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A Cognitive Theory of the Aesthetic Experience

Gianluca Consoli

Abstract

This paper aims at naturalizing the aesthetic experience on the basis of cognitive sciences. In traditional philosophical aesthetics, the aesthetic experience requires a specific attitude and a characteristic work of imagination. Today, cognitive sciences offer a rich set of empirically corroborated concepts useful in explaining these notions in naturalistic terms. This paper extends these concepts to explain how the aesthetic experience is integrated and how it affords knowledge.

Key Words

aesthetic attitude, fiction, imagination, knowledge, modularity,

1. Introduction

This paper explores the possibility of naturalizing the aesthetic experience (AE). A preliminary obstacle to this project is the definition of both 'naturalization' and 'AE.' To start, this paper is based on empirical data and theoretical frames derived from cognitive sciences and biology. The proposed naturalization aims at selecting salient theses of traditional and contemporary aesthetics about the AE, translating them into a scientific language, making them into more precise and accurate hypotheses with stronger explicative power.

Secondly, in traditional and contemporary aesthetics, various controversies surround the characterization, the epistemic value, even the existence of the AE. First and foremost, the notion of AE covers a wide range of experiences (visual, literary, musical, auditory, motor, etc.) and phenomena (natural phenomena, functional objects, aesthetic artifacts, works of art, etc.). Is the AE a specific and unitary experience? The proposed naturalization identifies the common core of the AE. Among the main components of the AE discussed by traditional and contemporary aesthetics are the aesthetic attitude (EA) subjects assume to interact with aesthetic objects and the work of imagination subjects develop to interpret aesthetic objects. The paper argues that (a) the AA exists and represents a specific kind of attitude that can be understood in terms of pseudo-modularity; (b) the work of imagination, prompted by aesthetic objects, produces and justifies modal knowledge; and (c) linked together, the AA and the aesthetic imagination constitute the common core of the AE.

However, this common core has multiple realizations. There are prototypical examples of it (i.e. the great works of art); partial realizations (i.e. aesthetic artifacts such as decoration in primitive society and design in contemporary society); peripheral implementations (such as rituals in primitive society and Happenings in contemporary society). Because the artistic experience represents a prominent example of the AE, the paper describes the common core of the AE taking art as the reference point. In particular the description has to do with

paradigmatic examples of (visual and literary) works of art. We will also refer to natural phenomena, aesthetic artifacts, and some practices of primitive and contemporary art. These examples are useful for suggesting how the proposed naturalization can be further extended to these phenomena. However, they are not complete explanations.

2. The aesthetic attitude

In the perspective of evolutionary psychology, the mind is constituted by a large number of modules, domain-specific neurocognitive subsystems. Each of these subsystems, selected through an evolutionary process, develops in ontogeny. For this reason, a subsystem can operate in two different ways: in the functional mode when it performs its evolved function, or in the organizational mode when processes are designed to construct the adaptation. The AE is driven by adaptations operating in their organizational mode.

For instance, many natural invariant phenomena, such as fire, stars, faces and landscapes, are judged attractive because their invariant properties allow them to furnish information and to activate procedures that help construct our visual system. Therefore the AE experience does not solve problems in the external world but produces adaptive changes in our internal organization.[\[1\]](#)

A similar point is also made in the enactive approach.[\[2\]](#) According to this perspective, experience is a skillful activity and functions in two different modes: the mode of transparency, when routine processing gives access to the world as a domain of facts; and the mode of activity, when subjects inhibit automatic responses, explore the world as a domain of affordances, and reflect on their experience. Aesthetic artifacts afford occasions for this sort of enactive experience. Many contemporary works of art are devices intentionally designed to block ordinary sensory-motor operations, attract attention, and trigger an open process of categorization.[\[3\]](#)

The AE is an organizational adaptation, a skillful activity, a temporally extended episode that involves perceptual, cognitive, imaginative, affective and emotional processes. A basic question this paper asks is which condition gives unity to this complex process? Which condition structures this large number of specialized systems into an integrated experience able to change our mind? According to our thesis, the fundamental disposition that ties together the aesthetic operations is represented by the activation of a specific mental attitude, the AA. As a basic framework, this attitude coordinates the involved activities in consistent and continuous cycles of self-reinforced feedback, organizing an integrated experience. From this perspective, the AA is activated before the experience with aesthetic objects really begins. Then during the experience, the AA remains active, supporting the information processing dedicated to understanding and interpreting aesthetic objects, their contents and details.

