to find possible information on what your (new) emerging being is. It is only starting from the broken mirrors that you can now proceed to identify yourself in the imagination and in the simulation in accordance with the arts and tools of poetry (Painting). Here is the necessity every time of conception. Only if, starting from the broken mirrors, the right cypher comes to the surface, can you continue your path in metamorphosis. Optimization is only one of the possible consolations along such a harsh journey. Each time you will have to complete the circle: from the Minotaur to the Painter and from the Painter to the Minotaur. Here are the two steps necessary for conception and irruption. Here is via (as evolution and metamorphosis) and the two senses of it: natural and cultural. It is the natural evolution that leads to Marsyas in truth and it is the cultural one that leads to Pan and the detachment of the new observer. Marsyas simulates and extrudes himself by unraveling his software and fixing it as hardware on which the God's knife will come to operate. Hence the emergence of new creativity, but from within. It is what is required in order to awaken the God from self-abandonment. Here is the cry (see Antonioni's film: *Il Grido*) of the Son to the Father, the last invocation on the cross before the crash. In the film, the cry is of the woman who witnesses the death of her Son, of the one who had been her husband and who has come to be replaced by the new infant. In reality, the cry accompanies the groom's flight from the tower and his coming to smash. It constitutes the last word-expression of the traveller reflected in the one who as a woman had abandoned him. The invocation of the Son to the Father is translated into the cry of the ancient bride. Once you are added to the meaning and once you come to be added by the creativity in action to itself. Function and meaning, on the one hand, and simulation and creativity, on the other. By adding myself I make a precise carving with reference to the Temple, coming to be added it is my being, instead, that is carved and dictated inside. The sense of software as a gift (or the sense of dance as a gift, of choreography as a thought) is to open myself to new creativity and new evolution. The God who thinks in the craftsman who is added

comes, therefore, to be contemplated and intuited by the very craftsman (as shown by Beato Angelico). The Goddess, in turn, comes to be categorized and calculated by the hero who comes to join the Temple (by intuition). Here is the stone Temple of Poussin. The God who dictates to me inside comes to be categorically intuited, but it is only by grasping his voice that I can therefore realize my metamorphosis in conception. Marsyas as the result of the metamorphosis and as the hero who, later on, will be added, will only be able to show himself as the one who has climbed onto his shoulders, thus opening up to a new possible observer along the course of the metamorphosis. This is the sense itself of the ongoing metamorphosis, but within the framework of a double dialectic: the dialectic between surface and depth and the dialectic between hardware and software. It is through this double dialectic that the passage Skolem speaks of can really come to be realized in all the complexity of its actual articulation.

According to an ancient intuition by Braque the emotion must be corrected according to the rule if we want to ensure a subsequent intentional extension by the emotion itself and, therefore, through this, the achievement of true invariance, albeit in the change. The rule, in turn, must be nourished by emotion if we wish to ensure a full development of the rule itself and, therefore, a real morphogenesis, albeit in continuity. Here is Life and Truth coupled, and with them via, albeit in accordance with its two directions. Hence the limit but also the value of the theses advocated by Chaitin: the great scholar is unable to grasp all the valences of the role played by meaning at the level of evolution, but carries out an analysis of the "artificial" connected to the emergence of Nature, thus individuating the conditions for the creating of an effective opening to new possible break-in. Setting himself up as a new Marsyas and undertaking the journey to the columns of Hercules, Chaitin really sets the conditions for a paradigm shift, thus opening up (albeit *in nuce*) to a new Semantics and the new cries of future detachment. The journey into invention begins here, and it is precisely here that the role played by the "verses" takes shape at the beginning. No longer pure determinations of the Form but tools capable of inventing the very way of articulating things to say and think from within: that is, tools that open up to the new arising function. The extroversion and semantic clarification represent the first step in view of the irruption taking place. It is necessary, however, to feed the omega-related pyre in order to be able to ensure the correct modalities for the change of semantics: in other words, to be able to truly face that onerous passage constituted by the passage on one's shoulders by the hero as suggested by Skolem. The artificial must be reflected in itself and must reflect the imagery in place, with a view to preparing for a correct irruption. It is in this sense that, by linking Goedel, Turing, and Darwin, Chaitin offers a versatile and important contribution to that complex analysis that right now is progressively preparing the first foundations of a new science: Metabiology. Hence the first emergence of artificial but not trivial machines as imagined by von Foerster: biological machines able to self-organize and to stay in symbiosis with man in view of his becoming a new creator through his coming to be added to himself by the God (in accordance with Bergson's metaphor, later taken up by Monod). These are unheard worlds which come to open and expand before our eyes. At the artificial level we can invent only by means of

