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From Aesthetic to Epistemic Structures and back: Complex Dynamics between Art and Science

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Abstract. We often forget that art and science are not dissociated, nor indeed antagonistic, but rather allow a creative interplay to emerge from which arises the generation of new forms of knowledge (Miller [1995]: 190). According to Parkinson, "the analogy between the new painting and the new physics consists in that elements formerly held as cognitive or conceptual a-prioris enter as constitutive factors in the very structure of the edifices of art and science" (Parkinson [2008]: 161). How exactly does it work? If for us nowadays it's relatively easy to think of the mimetic moment of art as a prelude to geometry, it is not so trivial to claim how higher-order representational symbolic epistemic structures (h.o.r.s.e.s.) arise from the lifeworld, or simply how both interact together. The aim of this paper is to stake out the complexity of processes going from the lifeworld and, before that, from the life of pictorial language, to h.o.r.s.e.s., in order to apply this model to further enquiries. In the first part, we will reactivate the Kantian interdependence between aesthetics and epistemology via the intersubjective dimension, in order to understand how the shaping of forms and the figuring-out patterns remain an essential component of any epistemic structure as such. In the second part, moving from Hacking, Husserl and Foucault, we will look into the way in which the evidence of symbolic structures can be maintained even alongside a genetic conception of science. Art plays an essential role in such a conception, in that it opens new horizons of figurativity in which new shapes can arise and new kinds of objectivities (Gegenständlichkeiten) can be accepted as belonging to our epistemic experience of the world.

Keywords. Symbolic Structures, Aesthetic Dimension, History of Science, Kant.

There is a strong interdependence
between aesthetic and epistemological problems.
E. Garroni

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very structure of the edifices of art and science» (Parkinson [2008]: 161). How exactly does it work? If for us nowadays it's relatively easy to think of the mimetic moment of art as a prelude to geometry, it is not so trivial to claim how higher-order representational[1] symbolic epistemic structures (h.o.r.s.e.s.) arise from the lifeworld (that is conceived as necessarily art-laden), or simply how both interact together. The aim of this paper is to stake out of the complexity of processes going from the lifeworld and, before that, from the life of pictorial language, to h.o.r.s.e.s., in order to apply this model to further enquiries. In the first part, we will reactivate the Kantian interdependence between aesthetics and epistemology via the intersubjective dimension, in order to understand how the shaping of forms and the figuring-out patterns remain an essential component of any epistemic structure as such. In the second part, moving from Hacking, Husserl and Foucault, we will look at the way the evidence of symbolic structures can be maintained alongside a genetic conception of science. Art plays an essential role in such a conception, in that it opens new horizons of iconicity in which new shapes can arise and new kinds of objectivities (*Gegenständlichkeiten*) can be accepted as belonging to our *epistemic* experience of the world.

1. AESTHETICS AND EPISTEMOLOGY: MOVING FROM KANT

1.1 Subject, community and shapes

In Epistemology, beyond a purely consensual theory of truth, a cognitive agent must be able to provide the evidence of his statements without external (cultural and anthropological) elements. That is also the idea of a transcendental theory of truth as presented by Kant in the *Critique of Pure Reason*. In this sense, the subject is *alone*, while having access to invariable forms and structures, which are able to shape the evidence for his claims of knowledge.

The experience of beauty on the other hand, according to Kant, confirms the mutual link between the subject and the community (with its cultural and anthropological structures) by a sort of projection of agreement in the claim of validity for every aesthetic judgment (critically considered). The Other, a sort of immanent human transcendence, is present, even if the intersubjective community cannot be deduced by the subject of the claim itself. However, the discovery of intersubjectivity does not seem a roughly idealistic process: the transcendental ideality of the open horizon of all judging subjects is to be found in the dynamical character of the capacity to judge, which acts without reducing the otherness of intersubjectivity to the subject (of knowledge). Such a reduction can be either psychologistically or metaphysically fashioned. According to Kant, on the contrary, intersubjectivity is necessary to the subject in order to be able to conceive itself. According to the claims of taste itself, subjectivity is decentralized, opened to something that is neither roughly psychological (association) nor metaphysical (as a sort of renewed monad). Due to such decentralization, the otherness of a community (historical but also merely synchronic) appears as a coessential (and therefore irreducible) for overcoming the *monadism* of the transcendental subject. Through the mirroring between *selfness* and *intersubjective otherness*, the dimension of historical knowledge emerges, not in the sense of a knowledge of history, but of a historically sedimented knowledge shared with other subjects in a well-defined transcendental perspective.

According to Kant, however, the opening of an intersubjective horizon first of all shows the possibility of grasping the potentially infinite richness of empirical experience (by which knowledge can be knowledge of something determinate rather than of purely physical principles). In other words, before giving access to any kind of history (natural history, human history and historical knowledge) to conceive an *intersubjective otherness* defines the relation between the epistemic agent and the experience of the natural world, as well as its codification in a positive knowledge whatsoever. In this

[1] On the vast topic of «representation» between art and science, see Chakravatty (2010).

sense the experience of beauty is only an exemplary moment. Coherently with the introduction to the *Critique of Judgment*, the principle defining the aesthetic subjectivity, or the aesthetic experience of subjectivity, i.e. finality, brings – so to speak – the Kantian philosophy from the idea of a merely mechanical system of nature to a richer idea of nature as a final system. From our perspective, that can be used as a thread for another inquiry: to show how the intersubjective manifold of art forms, in a well-determined age, will bridge the gap between two different ideas of knowledge and, thus, between two different world-images (*Weltbilder*).

