

Early art and the evolution of grounded emotions

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1. *Aesthetic emotions*

One of the topics studied and discussed more in recent years, both in the cognitive sciences and in aesthetics, is constituted by the emotions. In neurocognitive research there has been a real explosion of studies: each year hundreds of papers are published. Also in aesthetics a very broad debate has taken place, especially concerning aesthetic emotions. These are emotions prompted and guided by fictional representations, such as the representations conveyed by literature. These kinds of emotions are grounded on decoupled beliefs (disconnected from the current state of affairs) and on other-centered goals (derived from the other's condition). Beliefs and goals are both simulated off-line: they do not produce actual decisions and behaviors.

Much of the debate has regarded the so-called "paradox of fiction", characterized by this discordant triad. (a) I'm moved by fiction: I feel the emotion *x* (for instance, pity) for the fictional character *y* (for instance, Anna Karenina); (b) - I believe that - to feel an emotion for *y* requires that *y* really exists; (c) - I know that - what is portrayed in fiction is not actual and real: the fictional character *y* does not actually exist. So, are aesthetic emotions authentic, genuine, sincere, appropriate, consistent, true, and real? In this way, the approach based on the paradox of fiction not only questions the formative and cognitive value of aesthetic emotions, but it also makes problematic even the basic functioning of them (Davies [2009]).

This essays ties together cognitive sciences and aesthetics, providing a general thesis that completely overturns the approach based on the paradox of fiction. Very far from being a paradoxical and marginal phenomenon (a shallow imitation of daily emotions), aesthetic emotions represent in evolutionary terms an indispensable means that allowed the emergence of the ordinary emotions, especially of the so-called «secondary emotions». This proposal will be articulated on the basis of a theory of emotions inspired by grounded

cognition (Barsalou [2010]) and it will be developed in an evolutionary perspective through the reference to the archaeological evidence regarding the first art.

2. *Grounded emotions*

In order to argue our thesis it is crucial to stress two essential features of emotions. First, they can be conceived as episodes of temporary synchronization of several building components: perceptual construals and symbolic beliefs; inferences and reasoning; somatic retroaction and physiological regulation; goals activation and motivation; control, planning, and action; cognitive awareness of activating stimuli and phenomenal consciousness of on-line subjective experience. Although emotional responses can be dissociated (each system reflects many sources of variance in addition to emotionally relevant ones, so there are limits to their possible covariance), the synchronization usually emerges as a global and unitary experience, a gestalt-like integration with new properties that the atomic components do not have (Scherer [2005]).

The recent perspective of grounded cognition allow us to fully understand precisely this gestalt-like synthesis of multiple blocks. The reference point is the theory of the human conceptual systems, developed on the basis of recent experimental and theoretical results (Barsalou [2012]). This theory assumes that concepts are not amodal symbols computed in a modular system separated from the brain's modal systems for perception, action, introspection. On the contrary, concepts can be viewed as grounded representations, that is, organized collections of the multimodal information that has been typically experienced and processed for concepts' instances by multiple systems (perception, action, interoception, affect, mentalizing, language, reasoning, and so on). Concepts develop for aspects of experience that are relevant repeatedly across situations; the resulting profile of activity is established in memory, stored in distributed neural circuits, accessed in relevant situations. From this perspective, concepts are simulators: integrated patterns of multimodal simulation. When a concept is activated, there is a re-enactment of perceptual, motor, affective, and introspective states previously acquired during experience with the world, body, and mind – in the absence of bottom-up stimulation. Moreover, concepts are rarely represented in a vacuum, but are instead situated in meaningful background situations. These «situated conceptualizations» are extended networks of background concepts that represent elements of the entire situation. They typically include a setting, agents, objects, behaviors, events and internal states, each represented by relevant concepts. Furthermore, a great diversity exists in the specific situated conceptualizations that situate a concept on different occasions.

In fundamentally the same vein «emotion concepts» unify emotions as multicomponent processes (Wilson-Mendenhall *et al.* [2011]). As multimodal simulations, emotion concepts support and control perception, categorization, inference, internal states, and action. Again, they do not work in isolation, but are typically situated in background settings, events, and introspections. Precisely, a specific emotion concept is related to a large set of situated conceptualizations. Therefore, across different occasions, each situated conceptualization can produce not only different emotions, but also different forms of the same emotion, in terms of categorizations, subjective experience, bodily state, and potential actions. For instance, fear can be felt quite differently. On the basis of the relevant situated conceptualizations, it can be a fast reaction of flight in response to a sudden and threatening stimulus, but it can also be a reflexive, free-floating feeling without any direct cause.