successive simulations, while on the natural level we can only imagine what form successive illuminations will take. Here is the light of Grace which in Caravaggio comes to illuminate the cheat who plays with the Chaos of his life leading him to the metamorphosis-conversion. This is what happens to the mathematician who comes to change semantics by opening up to that onerous journey corresponding to the overcoming of himself as well as of his own vision of the world as an autonomous observer in action. The metamorphosis in other, and the opening up to a new world of thought and observation (together with the entry on the scene of new infinities) emerge necessarily to the extent of a radical transformation on the part of man, a transformation for which the right compass is not easily found. This is the challenge that life presents to us every day. Just think of the enormous load that as humans we carry on our shoulders: that load which every time requires the artist to work for the overcoming of his own Work as well as of what constitutes his inheritance as man and craftsman. Life grants no insurance in this sense; it cannot, in effect, give assurances to itself if it truly wants to succeed in ensuring the necessary renewal of its original creativity. Turing and Chaitin focus on the role played by the grid relative to pure software with reference to extroversion and disembodiment, the way is open to the identification of Omega. This identification, however, turns out to be linked to a conception (and previous petrifaction) possessing a precise historical character. In this sense, therefore, omega has no absolute character: when, in effect, a real meta-morphosis takes place, centered on the passage by the hero on his own shoulders, the coming into being of a new observation and, therefore, the very onset of new petrifac-tion come to enter the field. When the irruption occurs there is openness in depth, and unprecedented actors appear, albeit in the necessary context of an inheritance. Hence the proper sense of a natural evolution that can never come to be separated from the dialectic in place between Simulation and Creativity. The software leads, each time, to the opening from within of the hardware (with the birth of new intensities and the consequent outcrop of the God). The hardware leads, in turn, to the nesting in depth (in the swirls of meaning) of the software. The hardware opens on its abysses while also gifting incarnation to the point of surfacing as Nature. The software lurks deep within the sky of abstraction in successive increments of complexity (and its Methods) to outline the ever renewed contours of a kingdom of Culture. The pressure we will be under will not be of algorithms alone but also of meanings in action. The disembodiment must be pursued not only with a view to optimizing the evolutionary pressures on the table but also in view of a more ambitious goal: a complex system for living such as that represented by Ulysses-Marsyas appears to be the tool itself (first of all in overcoming the Pillars of Hercules), for an in-depth opening of its own hard-ware with the continuous birth of new meanings and with a continuous (but organic) remodulation of the ongoing evolutionary pressures. As Bergson states, complex living systems that act as autonomous agents come to enter the scene in function of ever new creativity, of the continuous realization of a renewed evolution. The way in which this happens is that which passes for the identification, each time, of the grid related to the martyrdom of St. Lawrence as masterfully illustrated by Titian. In the painting by Picasso "The flute of Pan" (Paris, Musée Picasso, Paris) the eigenvalues in action at the level of the score played by Pan are, in effect, the way to realize the