In both cases, we need not only to conceive nature as a pure structure of laws, that is, as an *objectum purae matheseos* (Descartes, AT VII: 71), and science as a *mathesis pura atque abstracta*, but to grasp both in their potentially endless empirical diversifications. First we have to shift to another, primordially rooted Nature, instead of holding on to the idea of nature as a sublimation of purely quantitative physical laws. Finality intervenes, according to Kant, precisely at the point where the Newtonian world of pure masses reveals itself only as a high speculative formalization of our way of experiencing it, i.e. as a *natura formaliter spectata* rather than as a *natura materialiter spectata*. Even if the purely relational schema of pure understanding could be sufficient *ex principio*, it determines a phenomenologically *poor* nature, that is, a nature without basis, just as the *Metaphysical Foundations of Natural Science* gives a very peculiar idea both of natural science [*Naturwissenschaft*] and of science as such, viewed from the point of view of a systematic approach.

The object, definable in its fundamental epistemic core as *pure mass*, needs to be experienced as *form*, that is, as a figure or as inherent to a figure; it needs to be *figured out* as shape, as *Gestalt*, in a mimetic process that is anything but innocent. In order to be able to *speak* about nature, in order to be able to grasp nature in its potentially endless empirical determinations, our vision must be *taught* to *figure-out* shapes of things. According to Kant, once it is made entirely independent of any form of Psychologism, the process of *figuring-out shapes* becomes a purely transcendental process, even if not in the sense of the transcendental schematism of pure concepts of the understanding.

The implementation of the pure time-schematism with the empirical schematism does not represent an extrinsic need for the aesthetic subjectivity. By showing the strong dependence of the empirical experience on the capacity of our imagination to figure out shapes and patterns, Kant shows that our experience of the world cannot emerge without an intrinsically aesthetic operation. In a somewhat symmetrical way, the intrinsic intersubjective nature of aesthetic experience shows how our experience of the world, a world existing before and independently of the emergence of higher-order formal categorizations, is linked to a practical dimension of life. The world of empirical experiences, as a «world in between», between knowing and agency, is a horizon of contamination, hybridization, a sort of *generative matrix of ways to figure-out shapes and patterns*[2]. The ways of imitation are not only a pure passive ways of mirroring objects but a higher and more complex systemic process of our living, acting and understanding. In this world-in-between, the dimension of fusion and contamination does not unfold as a series of shocks between pure masses, but as encounters between individual entities, cultures, shapes, sounds, gestures and so on.

The experience of beauty is the exemplary phenomenon of contamination, in which we can describe – from a transcendental point of view – the interaction between understanding, sensibility and imagination, the interaction between the subject and his community, the plastically open mirroring between the individual and the universal. The *Deduction of the Judgments of Taste* is the moment of the third Critique in which the universal capacity of figuring out shapes and patterns is linked with intersubjectivity. If the *Analytic of Beauty* alone was sufficient to legitimate the sta-

[2] For the use of «generative matrix» cfr. Schnell (2019: chap. 5).

tus of intersubjectivity, the Deduction not only makes explicit the implicit: the first nine of the twenty-five sections of the Deduction would have been sufficient for that. To make explicit not only the reference to a community *tout court*, but its grounds means precisely to show how that world of forms, the world in between, can be continually reconstituted and reformed.

The Deduction articulates the principle of finality as grounds for universal *formativity*, as a rule of figuring-out shapes and patterns, the moment in which the synergy between common sense (and intersubjectivity) and formal finality converges to the formation of new shapes. As early as the middle of the analytic of beauty, the communicability of pleasure and the free play between the understanding and the imagination were a sort of specular aspect of the same aesthetic dynamics: the ground of pleasure is the communicability of a sensation. The ground of communicability is the harmonic dynamic of the faculties.

1.2 Shaping forms and figuring-out patterns

The free play by which imagination and understanding are aesthetically harmonized, that is oriented to a knowledge in general [für eine Erkenntnis überhaupt], determines – by the same operation of a figuring-out shapes and patterns – the immediate state of our experience. Between appearance of our world of pre-objective experience and objectification through epistemological frames, we can find the dimension in which and by which the manifold pre-predicatively is formed, becoming then a semantically consistent reality. Such a pre-categorial synthesis, defined by Kant as *comprehensio aesthetica* (Kant [1928]: 320), comes up in the *Critique of Judgment* as a «standard idea» (Kant [1790] § 17: 83).

The dynamics described here are not one of associative processes, that is, of personal psychological acts of figuring-out: «This *standard idea* is not derived from proportions that are taken from experience *as determinate rules*. Rather, it is in accordance with this idea that rules for judging become possible in the first place» (Kant [1790]: 84). The emergence of an aesthetic idea as well as of a standard idea is empirically independent, because the faculty of the imagination itself to figure out shapes, i.e. normal ideas, is transcendental, that is: defines a condition of possibility [*Möglichkeitsbedingung*]. It can recall signs for concepts, it can associate a sign to an empirical shape – that the imagination sketched by the description of the visual space – with an archetypal shape: the standard idea. The *eidopoietic* nature of imagination shows also the means by which we think of the empirical world analogically as an interconnected system of forms in mutual relation. According to the standard idea, the world as pre-predicative experience takes on a stable meaning; the neutral state of the subjective dimension also begins to take place in a world constituted by purely relational functions, but moreover begins to appear as its phenomenological basic level. That what the imagination does in an absolutely dynamical natural way, i.e. to figure-out shapes and patterns, is the process by which the imagination «projects a large number of images onto one another. By fixing the middle archetypal form of the object, it is the ground of every empirical conceptual representation» [Ibidem, 83]. The standard idea represents, so to speak, «the image that nature used as the archetype on which it based its productions within any one species» [Ibidem], and it is thus the source of the conceivability of nature. On an intuitive level, it is the archetype by which we can recognize an object, as *this* object. From the standard idea the capacity of judgment projects a sort of frame of regularity into the empirical nature: even the roughest perception of a simple everyday object presupposes the identification, merely analogical but nonetheless essential, of an archetypal causality which is entirely heterogeneous with a deterministic system, the index of regularity that inscribes the bare ontological singularity in a semantically consistent horizon of meanings and forms. Such a demand for stability, before to be formalized in a teleological principle for the Reason as objective finality, is at work basically in every subjective experience.