The AA realizes the function of integration, implementing (in a specific form) properties that are common to all the attitudes as such. As social psychology suggests,[\[4\]](#) attitudes influence all subsequent information processing, from the early stage of perception to the late stage of storage in memory. Empirical

research reveals (a) selective exposition: subjects search for information consistent with their attitudes; (b) selective attention: subjects focus on information relevant to their expectations, ignoring other stimuli; (c) selective interpretation: subjects transform ambiguous information in order for it to conform to their expectations; (d) selective memory: attitudes represent heuristic criteria to organize both storing and recall; and (e) selective inferences: subjects make inferences, attributions and judgments consistent with their attitudes, especially if these are easily accessible and stable.

There is a further analogy with the attitudes as such: the AA may be activated in two different modes. Social neuroscience suggests that attitudes may be activated automatically and spontaneously, or intentionally and deliberately.[5] The different modes of activation depend both on the subject's motivation and contextual opportunities. The AA is often taken automatically on the basis of objective properties (i.e. symmetry, perceptual meaning or conceptual complexity) or on the basis of familiarity with some conventions (i.e. the exposition in a museum or the presentation with a title).

However, the AA may also be taken intentionally, for instance when aesthetic objects show new properties or are exhibited outside the institutional world of art. In these cases subjects employ explicit deliberation to recognize aesthetic objects.

These are the common properties the AA shares with attitudes as such. However, the AA has an original and unique form.

This form is determined by a set of properties caused by an original functioning of attention, consciousness, belief dynamics, and motivation. Aesthetic tradition has identified these properties; today we can explain them in terms of empirically corroborated concepts derived from cognitive sciences.

The AA influences the global functioning of attention. First, subjects direct their conscious attention to the aesthetic object, its aspects, properties and contents. They identify with it in a global effort involving different mental faculties. In contrast, in a distracted perception, subjects do not really encounter any aesthetic objects; they do not have a proper relation with them. The focus of attention is not enough to have a specific genre of experience. Secondly, the aesthetic object inhibits the daily routines that usually guide action, perception and inference. These routines concern the entire process of recognition, from early sensory-motor operations to subsequent symbolic categorization. They are learned through repeated implementations in similar contexts and are activated without conscious control.[6] When we try to understand *The Empire of Light*

(http://en.wikipedia.org/wiki/The_Empire_of_Light) or *The Persistence of Memory*

(http://en.wikipedia.org/wiki/The_Persistence_of_Memory), the ordinary perceptual routines do not match (at least immediately and directly) the pattern of cues, aspects and contents displayed by the paintings. Therefore they are blocked, their activation is no longer automatic and spontaneous. The same happens to the ordinary inferential routines when we try to understand *The Man without Qualities* or *Ulysses*. Ordinary routines require conscious processing and deliberate control. In this way subjects become aware of

them and of their automatic functioning in ordinary cognition.

This process is very similar to traditional Formalist defamiliarization: aesthetic objects are strange, extraordinary and special insofar as they force the suspension of ordinary beliefs, set the mind in a state of openness, prolong the process of perception and, finally, improve the understanding of the familiar.

The AA influences the global functioning of consciousness. The AE is intentional and transitive: it is directed toward an object, it represents the object under selective intentional modes, and it grasps the aspectual shape of the object.^[7] In particular, the intentionality of the AA increases the focus/fringe, center/periphery, figure/ground dynamics of consciousness. In general, the working memory and its temporary storage have limited resources: the central executive can manipulate only a few elements; much information is unconsciously processed outside the intentional focus; many details are lost.^[8] During the AE, subjects cannot collect all the relevant information immediately with a single act of consciousness. They explore the aesthetic object in a serial manner, with continuous feedback between bottom-up and top-down processes. For instance, this is the typical process prompted by the *Cubist* paintings. With a brief, primary exposure, fast forward processing allows primary and simple access to the paintings. These do not meet daily expectations and require more time and scrutiny. Top-down control guides attention backward to the input level.