Secondly, grounded cognition allows us to understand in detail the other fundamental feature relevant to our thesis, the typical distinction between two different kinds of emotions, the so-called primary (or basic) and secondary (or complex) emotions (Ekman [2003]). Primary emotions are fast reaction mechanisms triggered in the early stages of perception; short-lived and highly automated responses prompted by fixed programs and realized in anatomically ancient brain structures; universal alarm systems found in all human cultures and closely related to responses in other primates. They are commonly called fear, anger, disgust, sadness, joy, and surprise – but all these emotion words refer to phenomena less rich than those they refer to in folk-psychological narratives. Obviously, when they occur in the human mind, they are typically enriched with the conscious recognition of the activating stimulus and the on-line subjective experience. Secondary emotions are activated by extended, sophisticated, full-blown cognitive evaluations, occurring in response to complex stimuli. They are accompanied by the activity in the neocortex and require the ability to represent the scenario and analyze the relevant information; the ability to assess the (present or future) satisfaction/frustration of important and active goals, concerns, needs, desires; the ability to choose among different courses of action. Rather than fixed and fast reactions, they are extended and evolving episodes, with ongoing feedbacks that continuously monitor the degree of compatibility between the situation and the subject's goals (Frijda [2010]).

Because primary emotions as failsafe devices are domain specific programs, they have arisen in response to certain critical features of the ancestral environment and are necessarily tailored to these particular evolutionary recurrent conditions of activation (Cosmides, Tooby [2000]). On the contrary, although secondary emotions are con-

strained, at least partially, by phylogenesis, ontogenesis, and sociogenesis, they are flexible and open to change. Because they are organized by social rules, instead of genetic programming, emotional episodes allow a great deal of improvisation and innovation. During the on-line construction of the episodes, creative individuals (in terms of their emotional intelligence) can introduce new emotion concepts that diverge from the standard prototypes, with corresponding changes occurring in the emotional feelings and action schemata. If these innovations prove adaptive and effective for the individual, they may then be emulated by others and come into common use. In this perspective, secondary emotions are a social construction. Precisely for this reason they show great individual and cultural variability (Mesquita, Leu [2007]).

Grounded cognition theory of emotion explains the distinctions between primary and secondary emotions on the basis of the different role performed by consciousness. In this regard it is useful to distinguish between two kinds of consciousness: the first-order raw experience and the second-order reflexive awareness (Lambie, Marcel [2002]). The first represents what it is like to feel a particular emotion; it has an holistic nature; it regards the non conceptual nexus among perception, action, affect; it is often prompted by simple antecedents, even when the stimulus occurs outside the focus of attention. The second one is a kind of knowing (by acquaintance) the ongoing first-order experience; it is activated by conscious attention; it selects the relevant features of the first-order processing and provides an analytic scrutiny of them; it allows reflection, verbal reports, deliberate control. From the perspective of grounded cognition, the crucial point is as follows: because to be in an emotion state is almost always to be in a phenomenal state, the subjective experience of an emotion, even of a secondary emotion, involves only the activation of the specific pattern of beliefs, goals, and somatic feedback that distinguishes the emotion. Instead, the understanding of an emotion as a gestalt-like whole requires in addition conscious second-order thoughts that explicitly categorize the emotion as such, its causes and consequences. It is the content of these acts of categorization that make one feeling of fear distinct not only from another emotion, but also from other feelings of fear (Feldman Barrett *et al.* [2007]).