Even in the process of schematizing, the purely relational structure of transcendental determina-

tions of time (*transzendentale Zeitbestimmungen*) needs, in order to be the *experience of an individual*, another kind of schematizing. The faculty of judgment, either by the standard or the aesthetic idea, preserves that way of shaping forms from Psychologism and reveals it to be something transcendental, but in another way. The faculty of judgment allows us to recognize the identities and the differences between the real object, staked out by shaping its forms, and the concept. How, Kant seems to be asking, do we come to recognize in an empirical manifold a tree, a linden, independently of the fact that this *something* contains general ontological predicates? At the level of immediate perception, the subject receives an empirical manifold that becomes the tree, the linden, only by shaping its form.

What is this «certain something»? Its presence can no longer be purely determined by a transcendental cognitive relation, that is a relation subsisting between subject and pure manifold (the so-called *Gegenstand überhaupt*).

The access to a meaningful, semantically consistent empirical world, is the free yet harmonic interplay between imagination and understanding (Kant, [1790]: 159). Without such a process it would be impossible to have any empirical experience: the ego would be reduced to the experience of an anonymous world. The patterns and the consistency of our empirical world arise from the basic individuation of singularity, not as an ontological singularity, but as an empirical one. The individuation of singularity goes beyond the *praesentia* of a purely ontological complex of relations, and first emerges through naming something recognized as an empirical object. It is precisely at this point that Kant tries to overcome the dichotomy between *mathesis* and *taxinomia* as main presupposition of the science of the modern age.

The relation between name and aesthetic idea serves as an index for the recognition of the experienced *quid*, as *terminus a quo* from which the imagination inscribes the anonymous ontological *quid* in a semantic network: the function of any empirical scheme goes hand in hand with the capacity to link names to standard ideas (Capozzi, [1987]: 121). All of that resides outside a purely formal ontological process. The irreducible parallelism between thought and language, language and nature (word and object), justifies and needs at the same time the intertwining of analogical thinking in order to codify everyday experience in its empirical dimension. If we had a sort of natural relationship between word and concept, as if words, not only names, had an already valid correspondence with things, we would have no need (in Kant's view) of such analogical relations, and the faculty of judgment could play no role in determining our empirical experience. The faculty of judgment plays, on the contrary, an essential role by considering the constitutive semantic fluidity of our experience. How could we, upon a logical ground, infer a conceptual identity from the partial similarity of one thing to another? It is impossible by syllogisms or by concepts. «What I see there and know is a linden!»: in order to utter such a judgment, in order to fix a full correspondence between the shape of this tree, the monogram that my imagination has sketched, and the name – then the concept – must overlap, and therefore I can be able to judge what element pertains to the identification and what does not! The rough singularity of the thing must be *trespassed* towards the identity of the concept, because the concept is always universal (see Kant [1924], *Refl.* 2866: 121), whereas the unnamed thing remains a bare individual. If the concept, as universal, can be applied to a potential infinity of cases, the jump that brings the naked singularity to the universal is neither purely empirical nor purely conceptual, but another kind of process, that is, an analogical one.

In the case of analogical recognition, as with aesthetic representation, it is clear how only certain representational contents are such empirical determinations, inherent to the tree in front of us, but not all of them: only salient representations must be kept. Between the complex representation of the singularity of something and the concept, a sort of shrewd reduction takes place by way of intentionally experienced abstraction, as

in a sketch drawn on paper, or in a mimic gesture or a melody. Could we abstract from Socrates in order to obtain his simple shape? We do that in every moment of our object-oriented experience! In Kant's view, we do that through our productive imagination, educated by aesthetic experience, precisely at the moment when we *name something* with a common noun, such as: «Socrates is a man» or «that is a linden». The process of obtaining that *medium* which serves as a common criterion, as a common measure, is based upon the figuring-out of our imagination (see Kant [1923]: 94; Kant [1966]: 270).

In order to be comparable, then in order to be inscribed within an epistemic or even proto-epistemic framework, bare singularities first need to belong to a genus, to have a common noun. It would be meaningless to compare the linden on our right to the street lamp on our left, if not from a purely formal-ontological point of view. Making clear the analogical processes which puts the subject in its relation to the manifold of empirical experience not only reveals a subjectivity which is constitutively rooted in a semantic framework of meanings and ordered processes, but above all, it reveals how the capacity to figure something out is the necessary condition of knowing, because knowing, before working in purely and normatively formal (formalized) contexts, means being able to bring the singularity into a context, into a semantically concrete framework. This is provided *aesthetically*, according to Kant, by the capacity to judge, that is by finding shapes for a bare singularity. Such an aesthetic way of judging comes from a more disinterested activity of *figuring-out shapes and patterns*, that is, of figuring-out *per se*, without concerning oneself with reality, things or objects, but merely with the shaping of forms.

In this way, Kant presents - at the same time - a new approach to Art, even if the *Critique of Judgment* cannot be considered a treatise about philosophy of art. In other words, he shows a way to bring aesthetics and epistemology together in order to understand how everyday life depends on beauty above all else. In this sense, the basic epistemology of the real world depends on the experience of beauty in a broad sense, for only such experience can activate the essential predisposition for receptivity to ideas, essential predisposition to every relationship with the empirical dimensions of experience. For Kant, however, epistemology and science, in the traditional meaning of *scientia naturalis* and *historia naturalis*, do not include within them a history. Their genesis, already existing and remaining in the background, tells us not about scientific revolutions or paradigmatic crises, but merely about a progressive teleological description of nature itself. If, according to Kant, the *aesthetic* (*das Ästhetische*) plays a central role in epistemology, its *epistemology* is precisely that, what must be questioned and criticized. What the history of science has revealed is that, in fact, science, or the huge network of scientific practices, is more differentiated than it may have seemed at the end of the eighteenth century. It would be very difficult to extend directly the claim of the central role of aesthetic experience on epistemology to that highly differentiated network of epistemic practices which, to this day, we still somewhat naively call science.