Subjects have access to further relevant information and modify their previous, high-level representation. With this fine-grained representation as a mental reference point, a new cycle of attention-driven backward search is activated. Other details embedded in the paintings function as cues of unexpected and surprising associations and meanings. Often, too, associations and meanings are competing and only partially compatible. For instance, characters and situations of Kafka and Beckett resist complete fusion in a single frame of interpretation. This open movement is very similar to the hermeneutical circle. The attention is directed both analytically to the components of the aesthetic object, and synthetically to the aesthetic object as a whole, with a tension that avoids repetition and boredom. A complete resolution is not achieved: following considerable inspection, subjects decide to stop the exploration when they judge that their understanding is appropriate.

The inhibition of routinized processing, the increased focus/fringe dynamic, and the analytical and synthetic direction of attention make the intentional and transitive processes of the AA not completely transparent. Ordinarily, when attention is directed toward an object, subjects do not focus on transitive consciousness and its properties.^[9] On the contrary, during the aesthetic exploration subjects become aware not only of the object's properties but also of the acts of consciousness. The entire process of de-automatized exploration aimed at understanding the aesthetic object is made conscious. So the AE is at once an immersed, first-order, object-focused experience and a detached, second-order, self-focused experience.

The AA influences the global functioning of belief dynamics. The AE may have different kinds of props (literary, pictorial or sculptural, etc.) and so it may involve beliefs with different formats, both sub-symbolic (bodily, perceptual or affective) and symbolic. Whatever format they have, all of these beliefs share the same fictional and non-referential status. Triggered by aesthetic objects, these beliefs are not referentially constrained. Like beliefs in playful pretense and symbolic games,^[10] aesthetic beliefs are marked off and quarantined: subjects keep them separate from ordinary beliefs because the aesthetic beliefs are decoupled from the actual state of the world and are not really believed. However, although aesthetic beliefs do not correspond to any actual state of affairs, they are not opposed to factual truth as false beliefs are. They are not errors, illusions, lies, deceptions or manipulations.

Aesthetic beliefs are belief-like imaginings aiming at the fictional: real world truth condition are irrelevant.^[11] In this way, interacting with the aesthetic object, subjects maintain a persistent focus only on it, ignoring referential constraints and real world truth conditions. So they suppress routinized and reality-oriented responses and are prompted to explore a range of opportunities and possibilities afforded by the aesthetic object.

Historically, this perspective stems from the concept of mimesis developed by Aristotle as a specific form of cognition, more general than factual and contingent truth. In recent years, the pragmatic definitions of fiction and the theories of fiction based on the notion of make-believe have highlighted the difference between fiction qua different types of falsehood and aesthetic fiction qua specific form of imagination and not opposed to truth.^[12]

The AA influences the global functioning of motivation. During the AA, motivation is distinguished on two levels. In the background, the epistemic goal of knowledge represents the basic motivation of subjects. The goal of knowledge is terminal, fixed and inborn. Humans are "informavores:" our mind has evolved to seek and consume information in an endless search.^[13] As we will see below (section 4), in the AE this goal is oriented to learning through a direct interaction with the aesthetic object. This particular realization of the epistemic goal supports the specific goals activated by the exploratory activity. Whereas the epistemic goal is actual, these specific goals are derived from the aesthetic object and are simulated off-line. Subjects pretend to adopt them. They feed the goals into their own decision mechanism without producing any effective decision or behavior.

For instance, when subjects try to understand fictional characters, they accept the game of make-believe and realize a perspective shift: they suspend the egocentric map, re-center it on the allocentric map, imagining as if they have adopted the character's goals. Because of the interaction between the basic goal of knowledge and the off-line goals, the aesthetic information processing is not motivated by instrumental goals. Subjects do not have personal goals, ordinary desires or practical needs. Their mental activity develops freely, guided only by the structure and the properties of the aesthetic object.

The fictional and non-utilitarian nature of the AE represents what aesthetic tradition calls "disinterestedness" (Kant) or "psychical distance"(Bullough): it involves detachment from referential conditions and from daily concerns but not disengagement from knowing and learning.

3. Integration and pseudo-modularity

The specific functioning of attention, consciousness, beliefs and motivation identifies the condition that makes the AA a particular genre of attitude. However, deepening the initial question, how can the AA coordinate these multiple processes in order to produce an integrated experience? Cognitive sciences, in particular research concerning modularity, offer a conceptual frame to answer this question. It is our thesis that the AA is a specific kind of macro-modular organization.