trigger and the possible multiplication of the first cries of the Minotaur, that is to say of the first steps of the incarnation process. In this context, the eye of the mind, as well as the eye of Horus, son of Isis, appears, precisely, as one of the engines of natural evolution. But Horus is not only a name or a concept or an imagination that lives: he is, first of all, a universal Form (cf. Picasso's sculpture), that soul of itself and that guides and points to every possible vision. It is the eye that in Reflexivity becomes an eigenform to itself, a matrix of real invariance and autonomy. When we are faced with works that come to be worn by the Muse through an ideal seam for files, we find ourselves faced with the offer of a particular inheritance from a piece of hardware that has come into being as an autonomous agent and that allows the new software (Marsyas as conceived) to come to light through the support offered by the cypher. Creativity along the path pursued by the Minotaur has turned into petrifaction, thus offering a legacy and while allowing the Goddess to conceive. Marsyas represents the new software that is born, but the hero is, in his turn, marked by a cypher, by a secret Rule that lives him in filigree: the robe relative to his sacrifice will be woven into the file of Reflexivity to the point of determining the giving of extroversion. At that moment the God will come to select opening to the new irruption (and new hardware). By following Horus we have the effective possibility of fully entering the realm of dialectics between function and meaning that allows us not to close ourselves into the enclave of the first-order structures but to range in a much broader realm of functions also featured in accordance with the tools offered by non-standard mathematics. Choosing non-standard model theory really 'introduces' a new general semantics. Hence the possibility of fully exploring the arena relating to non-standard models as indicated, first and foremost, by Skolem but taking advantage of the latest acquisitions achieved at the level of the most recent theory of self-organising models.[6] At the level of a natural, biological self-organising system that is characterised by its cognitive activities, the objectives are set from within. The origin of meaning is an emergent property within the organisation of the system itself, and this is connected to precise linguistic and logical operations as well as distinct procedures of observation and self-observation. These operations stimulate continuous processes of inner reorganisation. In the light of the new scientific paradigm represented, today, by Enactive Realism[7] Nature appears to 'speak' by means of mathematical forms: we can observe these forms, but they are, at the same time, inside us as they populate our organs of cognition. In this sense, in such a scenario, natural evolution also scans the effective growth of our tools of participatory knowledge of the world around us, our own coming to recognise ourselves as a stage within a path concerning a real development of creativity but on a co-evolutive level and in accordance with a semantically pregnant perspective. Paraphrasing Galileo, normally regarded as the father of modern science, we can affirm that Nature is speaking by computations, thus causing Nature to be embodied. However, such natural computations cannot be articulated only on a purely syntactic level nor can they be flattened on disembodied crystallizations. Actually, at the biological level we are continuously challenged by semantic information and semantic phenomena thus coming to be involved in an effective process of self-organization. Real 'extroversion' is in function of the activation of new selection procedures capable of ensuring a metamorphosis (from within) of the

system: a metamorphosis that will necessarily involve the mathematician who builds the model. In this context, the system's pursuit can really offer the opportunity to trigger more sophisticated levels of embodiment only by changing semantics.

According to Monod, Nature appear as a tinkerer characterized by the presence of precise principles of self-organization. However, while Monod was obliged to incorporate his brilliant intuitions into the framework of first-order cybernetics and a theory of information with an exclusively syntactic character such as that defined by Shannon, research advances in recent decades have led not only to the definition of a second-order cybernetics but also to an exploration of the boundaries of semantic information. We have already seen how for H. Atlan, on a biological level "the function self-organizes together with its meaning". Hence the need to refer to a conceptual theory of complexity and to a theory of self-organization characterized in an intentional sense. However, there is also a need to introduce, at the genetic level, a distinction between coder and ruler as well as the opportunity to define a real software space for natural evolution. The recourse to non-standard model theory, the opening to a new general semantics, and the innovative definition of the relationship between coder and ruler can be considered, today, among the most powerful theoretical tools at our disposal in order to correctly define the contours of that new conceptual revolution (that new worldview) increasingly referred to as Metabiology. A conceptual revolution that appears primarily to refer to the growth itself (at the co-evolutive level) of our instruments of participatory knowledge of the world. A work at whose level the entropy conditions change continuously also depending on the decline of Clio as the Muse of History. Hence the very possibility of considering Nature also as a Work of Art as advocated by P. Feyerabend.

Notes

1. Cf. Dean (2013).
2. Cf. Dean (2013).
3. Cf. Putnam (1980).
4. Cf. Quinon and Zdanowski (2006).
5. Cf. Carsetti A. (1989) "Self-organizing models", T.R. (La Nuova Critica).
6. Cf. Carsetti A. (1989) "Self-organizing models", T.R. (*La Nuova Critica*).
7. Carsetti A. (1993) "Meaning and complexity: the role of non-standard models", *La Nuova Critica*, 22, 57–86.

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