However, difficult does not mean impossible. The second part of this paper will evaluate precisely the possibility of such an extension, and the necessary clarification of its basic features, which results therefrom.

2. FROM AESTHETIC TO SYMBOLIC STRUCTURES AND BACK

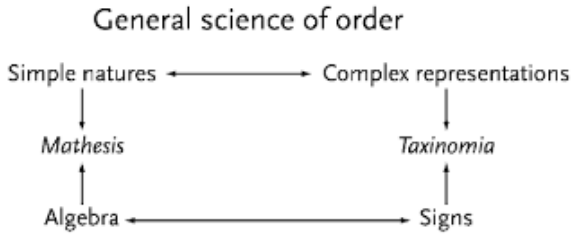
2.1 Passivity, lifeworld, and genetic processes

The question to be asked is no longer whether intersubjectivity (even as a common aesthetic sense) works as the cognitive component for every subject, but whether subjectivity, as empirical and historically situated subjectivity, via intersubjectivity, works on the formation of h.o.r.s.e.s. What we should be asking, in other words, is a) whether there is a trace of the aesthetic working, or of some aesthetical transfiguration of reality, in higher-order symbolic structures of knowing, and b) whether these formations, or some of them,

work backwards to transform our aesthetic imaginary life.

At first sight, it seems obvious that there can be neither fusion nor contact between h.o.r.s.e.s. and the aesthetic element. As in a sort of dogma, we are oriented to consider the genesis of symbolic mathematical, physical, biological epistemic structures, i.e. structures with a high rate of formalization of one or more regional ontologies, as entirely independent of the aesthetic, a dimension wherein beauty can work only from the point of view of the elegance of formalisms (the elegance of certain notations, some proofs and so on).

Such an approach is still essentially Kantian, at least from an epistemological point of view. The aesthetic dimension can, in the best-case scenario, play a role for the so-called soft sciences [Kraus (2011)] and, more generally, for those sciences which – at the time – precisely do not need higher levels of symbolic formalization. In this way, we still remain, so to speak, in that dichotomy sketched out by Foucault, according to which *Taxinomia,* or every complex element of our experience as well as of nature, cannot belong to the horizon of *Mathesis*: the nature of the complex, or nature itself in its complexity, cannot *contaminate* the pure *corpus* of its mathematization (Foucault [1989]: 80).



Our thesis is, to the contrary, that the aesthetic element, the activity of figuring-out shapes and patterns and shaping new forms which seems *prima facie* to be entirely independent of the dimension of formality and formalisms, works in a complex way at an ontogenetic as well as at a phylogenetic level, precisely by allowing new codes of representation to emerge. Such codes, in turn, allow for h.o.r.s.e.s. at the level of a high (if not the highest) rate of formalization. We have then to ask if, and in which way, the aesthetic dimension plays a central role in the formation and construction, but above all in the discovery, of new h.o.r.s.e.s. In this sense, the aesthetic dimension would be considered not only an origin of the receptivity to aesthetic ideas, but also a generative matrix of ideas and epistemic frames.

How could the aesthetic dimension play such a central role? In order to answer this question, we have to take another step into the transcendental dimension, more particularly by considering what the late transcendental phenomenology of Edmund Husserl shows about the genesis and emergence of logically symbolic structures as such. As many scholars since Derrida have pointed out, Husserl is the first to elaborate a genetic non-psychologistic theory of the emergence of logical structures from passivity, in *Experience and Judgement*, and of epistemic structures from the lifeworld, in the *Crisis of the European Sciences* (Husserl [1970]: 27-28).

The importance of such elaboration within ruled genetic analysis cannot be underestimated, first of all for all historical epistemology, as such. In order to sketch out the problem of such a vertical (bottom-up) conception of the emergence of theoretical structures, it will suffice to focus on three points:

1. There is, at the proto-dimension of passivity, a sort of continuum of shapes that shade into one other and are conceivable «at any level of generality». While maintaining his radical anti-psychologism (developed after Frege's criticism of his *Philosophy of Arithmetic* and made stable by the idea of categorical intuition in the sixth *Logical Investigation*), a genetic perspective on the emergence of theoretical structures admits that it is possible (and necessary) to think of a bottom-up process wherein shapes, at any level, have to be considered from the point of view of their logical stability. The process of ideation, or the process of emergence through ideation, does not deny the stability and autonomy of a shape at the level of formalization. The question is, how are we to think of such a verticality of genesis?

2. At the point of the passive proto-dimension, that is, before it has been objectified, a shape cannot receive any kind of intersubjective determinability, i.e. it cannot be «communicable to everyone in its determinations» . The question is: does such an inscription in communicability, in relation to our previous analysis of Kant, still remain purely theoretical, or does it need, at least in some cases, a sort of aesthetic transformation?

3. To take genesis as a bottom-up emergence of shapes for granted, whilst leaving open the possibility of a better understanding of the emergence itself, we have to consider what happens in the transition between the anonymous dimension of shapes, communicability, and the emergence of a formal level as such. Does such a process have something to do with Kant's conception of shaping forms and figuring-out?

The answer to the third question is positive. Indeed, if we consider what Husserl says about the process, we find more than analogies with the process described by the *Critique of Judgement*, but with some important modifications. He says that «measuring is only the end stage » of a longer, more deeply rooted process, meaning that, starting from the proto-passive dimension wherein shapes are embedded in a continuum, the cognizing *ego* begins to describe «bodily shapes of rivers, mountains, buildings» which, as a rule, is independent of names and concepts. It means that, just as for the normal idea, we have to inscribe that form in an intersubjective horizon wherein the shape, in order to be «determinable, and communicable in its determinations, to everyone» must be conferred an elementary linguistic sign.