Generally modules are domain-specific, special purpose mechanisms dedicated to solve a particular class of problems. Modules are biological mechanisms shaped through evolution. Natural selection copes with environmental pressure in a piecemeal fashion. Hence, there is not a prototype module, but various kinds of modules, with different forms, functions and properties. For this reason, researchers tend to have diverse conceptions of modular architecture. So far it is not clear to what extent modules are interrelated and to what extent they play a role in central cognition, which is flexible and context-sensitive.[14] However, in the strong conception, modules have important informational constraints.[15] First, they have a proper domain, all the information the module is biologically designed to process (i.e. face recognition).

Proper domains are defined by specific input conditions that activate mandatory, involuntary, passive and fast operations through a genetically channeled ontogenetic development. Second, modules are inaccessible: other systems have access only to the final results and not to the internal operations (i.e. Chomskyan grammatical competence). Third, they are encapsulated and cognitively impenetrable: modules have limited databases and use only a limited subset of the information processed by other systems, even if this information is relevant (i.e. visual illusion).

The main modular property of the AA is an informational constraint similar to a soft encapsulation. When subjects assume the AA they suspend both reference and real world truth conditions. In this way, aesthetic processing is realized within a sort of fictional box.[16] Subjects know that beliefs, like representations, are not factually true because they do not correspond to any actual state of affairs. However encapsulation inhibits access to this knowledge. Therefore, subjects can focus only on fictional representations; they can use off-line reasoning mechanisms; they can simulate goals outside the egocentric map. This encapsulation is soft because it does not depend on fixed architectural constraints. Even when it is automatically triggered, the aesthetic encapsulation can be overridden at any time, explicitly recalling the fictional nature of representations. In addition, this kind of encapsulation is not entirely cognitively impenetrable. The knowledge of the fictional status of representations is always active in the periphery of consciousness. Otherwise subjects, might lose track of this status and confuse the fictional

universe with the real world.

The aesthetic encapsulation is modular insofar as it coordinates and integrates the diverse processes of aesthetic processing in a unified fictional box. It has specific modular properties, insofar as it is voluntary and only relatively closed. The AA has other important pseudo-modular properties.

As a macro-modular organization, the AA facilitates global accessibility among the large number of systems activated by aesthetic objects. Perceptual, affective and cognitive systems share the relevant information in order to understand aesthetic objects; once a content is established by a system, it is broadcast to the others. From this perspective, the fictional box allows a blackboard to interact with aesthetic objects in order to integrate information coming from diverse specialized modules. However, systems do not communicate only results. In addition, each system has a direct influence on the internal operation of the others.

This influence is not directed towards the more peripheral stages of a system's internal processing. As in ordinary cognition, peripheral stages are inaccessible.^[17] Rather, the influence involves the intermediate processing levels of each system and produces the cycles of forward and backward exploration described above. In this dynamic, a distributed network of modality-specific representations shapes the organization of conceptual knowledge of aesthetic objects. In turn, conceptual information guides and orchestrates motor and sensory explorations of aesthetic objects. Therefore, the fictional box allows a workspace framework to combine multimodal operations for action, perception and proprioception with the organization of conceptual contents, semantic categories and abstract information. In the AE results, the system's internal operations and mental faculties are intimately intertwined in a unitary experience.

The domain specificity of the AA is not confined to a determined category of objective properties. Contemporary art (i.e. ready-mades, conceptual art) has shown that aesthetic properties represent an open set that is not restricted to traditional aesthetic properties, such as beauty, symmetry, proportion, and so on.^[18] Therefore, even if we suppose a proper biological domain of the AE defined by natural preferences that allows the construction of adaptations, we must recognize the mismatch between this proper domain and its actual domain. In general, the actual domain is defined by inputs that imitate biological input conditions (i.e. face recognition devices are activated also by masks and portraits). Actual domains are often inflated by cultural domains, that is culturally generated information that satisfies input conditions.^[19] In a similar way, the AA is activated by a culturally expanded domain of historical practices, without stable and fixed boundaries.