3. *Early art*

With regard to the available archaeological data concerning the early art, the reference point is represented by the evidence concerning the Upper Paleolithic (lasting from about 40,000 to 10,000 years ago), in particular the findings of Cro-Magnon art in Europe. These findings are constituted by a complex, integrated set of behaviors and prod-

ucts commonly thought to be undoubtedly artistic: cave paintings, tridimensional sculptures, musical instruments, architectural disposition of building components, and rich ornamentation (Fagan [2010]; Finlayson [2009]). There was probably also storytelling: there is a general agreement that language must have been in place (Bannan [2012]). Moreover, it is important to pay attention to recent research, particularly at African sites, where stones and bones with systematically engraved lines, perforated shells and animal teeth, and ochre crayons from 135,000 to 70,000 years ago can be found (D'Errico *et al.* [2003]). So, the general flourishing of artistic behaviors and products during the Upper Paleolithic was probably preceded by a slow and gradual process of preparation in which the precursors and preconditions of aesthetic experience developed.

There are two different lines of interpretation concerning these archaeological date. One line affirms that 40,000-30,000 years ago marked a sudden creative explosion (Tattersal [2012]), whilst the other line denies the idea of a cultural revolution and pushes back the date of psychological modernity and the behaviors that demonstrate it (Stringer [2012]). However, what matters in our present perspective is that both the lines of interpretation do not modeled the first artistic behaviors and products on the modern Western notion of fine art. They do not represent specialized practices with professionalized roles; they are not tied to the self-expression of an isolated individual; they are not appreciated in dedicated places, such as in a museum, by static individuals; and they are not comprised of autonomous objects (i.e. pictures, sculptures, and so on) or activities (i.e. storytelling, dances, and so on) collected in a superordinate category. The ethnologists' reports from pre-modern societies suggest that all modern hunter-gatherers have multi-media group scale ceremonies. In analogy, it is commonly hypothesized that the earliest artistic behaviors and products were collective practices in which everyone participated and that were organized as multimodal and temporal coordinated experiences (i.e. religious ceremonies replete with dance, music, song, narrative, and gestural symbolisms).

Although this hypothesis is very plausible and generally accepted, we have to acknowledge that hitherto the universal agreement on this point was not based on direct evidence: whilst pre-modern societies often depict these common rituals, there is not a single cave painting of such ceremonies. Moreover, the subterranean art of the Upper Paleolithic is commonly judged to be one of the greatest archaeological enigmas. Still, today, anthropologists and archaeologists are no closer to knowing why the artists of the Upper Paleolithic penetrated the deep limestone caves in total darkness to depict images in inaccessible fissures. However, in spite of this lack of direct evidence and of a

comprehensive explanation of the Upper Paleolithic cave paintings, the ethnological and anthropological hypothesis of participatory, multimodal, and dynamical art absolutely remains the only available option (Dunbar [1996]; Layton [2000]; D.S. Wilson [2003]; Mithen [2009]; Churchland [2011]; E.O. Wilson [2012]). This is confirmed by the fact that none argue the opposite thesis (that art was not participatory), not even the advocates of the display or self-presentation theory of art (Miller [2000]; Menninghaus [2003]). Above all, the opposite thesis seems to be an ideological projection from the eighteenth-century system of fine arts.

Moreover, it is important to stress that, although the different evolutionary theories have reached no general consensus on the adaptive function of the aesthetic experience, they clarify definitively that early artistic behaviors and products were not the source of actual, empirical, practical, and utilitarian information, simply because these kinds of information can be conveyed more effectively by others means (Dissanayake [2000]). Even when evolutionary theorists like Pinker have denied the status of adaptation, they have recognized that aesthetic experience allows the exploration in conceptual spaces of possibilities on the basis of imagination (Pinker [1997]). So, in analogy with pre-modern tribal art, the early art was, at the same time, decoupled and engaged. It was decoupled because it was disconnected from the practical functionality of the immediate problem solving: in this sense, it promoted a “disinterested” and “purposeless” use of imagination in all the participants. However, it was engaged because it constituted a performative, multi-media, collective ritual that each participant experienced as an integral part of their life, with crucial and indispensable real-world implications.

4. The making of the secondary emotions

In contrast to the paradox of fiction, it is commonly thought that art generally represents one of the primary ways in which emotions are educated, and that the emotional knowledge required for social life is transmitted and improved by examples portrayed in images, myths, and narratives (Donald [2006]). Also, it is generally accepted that early participatory art may provoke a real emotional contagion, that is more radical than empathy. Contagion and empathy may be both automatic and unconscious, but in the contagion there is a complete identification among the subjects, whilst in the empathy the empathizers remain distinct from the targets (de Vignemont, Singer [2006]). Moreover, the emotional contagion induced by the first art is more powerful than that of subsequent forms of art that make a marked distinction between the audience and the performers. Everyone participates, singing and dancing, mirroring each other's behavior

toward the same affective state. This strong investment facilitates the sharing of common feelings and attitudes, and it reinforces social bonding (Carroll [2004]).