We find here a sort of symmetry breaking in the pre-categorial experience of a shape and the exit from the continuum of shapes, in order to enter into another continuum, namely the dimension of the lifeworld. It is clear that passivity and the lifeworld are not the same (Staiti [2018]). The lifeworld means intersubjectivity and represents a higher level than pure passivity. In this sense, the emergence from the (undifferentiated) continuum of shapes and the inscription in the lifeworld as an intersubjective (multi-dimensional) horizon signifies an inscription of shapes in a radically new *topology* (Husserl [2008]: 112-118), wherein regions are mapped out and rooted in a sort of *fibration* with each other. Becoming a name, and then a sort of link with an ideality (joined together with other idealities), the pictured similarity would be taken out of its constitutive anonymity and laid open to further determinations: not only the determination of position, but every determination including all further idealization, to the point where the original shape is no longer recognizable as a pictured similarity as such, but is *sublimated*.

According to Husserl's genetic theory of science, the inscription of a shape in the horizon of the lifeworld, even if such horizon is characterized by its multi-dimensionality, need not encounter the aesthetic dimension, as it were. The fact that the aesthetic was never an important topic for Husserl, is proven by the fact that he completely misunderstood, or else ignored (Uzelac [1998]), the importance of the aesthetic dimension in understanding the fixing of shapes at the level of the lifeworld.

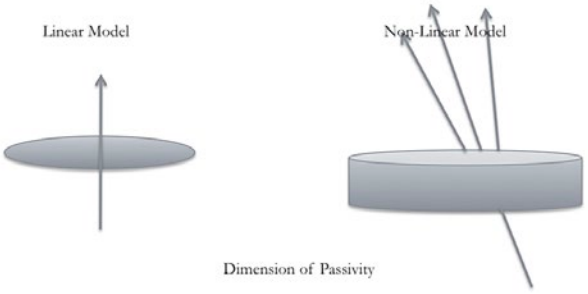
Such a misunderstanding goes hand in hand with a linear bottom-up conception of genesis, as if genesis were a sort of vertical ascent through the power of ideation, that is, with the radical misunderstanding of how the aesthetic dimension is essential to the constitution of an intersubjective community as such. If that is coherent with some of Husserl's basic assumptions about ontology, in particular concerning regional ontologies, it is precisely because such assumptions limit the interpretative power of such a theory of science. For Husserl, although in radical opposition to the ontological monism of Carnap and logical positivism, ontological pluralism is fixed, not dynamically conceived (Pradelle [2010]). The fixed relationship among different regions of experience, as a partition of the lifeworld, make it so that there is no way to think of any hybridization of motives bringing to some higher genesis of concepts and idealities or other. In this sense: from the lifeworld, that which is natural remains natural (as formalized in the natural

sciences), that which is human remains human (as formalized – not too highly! – in the social sciences or anthropology) and so on. The question for us, then, is not merely whether or not, according to Husserl, the aesthetic could become a well-defined regional ontology (in this case it will remain a flat ontology without higher forms of symbolization), but whether such a conception of the lifeworld *per se* is still affordable. To think of the lifeworld, i.e. the multi-dimensional horizon of our experience, as a tiling wherein regional ontologies are tiles, is not only anachronistic but also partially conflicts with the very assumption of a multi-dimensional lifeworld.

From the same perspective, it is anachronistic to think that skipping from the dimension of passivity to the dimension of communicability does not imply a sort of aesthetic transformation. The pictured similarity (a vestige of a sort of Aristotelian psychology, «*imago in phantasia depicta*») is far from being an element of our lifeworld, just as a pictorial work is far from a simply passive copy of something belonging to the same lifeworld.

As Foucault shows, naming and names are no pitches on objects but carriers of the complexity of our living in cultures, with religious, iconographical codes (and systems of power).[3] Naming (according also to Quine [1969]) is not a 1-1 operation but an instantiation of a discursive order. So inscription, through communicability, in the multidimensional horizon of the lifeworld, cannot at first be thought of as a non-active transformation, as if we were dealing with an inventory of things by naming. Such a consideration would take us too far. It is sure that once conceived the difference between the proto-dimension of passivity and the multidimensional horizon of lifeworld, to conceive the bottom-up process as linear and purely vertical is simply and roughly dogmatic. Communicability and aesthetic transformation are almost synonymous, because what we come to see through naming is not only a pictured similarity but a sort of anthropological concretion of meaning which allows us to grasp the named thing or phenomenon as something else, something belonging precisely to our lifeworld. That breaks the linearity of any bottom-up process passing through the lifeworld and going to generate h.o.r.s.e.s. Hence, the passage through the lifeworld breaks the linearity of the genetic process because its anthropological as well iconographic depth works as a prism.

As a prism deviating and refracting a ray of light, the lifeworld, through its anthropological as well iconographic depth, deviates and refracts the genesis from the pre-predicative to a high level of symbolic formalization.



In this sense, Benjamin understood more deeply the strong relationship not only between art and languages, but also between art and the lifeworld. Art is the language of the lifeworld more than any other human factor (Benjamin [1979]: 122).

2.2 Emergence, non-linearity and complexity

If we apply this conception of visual languages[4] as co-essential to the lifeworld as such, we can use it as a method for implementing both Husserl's and Foucault's conceptions, in order to think epistemologically the genesis of h.o.r.s.e.s.. According to Husserl, using the genetic perspective but *aesthetically implemented*, we can claim that the aesthetic element of the lifeworld performs or works actively and genetically bottom-

[3] A satisfactory introduction to this topic can be found in Vom Bruck & Bodenhorn (2009).