Duchamp's *Fountain*

(http://en.wikipedia.org/wiki/Fountain_%28Duchamp%29),

Warhol's series of Campbell Soup

(http://en.wikipedia.org/wiki/Campbell%27s_Soup_Cans), and

Found Art are extreme examples of objects and artifacts accepted as works of art only on the basis of cultural conventions (in Danto's terms, transfigurations). Therefore,

this activation becomes automatic, unintentional, and to a certain degree mandatory only throughout a continuous learning process. In this perspective, although the AE is a biological adaptation, it is far from genetically prefigured.

During ontogenetic development, abilities such as drawing, dancing and music mature according to similar stages.

However, precisely because the AE depends on cultural inputs, it assumes different cultural forms and different individual levels of expertise in artistic expression and appreciation.

4. Aesthetic imagination and knowledge

The AE is an innate, universal adaptation that has been extended historically with the explosion of cultural stimuli. The initial basic question now becomes: if the AE, intended as an integrated experience, represents an adaptation, what is its evolved function? The answer lies in the relationship between aesthetic imagination and knowledge. According to our cognitivist view of aesthetic function, the AE is a specific realization of the epistemic goal of knowledge. It constitutes a re-functionalization of previous phylogenetic systems (perceptual, affective, linguistic, etc.) in order to acquire knowledge through a decoupled (non-referential, playful, simulative, disinterested, non-utilitarian) experience.

For the sake of simplicity, we call this experience "fiction making" and we intend "fiction" in the specific sense of section 2 (non-reality oriented and independent of practical functionality). So the question is, can we know through fiction making? On the basis of typical criticisms,[\[20\]](#) this question entails three different challenges. The knowledge challenge: can fiction making generate knowledge? The warrant challenge: can fiction making justify knowledge? The proficiency challenge: can fiction making extend knowledge in a proficient mode? On the basis of cognitive sciences, it does seem possible to formulate for each challenge a positive thesis corroborated by crucial evidence.

Knowledge challenge. How can fiction afford knowledge if it has no contact with reality? The science of fiction, which is a new field of research in cognitive psychology, shows how this can be possible. A body of crucial experiments concerning fictional narrative found that exposure to fiction, unlike exposure to non-fiction, (a) predicts a more positive performance on a variety of social ability measures (frequent readers of fiction tend to have better abilities of empathy, social inferences, and theory of mind);[\[21\]](#) (b) is positively correlated with social support;[\[22\]](#) and (c) causes greater change in self-reported experience of personality traits and emotions.[\[23\]](#)

In addition, the science of fiction explains how fiction can afford knowledge. Simulative experience through fiction facilitates the process of growth and maturation of mind reading. Fictional narrative compresses models of the social world, a complex constituted by multiple processes in interaction. From these processes arise emergent properties that can not be predicted in advance from the low-level possible interactions. Fiction follows the trajectory of such possibilities, thus providing concrete simulative experiences that improve mind reading and the understanding of the social

world. [24]

Mind reading constitutes a set of social-cognitive skills (such as direct simulation, role taking, analogical inferences and theorizing on the basis of folk psychology) for understanding others as intentional agents and for engaging in shared activities (such as joint attention, collaborative cooperation, or symbolic communication). These skills are responsible for the unique form of human social organization, based on cultural learning and cultural creation. In this perspective, from the point of view of ontogeny, fiction represents an indispensable means of becoming a cultural being. In effect, young children from the second half of their second year enter into the collective intentionality of fictional worlds in early pretend play, understood as a meaningful activity. [25]

In addition, it is important to stress that joint pretend play involves all kinds of imaginings: bodily, sensory, affective, and so on. On this basis, the empirical results concerning fictional narratives collected by the science of fiction can, in principle, be generalized to all kinds of imaginings, not only propositional, and to all forms of aesthetic artifacts, not only fictional narratives. For instance, from the point of view of the pictorial representation, psychology of art has shown that even figurative paintings do not have the status of copies and imitations. [26] Instead, both figurative and abstract paintings constitute imaginative explorations concerning the sensory-motor contingencies of visual experience, the non-conceptual contents of perception, the what-it-is-like effects, the non-propositional and propositional interplay.

From the cognitive sciences perspective it does seem possible to propose the principle of affordance. The AE does not provide factual descriptions: through aesthetic artifacts, subjects do not extend their knowledge of truths about the actual world. They do not know actual and real facts. On the contrary, the AE enables modal knowledge of and about possibility: through aesthetic artifacts, subjects extend their knowledge of affordances provided by the world as an open and endless domain of possible skillful activities. Therefore, the cognitive value of the AE refers to the exploration of conceptual spaces of possibilities on the basis of the imagination. In the AE subjects do not access the world as a factual domain of state of affairs. They encounter it as a generative domain of opportunities for exploration.