However, in our hypothesis, early art not only organized the emotional life of participants in order to unify the social group; more radically, it invented modern emotions. During rituals, the raw affective experience of participants is made special as an extraordinary object of attention; it is explicitly focused and recognized; it is categorized on the basis of shared situated conceptualizations. In this perspective, the first art not only educated, but it also contributed to the invention of the emotions, particularly the inventions of the secondary emotions, in which pre-reflexive and immediate experience is re-represented, described, and interpreted. Moreover, the situated conceptualizations are not induced via mimesis by a separated author. On the contrary, they are constructed collectively and on-line, without previous prototypes. Therefore, the first art stimulated the transition from primary emotions, as fixed reaction mechanisms, to the possibility of creatively modifying the emotional processes according to the contextual affordances.

It is important to emphasize that early art helped this transition precisely in virtue of the main features we have noted: its multi-media, participatory, and dynamical nature. Early art harmonized narratives, paintings, music, dancing, and singing. From our perspective, this multimodal experience tied together the linguistic dimension with the perceptual, affective, and somatic aspects in a new global compound. This compound was essentially grounded in two intertwined kinds of integration: first, the unity of linguistic narratives with visual paintings; second, the unity of symbolic understanding with emotional control. From the first point of view, our ancestors constructed their emotional knowledge through the collective stories and myths they learned together during communal rituals. These stories were visually illustrated, and so reinforced and enriched, by the correspondence to the iconography of rock art and the symbolic gestures of rituals. From the second point of view, our ancestors improved their emotional competence through the control they exercised on the emotional contagion provoked by dancing together in a repetitive fashion to repetitive music. The first and the second operations were intimately connected: the construction of the emotional knowledge through the mediation of the narratives, the iconography and the symbolism were, at the same time, the control of the personal emotional experiences according to the rules and the opportunities afforded by the communal stories, pictures, and gestures.

Obviously, it was crucial to the whole dynamic that the ritual was collective: from primary emotions as individual reaction systems, the emotional life was embedded in larger communal meaning-giving structures enabling a sense of personal continuity. Moreover,

it was crucial that the ritual had a multi-structured temporal organization. As is suggested by pre-modern art, the first stages, involving music, dancing and singing, provoke an automatic and complete identification of all the participants in an ecstatic and intense experience, whilst the later stages, the time of deliberate image-making, allow a reflexive detachment (Lewis-Williams [2002]).

Neuroscientific evidence fully corroborates our thesis: understanding oneself (in the sense of self-reflecting on current experiences, enduring psychological traits, and autobiographical memories in order to develop a personal self-concept) and self-regulation (in the sense of intentional control concerning automatic reactions, bottom-up generated emotions, and reflexive efforts of stimuli reappraisal) represent practices that recruit the same medial frontoparietal network of neural circuits (Ochsner, Gross [2005]). Thus, in our hypothesis, early art constituted a cultural device intentionally designed by our ancestors to stimulate these brain regions in order to integrate sub-symbolic (somatic, perceptual, and affective) with symbolic (linguistic, propositional, and conceptual) dimensions, bottom-up and stimulus-driven activation with top-down and self-generated regulation, automatic and tacit with controlled and deliberate processes in a new order of emotional consciousness, emerging from a gestalt-like synthesis of these several building blocks.

So, our conclusion completely denies and removes the perspective based on the paradox of fiction. First art contributed to the transition from primary to secondary emotions; from immediate and pre-reflexive experience to constructive and self-conscious emotions; from fast and basic reactions to multimodal and integrated emotional episodes; from individual and fixed alarm systems to shared and creative situated conceptualizations of emotions. In summary: especially in their complex version, ordinary emotions do not exist from the beginning. At least to a significant degree, their evolution is grounded in the aesthetic emotions induced by the early art and experienced by our ancestors on the basis of a decoupled but not disengaged use of aesthetic imagination.

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