[4] On the topic of visual culture and visual language, see Mirzoeff (2001).

up, but not linearly and not bound by any discipline (that is, within a rigid structure of regional ontologies). According to Foucault, the dimension of intersubjectivity is not neutral, but rather a sort of generative matrix of individuation (at first) and the emergence of idealities. To put it differently, the genetic process of h.o.r.s.e.s. is complex, that is «a tissue (*comlplexus* means «what is tossed together») of heterogeneous inseparably associated constituents», «a tissue of events, actions, interactions, retroactions, determinations, fringes, that constitute our phenomenal world» (Morin [2005]: 21). Historic approaches to great civilizational processes, such as the rise of Greek culture (from which, properly speaking, emerges «the idea» of science, *epistêmê*, as we know it), have already touched and analytically considered such implication of motives on the basis of which we can talk about a complex evolution.

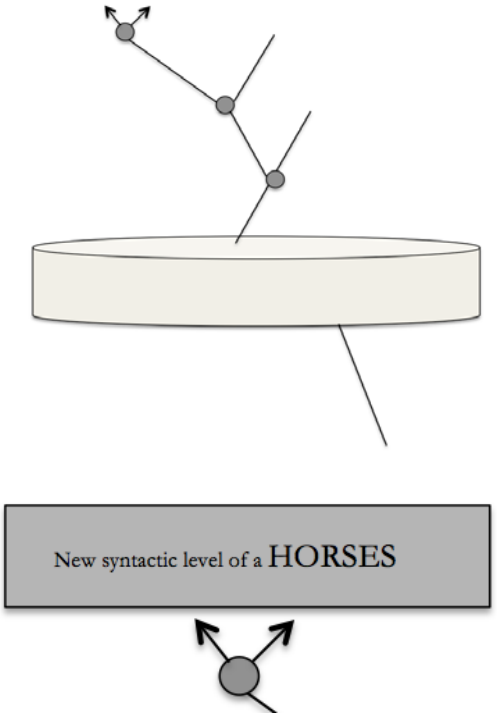
If «art shows an unlimited capacity of spiritual communication» (Jaeger [1986]: 65), it is precisely because – as an essentially formative medium – it lies between the proto-logical dimension of passivity, what Jaeger calls «the sensible evidence of real life», and the conceptual dimension of ideation, that is, «philosophy and reflection». Our thesis is that the invention and construction of h.o.r.s.e.s. must necessarily be not «context-independent» but context-sensitive and articulated according to a constantly operating semantic generative matrix. This must happen from an ontogenetic, as well as a phylogenetic point of view. The thesis is not psychologistic because it is not a question of presenting a sort of psychological analysis of the making of art or the doing of science, but an analytically strong interpretation of changes in science following the perspective of historic epistemology from Kuhn to Hacking. The nodes of the genetic emergence of h.o.r.s.e.s., from proto-passivity to formalization, necessarily pass through real life, and will be refracted, if not oriented, by a sensibility lying at the basis of our real life, an aesthetic sensibility to the world. Art, we might say according to Jaeger, «is more philosophical than real life but it is also more full of life than philosophical knowledge, thanks to its concentrated spiritual reality».

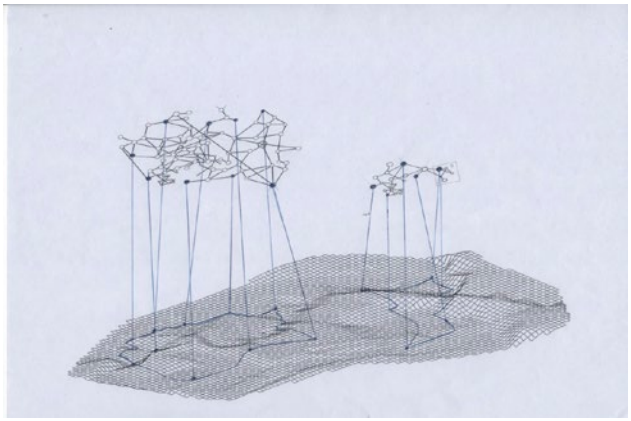
Two possible objections to this thesis are 1) that we cannot apply the method of complex emergence analysis to well-defined structures, and 2) that we fall, if not into a form of Psychologism, then into cultural Relativism *à la* Foucault. That would mean that, with respect to any superficial reading of *The Archeology of Knowledge*, we will lose touch with the evidence of our science, or of our scientific claims because, *in fine*, everything is cultural. But that is not the case, due to the complementarity between the phenomenologic-transcendental approach, which admits, as anti-psychologistic factor, an ever-stable categorical «intuition» of idealities, and Foucault's approach, which brings back, so to speak, the singularity of a conceptual element or node of a scientific complex network to the discursive order of that network as such. The key of a complex interpretation of some formation of h.o.r.s.e.s. must be found beyond all cultural relativism (for every single scientific claim). It arises from, and belongs to, both a certain *discursive field* (Foucault) and to an *order of experience* (Husserl).

There is neither a mere *discursive order* without stabilities, syntactic invariances of highly formalized epistemic experience, nor a mere *order of experience* without paradigmatic, intersubjective and culturally established invariances and saliences of every claim. By complementing Husserl with Foucault and vice versa, we can affirm that a certain claim is statically stable from the point of view of evidence (because evidence, in the form of categorical intuition for h.o.r.s.e.s., arises simply from the directly underlying level) and genetically open, that is, unstable, because it depends on a wider network of concepts, the discursive order, constantly evolving.

If, from a genetic point of view, a h.o.r.s.e.s., even very distant from the empirical experience, still genetically depends on the dimension of the lifeworld and the historical bifurcations of genetic processes from the point of view of the evidence and theoretical stability of a new syntactically higher formalized level, what provides

stability (then possibility) to evidence, is the local categorical pertinence with the directly underlying level[5].