Warrant challenge. Even if the AE affords true beliefs, how can fiction justify beliefs? Cognitive sciences show how this can be possible. Beliefs and imaginings have different functions. Beliefs represent the world as it is. Imaginings represent what the world would be like given some set of belief-like assumptions. However, beliefs and imaginings can have the same content, format and code. Thus, once belief-like representations enter inference and reasoning mechanisms, these respond much as they do to parallel beliefs. Beliefs and belief-like representations are isomorphic: they have very similar causal powers on subsequent processing. [27] This means that the understanding of fiction is governed by the same rational standards and norms that govern the understanding of the actual world. From this point of view, belief-like representations duplicate the logic of

beliefs: if it is reasonable to believe p in the ordinary context, it is reasonable to imagine p in the fictional context.

The perspective of pseudo-modularity can explain the mechanism of fictional justification better. The fictional box is a workspace in which belief-like representations are temporally stored and manipulated. This box is encapsulated: subjects know the fictional nature of representations, but at the same time they suspend the epistemic influence of this knowledge. In this way, subjects can play the make-believe game attending only to the fictional representations as if these were really believed. However, the encapsulation is partial and soft, the knowledge of the fictional nature of the representations is always available in the periphery of consciousness. For this reason, subjects can recall this knowledge when they need it.

In particular, they recall it when they must judge if fictional representations are plausible and credible. More precisely, subjects do not match the fictional representations to actual states of affairs. Instead, they evaluate whether the fictional representations are consistent with patterns of possibility and opportunity afforded by relevant beliefs about the real world.

From the perspective of the cognitive sciences, it does seem possible to propose the principle of verisimilitude. The truth-value of modal knowledge is justified if subjects judge the imaginings reasonable, if they judge the possible experiences prompted by the aesthetic artifacts as acceptable and convincing, even if these experiences are alternative to real ones. The verisimilitude is based on the isomorphism between belief-like representations and ordinary beliefs. Fictional representations are believable if they are consistent with the conceptual space of possibility drawn by ordinary beliefs about the real world. Therefore, just because the fictional box is softly encapsulated, justification is not a self-sufficient process restricted to the aesthetic object and its fictional world. On the contrary, the ultimate test of aesthetic knowledge is the external experience. Only if the belief-like representations acquired from the AE are useful in refining and deepening our preliminary understanding of the real world, they re-organize our knowledge and become part of our mind. (In Ricoeur's terms, they refigure our comprehension.)

Proficiency challenge. Even if the AE enables modal knowledge and confirms its truths, how can aesthetic objects afford important new beliefs in distinctive ways via means that are epistemologically significant? Philosophy produces formal arguments; science is based on the experimental method. Is the AE confined to the individual and ideographic dimension?

Cognitive sciences, in particular the perspective of grounded cognition, show how the AE can enable general knowledge.

This perspective proposes that simulation, as the re-enactment of motor, sensory, perceptual and introspective states acquired during experience with the world, constitutes the basic mechanism of the brain.[\[28\]](#)

Typically, patterns of re-enactment are activated for representational use, especially for anticipation and prediction.

Complex multimodal simulations become active to understand a situation and to produce continual predictions about what could happen next. As a unifying computational principle, simulation can implement core cognitive functions, even

symbolic inferences and language comprehension. Symbols, words and concepts acquire their deep informational content and produce true comprehension only on the basis of extensive interactions with simulations.[\[29\]](#) To this point, the research concerning categorization specifies that categories are organized around prototypes. These may be represented either by summary representations or exemplars. The former are flexible structured lists that include the relevant features (car/sedan). The latter are concrete instances of the categories, the best examples of them (car/a particular sedan model).[\[30\]](#)

In summary, understanding and anticipation require multimodal simulations that can re-enact both prototypes and individual tokens. The aesthetic mechanism of knowing through fiction implements this general brain device in a specific form. Guided by aesthetic artifacts, subjects explore via imagination a prototypical space of possibility configured by a concrete and determined example. This individual token does not correspond to a discrete factual truth. Instead, it configures and anticipates a compressed network of affordances that goes further and beyond the actual state of the world. Therefore, knowing through fiction means learning on the basis of a simulative exemplification with prototypical value. From the epistemic point of view, the AE does not offer realistic, general and formal reasons as do science and philosophy. However, its virtual simulation helps predict affordances and opportunities different from actual real world conditions but consistent with possible real world conditions.