But if, as we (at least) should, we consider a theory or a branch of a theory as a complex network, firstly *per se* (fig. 5a), and secondly in its constant concrete relation to the lifeworld and to the experience (fig. 5b) instead of relativizing evidence, such a general interpretive framework allows us to relativize monistic conceptions of science affected by a dangerous misunderstanding. For example, the very dangerous misunderstanding of a single origin (closer to biblical tales than to science): *the origin* of geometry, *the origin* of physics, *the origin* of biology or *the origin* of science[6].

2.3 Origin, rebirths and feedbacks

The complexity of scientific processes as human processes and their constant relation to the lifeworld, prevents us from speaking about absolute singularities. For example, counter to Husserl, it will be more useful according to Michel Serres to speak of many or multiple origins of geometries: «La mathématique n'a donc pas été une fois, et ceci à tout jamais, en situation d'origine» (Serres [2001]: 25). Such multiple recurrent or resilient *situations of origin* mean simply a reactivation of the relationship with the lifeworld and often with the lifeworld as aesthetic dimension. If we consider phylogenetically, from an historical point of view, many phases of creativity in science, if not revolutions, we notice that they have been filtered by aesthetic dimensions. By affirming the complexity of genetic processes of h.o.r.s.e.s. and their emergence from a lifeworld, it becomes possible not only to avoid

[5] A analysis of the layered structure of categorical intuition was presented by Lohmar (1989: 70-102). For a genetic approach to mathematics in this way, Fraisopi (2012: 33-78).

[6] For a other approach to science, as modular instead of architectonic-axiomatic systems, cfr. Dupré (1983) and Cartwright (1999).

the question «what comes first, the chicken or the egg?», but to analyze some cases from another point of view. Let us consider, for example, the so-called origin of geometry in the Greeks. The myth of a single origin, the search only for a single element in order to explain complex phenomena, should be abandoned once and for all. Where does Geometry or Mathematics come from? Field measurement, bookkeeping, religion (as in the Indian civilization) or whatever else, conceived as unique origin, are all simplistic answers. What came first, agronomy, the religious cult, or art? From an historical point of view, every single element, as part of a complex intersubjective horizon, cannot be, separately taken, a satisfying answer.

The Greek temple, as a symbol of Greek architecture, is not only a building, but like cathedrals in the middle ages, a sort of instantiation of knowledge[7]. But before any cathedrals or what have you, the Greek temple made clear how art and science could melt together. The very meaning of temple, *templum*, *tèmenos*, represents the first original topological partition between sacred and profane life. In this sense, art and religion are what first open up the space of such things as the epistemic as such: why is the Greek temple built according to the golden proportion? Why does geometry find a place in the temple itself? The sacred space, as a normative partition between the inner and the outer, between two dimensions, and as a dimension of normativity itself, allows, in the sense of an epiphany, geometric structures to appear as belonging to the dimension of normativity of the world of appearances. In this sense, art is not only a vehicle for science, but that which allows science to make sense, opening the topological outer space of normativity (but inner space of sacred life) wherein the irregular dimension of phenomenal life must be mirrored in order to become a stabilized meaning.

The same situation of origin can be seen in the late middle ages and at the beginning modernity, when we have no evidence of a single factor determining the rebirth of algebra and mathematics, as well physics and astronomy (Fraisopi, 2016). The method of central perspective, for example, not only works as a model for the *cogito* (Horn, 2000), but above all perspective means a new way to conceive mathematics and physics themselves as formal determinations of nature in science. The same could be said for botany (that is, biology) and illustrating: what comes before? The answer will necessarily be simplistic, because the question is simplistic too (Lüthy, Smets [2009]).

If, on the contrary, we think of a sort of feedback, it is enough to think back to the avant-gardes of the early twentieth century. Instead of being considered, as at the beginning, with both ridicule and admiration, we have to look inside, or through, the cubist or the futurist art in order to see what radical counter-effect the deconstruction of the Euclidian idea of space and the relativization of geometry has upon art and common sense. People have not always understood the intentions of cubist artists, and they received this new art with much confusion. While it will undeniably always be remembered as a revolutionary turning point in the history of art for its endeavors to break away from the traditional rules of painting, which had ruled for more than five hundred years, Cubism ultimately represented the artists' preoccupations with new systems of conception and new understandings of spatial structure. As Stephen Kern puts it simply, «then, it was under the impact of the Impressionists, Cézanne and the Cubists that the perspectival world broke up as if an earthquake had struck the precisely reticulated sidewalk of a Renaissance street scene.» [Kern [1983]: 140]. The modernists completely rewrote the rules of painting and opened up the way to every single movement of abstract art that followed cubism. Space was no longer the same in the early twentieth century, and it was up to every student of nature, regardless of their discipline, to uncover the newly discovered mysteries of these higher realms of existence beyond the visible world.

[7] In this sense, Malvezzi (2018), Coldstream (1977), Schweitzer, (1971). For a closer approach to geometric proportions in Greek temples, Leonardis (2016).

CONCLUDING REMARKS

Such case studies can ultimately show, starting from the assumption of the complexity of scientific processes, that there is no aseptically defined, decisive division between art and the sciences except contamination (again and again, *immer wieder*), and that epistemology, as a study not focused solely on the object-oriented propositions of science, but on science as a complex system or as a network of complex systems, must consider the fringe of science-making instead of object-oriented propositions, precisely in order to understand what makes it so that the orientation toward objects simply changes. Why does science recognize the need and possibility of admitting new entities into science? If it is impossible to claim that the *aesthetic dimension* determines or orientates the syntactical consistency of h.o.r.s.e.s., without falling into a cultural relativism (à la Foucault), it would be relevant to claim that the aesthetic dimension works precisely in the predisposition to accept new semantic entities, i.e. new kinds of objects, events, states of affairs, as new ontological dimensions. It is the need for science, or for great advances in science, to figure out new situation of origins, to think, to figure out new ontological dimensions even if they are seemingly contradictory with a) sensible experiences, and b) the accepted (already dominant) ideology or worldview (*Weltbild*) resulting from overlapping sensible experiences and previously established h.o.r.s.e.s. Only by working the figuring-out shapes and form, that is the aesthetical dimension of the lifeworld, does art open up new horizons of figurativity. In this sense, we can affirm that through the art-working or through the evolution of the aesthetic dimension, a virtuous circle between our lifeworld and the dimension of knowledge emerges, which is every time instantiated in the opening up of new horizons for seeing and considering the phenomenal world itself.