Precisely for this reason, aesthetic imagination is at once reproductive and productive. From the first point of view, imagination re-enacts simulative schemata previously entrenched in memory that allow subjects to recognize the fictional representation as believable and to involve themselves in the simulative experience.[\[31\]](#) From the second point of view, imagination works creatively on existing simulative schemata in ways that defy habitual expectations and convention. The main creative operations may be application: the adaptive use of pre-existing simulative structures to fit slightly altered situations.

Analogy: the transposition of a simulative structure from one habitual context to another unfamiliar context. Combination: the integration of different simulative structures into a novel synthetic frame. Abstraction: the discovery of regularities in a number of different simulative structures.[\[32\]](#) In general, creativity may be explanatory or transformational.[\[33\]](#) The former is rule-governed, it discovers which types of structure can be generated within an existing conceptual space. The latter is rule-changing, it transforms the existing conceptual space generating structures that could not be generated before. Whatever degree it reaches, aesthetic creativity ties together reproductive and productive imagination. A series of empirical studies show explicitly this relationship in the ontogenetic development: pretend play and creativity are mutually intertwined in children.[\[34\]](#)

From the perspective of the cognitive sciences, it does seem possible to propose the principle of imaginative exemplification. On the basis of a determined fictional

exemplar the AE enables an imaginative simulation that is not constrained to denote, represent or anticipate a factual state of affairs. On the contrary, the imaginative exemplification compresses a virtual model that can be in principle universalizable. It can be applied as a mental reference point to all the relevant real world scenarios. As such, this virtual model has the status of an hypothesis; it has an effective cognitive value only if it explains past experience with new insights and predicts future experience more accurately.

5. Evolutionary aesthetics

In summary, the cognitivist view of the AE derived from cognitive sciences suggests, in general, that Aristotle was probably right: fiction may be a very serious and powerful tool for gaining knowledge. From the point of view of evolutionary aesthetics, it suggests that AE is a cross-cultural, species-general predisposition that is, at the same time, both a function of mental flexibility and cultural creativity and a basic feature of the human brain that improves the former and allows the proliferation of the latter.

The AE does not solve practical problems. According to self-labeled Darwinian aesthetics, aesthetic preferences are innate signals of fitness that guide human choices, especially in intersexual selection of mates.^[35] There are many doubts that even in the animal kingdom the proximate motivation of aesthetic preferences can be entirely reduced to their ultimate fitness value. Aesthetic features seem to be attractive *per se* as sexually stimulating, not as a ground for an inference to the reproductive capacity of their owners.^[36] However, even if partially decoupled from any utility for fitness, it is possible that the AE may have been originally connected with sexual selection. As an embodiment of skills and abilities, finely crafted artifacts may have been counted as reliable indicators of the maker's fitness. It is also plausible to consider the Acheulean manufacture of hand axes to be the origin of the "first art."

In one million years of production, a practical tool also became an indicator of fitness and status.^[37] Nevertheless, it is important to stress that human aesthetics proper slowly emerges with a playful, fictional, disinterested and non-utilitarian nature. It enables virtual domains of experimentation in which subjects are freed from immediate and direct responses: actions, perceptions, beliefs and emotions are de-constrained from their habitual and proponent links; subtle relationships are explored and new complex meanings are discovered. So, in order to improve knowledge, the aesthetic imagination has to be set off from mundane life, from practical problem solving, planning, and hypothesizing.

Precisely because it is autonomous and independent from strict functionality, it can play an adaptive role and constitute an essential and integral part of the evolution of socio-cultural systems.

The AE does not have a byproduct status. The AE is not the product of a single adaptation, such as walking. Instead, it initially emerged from, and is continuously supported in its actual functioning by, multiple systems that evolved for other purposes. However, in order to enhance the specific mode of improving knowledge through fiction making, the AE co-opted

these systems for this new function. Therefore the AE emerged neither as a spandrel, that is, a side-effect of these systems, nor as a mere extension of them.^[38] On the contrary, it constitutes a re-functionalization (in Gould's terms, an exaptation) that imposed upon them a new function and changed their higher-order relationships. From this point of view it is important to stress again that the AE does not implement a generic function of "blending"^[39] and it is not reducible to a generic "cognitive play with pattern."^[40] The AE realizes the epistemic goal of knowledge in a unique form. Knowing through fiction is provided by an imaginative compression with prototypical value. This virtual exemplification is embodied in a single aesthetic object. In its material presence, the aesthetic object constitutes an open-ended and continuously renewable potential for recursive explorations. As such, it requires direct acquaintance and cannot be replaced by simple descriptions and explanations.

The AE does not have a single function. Just because the AE integrates multiple systems, the function of knowing through fiction is not exclusive. The AE may often enhance communication, cooperation, cohesion, group bonding, shared experience and collective culture.^[41] It may also serve the goal of manipulation, propaganda and political control. At least originally, it may display the artist's fitness, status and prestige.^[42] It is often correlated with magical explanations in which objects acquire hidden causal powers.

More generally, people may engage in the AE for expressing themselves or for entertainment. Anyway, knowing through fiction represents the core function of the AE. Other multiple purposes are additionally imposed upon this main function as biological or cultural-specific over-goals. This point is especially evident in the proposal of "artifying" as "making special."^[43] In this perspective the common core of aesthetic artifacts and performances is to attract attention, sustain interest, create cognitive order or add emotional salience.

However, without organizing and sharing a particular form of knowledge, the function of making special does not have any specificity. It constitutes the simple mechanism of attention triggered by affective relevant stimuli processed in particular modes (exaggerated, patterned, embellished, repeated, and so on).

The AE does not constitute a single activity. The function of knowing through fiction is obvious in storytelling. However, this core function of fiction (intended in the broad sense) is not restricted to linguistic abilities. It directly concerns ceremonial rituals. These are practices that do not cope with immediate problems or practical needs. Instead, they create a meaningful frame that is different from a natural one. This frame explains nature and suggests how to control it (or to reduce stress because it is not controllable), integrates members into a group that participate in the same social organization. Similarly, body adornments and object decorations are not only attractants; they constitute the search for anthropic frames distinguished from natural ones.

In the same way, music and dance are not literal modes of communication that convey instrumental information. To different degrees, all of these activities have a meaning that

goes beyond their specific physical forms or functional uses.[44] They are released from the ordinary use of information, perceptions, beliefs and abilities. They duplicate this use by providing an imaginative space, they explore alternative possibilities beyond factual constraints. They continually expand the space of human experiences. Even though the “symbolic art” of the Upper Paleolithic, with its representational cave carvings, is of course not fictional as contemporary paintings are, the proper form of the AE emerged in the ancestral environment of adaptation as adjunct to different cultural activities aimed at imagining a human order decoupled from natural pressure. In this perspective, the core function of the AE arose gradually and became conscious progressively, through a long process of bootstrapping based on recursive interactions among the available mental systems, cooperation, and cultural creation.

6. Conclusion

A very serious objection may be directed to our approach: not all works of fiction are aesthetic objects (even less works of art). In addition, not all aesthetic objects produce knowledge (at least to the same degree). The answer is: it depends on their value. So, the basic question is transformed again: what is aesthetic value?

On the basis of our previous theses, we can suppose that there is an intimate relationship between the aesthetic value and the cognitive value. Knowing through fiction is the evolved function of the AE. We can suppose also that the aesthetic value is not reducible to the cognitive value: knowing through fiction provides neither general laws as science nor formal arguments as philosophy. Our theses on pseudo-modularity and aesthetic imagination configure a theoretical space in which it seem possible to explain, again with the aid of cognitive sciences, both aesthetic pleasure (why the AE is a self-rewarding source of pleasure in itself) and aesthetic judgment (why the AA is intertwined with evaluation).

The questions about the aesthetic value, the role of the aesthetic pleasure, the evaluative nature of the aesthetic judgment represent the most important missing piece to (a) form a global theory of the AE in naturalistic terms; (b) identify completely the common core of the AE; (c) describe the multiple realizations of this common core; and (d) define the boundaries of the AE. However, our space is running out and next time we will speak about this other intriguing part of the story.[45]

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