REFERENCES

Benjamin, W., 1979 : *On Language as Such and on Language of Man*, in Id., *One-Way Street and Other Writings*, NBL, London.

Capozzi, M., 1987: *Kant on Logic, Language and Thought*, in Buzzetti, D., Ferriani, M. (eds.), *Speculative Grammar, Universal Grammar, Philosophical Analysis. Papers in the Philosophy of Language*, Benjamins, Amsterdam, pp. 97-147.

Cartwright, N., 1999: *The dappled world*, Cambridge University Press, Cambridge.

Chakravartty, A, 2010: *Truth and representation in science: Two inspirations from art*, in Frigg, R., Hunter, M. (eds.), *Beyond mimesis and convention*, Springer, Dordrecht, pp. 33-50.

Coldstream, J.N., 1977: *Geometric Greece*, St. Martin's Press, New York.

Dupré, J., 1983: *The Disunity of Science*, "Mind" XCII, pp. 321-346.

Foucault, M., 1989: *The Order of Things. An archaeology of the human sciences*, Routledge, London/New York.

Fraisopi, F., 2012: *La complexité et les phénomènes. Nouvelles ouvertures entre science et philosophie*, Hermann, Paris.

Fraisopi, F., 2016, *Perspective and spatiality in the Modern Age*, "Aisthesis", 9 (1), pp. 115-133

Henderson, L., 1983 : *The fourth dimension and non-euclidean geometry in modern art*, Princeton University Press, Princeton.

Horn, A., 2000 : *Das Experiment der Zentralperspective Filippo Brunelleschi und René Descartes*, in Niebel, W.-F., Horn, A., Schnädelbach, H., *Descartes im Diskurs der Neuzeit*, Suhrkamp, Frankfurt a. M., pp. 9-32.

Husserl, E., 1936: *The Crisis of European Sciences and Transcendental Phenomenology*, transl. by David Carr J., Notrhwestern University Press, Evanston (IL) 1970.

Husserl, E., 2008: *Die Lebenswelt. Auslegungen der vorgegebenen Welt und ihrer Konstitution. Texte aus dem Nachlass (1916-1937)*, Springer, Dordrecht.

Jaeger, W., 1986 : *Paideia. The Ideals of Greek Culture*, Oxford University Press, Oxford.

Kant, I., 1790: *Critique of Judgement*, transl. by W. S. Pluhar, Hackett, Indianapolis/Cambridge 1987.

Kant, I., 1966: *Logik*, in *Kant's Gesammelte Schriften*, Bd. XXIV, Berlin.

Kant, I., 1923: *Logik Jäsche*, in *Kant's Gesammelte Schriften*, Bd. IX, Berlin.

Kant, I., 1924: *Reflexionen über Logik*, in *Kant's Gesammelte Schriften*, Bd. XVI, Berlin.

Kant, I., 1928: *Reflexionen über Metaphysik*, in *Kant's Gesammelte Schriften*, Bd. XVIII, Berlin.

Kern, S., 1983 : *The Nature of Space. The Culture of Time and Space 1880-1918*, Harvard University Press, Cambridge (MA).

Kraus, K., 2011: *Kant and the Soft Sciences*, "Studies in History and Philosophy of Science" Part A, pp. 618-624.

Leonardis, R., 2016: *The Use of Geometry by Ancient Greek Architects*, in Miles, M.M. (ed.), *A Companion to Greek Architecture*, Wiley, New York.

Lüthy, Ch., Smets, A., *Words, Lines, Diagrams, Images : Toward a History of Scientific Imagery*, "Early Science and Medicine" 14, pp. 398-439.

Malvezzi, R., 2018: *The Archetype of Wisdom. A Phenomenological Research on Greek Temple*, Mailand.

Miller, A.I., 1995: *Aesthetics, Representation and Creativity in Art and Science*, "Leonardo" 28 (3), pp. 185-192.

Mirzoeff, N. (ed.), 2001: *The Visual Culture Reader*, Routledge, London.

Morin, E., 2005: *Introduction à la pensée complexe*, Gallimard, Paris.

Parkinson, G., 2008: *Surrealism, Art and Modern Science: Relativity, Quantum Mechanics, Epistemology*, Yale University Press, New Haven and London.

Pradelle, D., 2010: *Husserl contra Carnap. La démarcation des sciences*, in Ierna C., Jacobs, H., Mattens, F. (eds.), *Philosophy, Phenomenology, Sciences. Essays in Commemoration of Edmun Husserl*, Springer, Dordrecht, pp. 157-190.

Schnell, A., 2019: *Was ist Phänomenologie ?*, Klostermann, Frankfurt a.M.

Schweitzer, B., 1971: *Greek Geometric Art*, Phaidon, New York.

Serres, M., 2011: *Les origines de la géometrie*, Flammarion, Paris.

Staiti, A., 2018: *Pre-predicative Experience and Lifeworld. Two Distinct Projects in Husserl's Late Phenomenology*, in Zahavi, D. (ed.), *Oxford Handbook of the History of Phenomenology*, Oxford University Press, Oxford, pp. 155-172.

Uzelac, M., 1998: *Art and Phenomenology in Edmund Husserl*, "Axiomathes" 1-2, pp. 7-26.

Vom Bruck, G., Bodenhorn, B. (eds.), 2009: *An Anthropology of Names and Naming*, Cambridge University Press, Cambridge.