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Caves, Hands and Therianthropes Methodological Notes for a Philosophy of Prehistoric Art

Abstract: This paper addresses the philosophical problem of interpreting prehistoric rock art, whose original meanings remain largely inaccessible. After reconstructing the emergence of prehistoric art as an object of scientific inquiry and reviewing major interpretative hypotheses—magic, religion, social symbolism, and shamanism—the paper highlights the limits of approaches grounded exclusively in modern concepts and ethnographic analogies. Drawing on methodological insights from Giambattista Vico and John Dewey, it proposes a two-stage framework. The first stage integrates archaeology with cognitive sciences to reconstruct the biologically grounded cognitive and affective capacities involved in picture-making and aesthetic experience. The second stage develops cautious interpretative hypotheses through historical and ethnological analogies, while acknowledging cultural change and temporal discontinuity. This framework is illustrated through two case studies based on recent fieldwork: the hand stencils of the cave of Gargas, examined as examples of a recurring element of prehistoric rock art, and therianthropic figures in San rock art, analysed as expressions of human–animal continuity. The paper argues that philosophy can clarify both the possibilities and the limits of interpretation, contributing substantively to the study of the prehistory of art.

1. *Prehistoric Rock Art: discoveries and hypotheses*[1]*

Since its discovery in the late nineteenth century, prehistoric art has challenged the assumptions and practices of modern observers. In 1880, when Marcelino Sanz de Sautuola reported his discovery of the paintings on the ceiling of the Altamira Cave in Spain, the archaeological establishment dismissed it as a fraud. At that time, the existence of some kind of Paleolithic art was already accepted. Since the 1860s, finely engraved stones and bones had been discovered in caves and rock shelters of southern France, near tools and animal bones from the Ice Age. Yet the polychrome ceiling of Altamira revealed astonishing artwork, resulting from a collective endeavor, and suggested symbolic meanings that "primitive men" could not have conceived or produced; hence a heated debate over the true antiquity of

1 *This article has been supported by the PRIN 2022 PNRR "DIET-ETHICS - How Early Modern Ideas Shaped European Food Ethics" (P2022KFEYS). Funded by the European Union – Next Generation EU, Mission 4, Component 1, CUP Master B53D23031120001, CUP Unit F53D23011430001.

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those paintings persisted for more than twenty years[2]. Prehistoric art of this scale remained "unseen" as it had been in many accessible places, such as the cave of Niaux, where the painted bison in the "Salon noir" were close to graffiti by modern visitors, yet nobody mentioned them[3].

In 1895, more engravings were found in the cave of La Mouthe, in a gallery sealed by Paleolithic deposits, and further discoveries followed. The stratigraphic evidence could not be denied any longer. After these data were acknowledged, and the prominent archaeologist Émile Cartailhac publicly offered his "mea culpa of a sceptic" in 1902, the stage was ready to tell a new story, releasing the analogy between these prehistoric artefacts and those of "primitive cultures" that were the object of anthropology. Paleolithic humans had their culture too, which could include religion, magic and art[4].

However, the very notion of "art" has been deemed unfit to define rock paintings and engravings. Today, some scholars have abandoned the aesthetically charged word "art", pointing out that "art" and "aesthetics" are modern notions. They prefer to speak of prehistoric "images" and "visual culture". Others – as I do in this paper – still use "art" in the broad sense of the action of intentionally manufacturing objects (artefacts). In any case, the hypothesis of a purely aesthetic interest of prehistoric artists, practicing "art pour l'art" as a pastime, was soon discarded. In fact, many Paleolithic paintings in European caves were not meant to be easily admired, and some are located in secluded corners where they could hardly be seen at all. Successive theories reopened the problem of the adequacy of historiographic categories: was prehistoric "art" a tool for magic (meant to support the hunt, to control the weather and other uncertainties of life)? Was it part of religious rituals? Was it a symbol of sexual or social groups? Was it an expression of shamanic visions[5]?

From a methodological point of view, most of these hypotheses were grounded in – or corroborated by – ethnological analogies. For example, the reports on Aboriginal cultures by Walter Spencer and Francis Gillen documented the belief that Australian rock paintings, which were still being produced in the nineteenth century, could promote the reproduction of game or the success of hunting. These reports substantiated James Frazer's theories about primitive culture, which were in turn taken up by Solomon Reinach in his seminal paper "L'art e la magie" (1903)[6]. For

2 The story of these archaeological findings and controversies has been told many times. See Bahn (2016).

3 Stavrinaki (2022, pp. 134-139).

4 The notions of culture, animism and magic, developed by anthropologists Edward Burnett Tylor in *Primitive Culture* (1871) and James Frazer in *The Golden Bough* (1890), played a prominent role in the interpretation of prehistoric art.

5 A detailed critical overview of these and other hypotheses on prehistoric art can be found in Le Quellec (2022). For a shorter critical account Clottes (2011). For a history of early interpretations see Palacio Pérez (2017).

6 Reinach suggested a theory of prehistoric art as magic based on ethnological comparation. He argued: "The only hope we have of knowing *why* cave dwellers painted and sculpted

decades, the theory of "hunt magic" was one of the main hypotheses concerning prehistoric art, endorsed by the major authority of French prehistoric studies, Henri Breuil. However, the projection of ethnographic observations on the Paleolithic was conjectural, and archeological evidence in European caves eventually showed that painted animal species often did not correspond to those that were eaten.

After almost 150 years of debate, consensus is still lacking, and some scholars argue that the meaning of prehistoric rock art is forever lost[7]. We struggle to make sense of a growing and global collection of paintings and engravings, mostly composed of pictures of non-human animals and abstract signs. This is not only an archaeological problem, for the early expressions of human culture over tens of thousands of years are a unique subject for aesthetics, philosophy of mind, philosophy of language, and environmental philosophy. Indeed, as I will argue, philosophical ideas can make promising contributions to the investigation of prehistoric art.

2. *Methodological ideas from philosophy*

The problem of understanding prehistoric peoples had already been addressed by Giambattista Vico in his masterwork *La scienza nuova* (*The New Science*), first published in 1741[8]. Vico aimed to establish a new historical science and faced the problem of understanding peoples who left no written record. To be sure, he held a conservative view of the chronology of humanity, rejecting the idea of a boundless antiquity, which circulated among materialists and libertines, and which had led to questioning Biblical chronology on philological and historical grounds. Vico limited the origin of humanity to the third millennium BC, thus preserving the Biblical narrative.[9] But precisely because he rejected various attempts to connect the history of the Jews with different historical sources from Antiquity, he also faced the task of understanding peoples left out of the Biblical narrative, living scattered around the world after the Deluge.

From a methodological point of view, Vico distinguished between "philology" and "philosophy": "philology" included the empirical investigation of language and literature, ancient history and antiquarianism, while philosophy's task was to interpret data collected in those fields in order to understand the development of

is to ask the same question of today's primitive peoples, whose condition is revealed to us by ethnography" (Reinach 1903, p. 259). Reinach drew on reports that he received directly from Frazer, Reinach (ibid, p. 262). See Palacio Pérez (2017, pp. 59-64).

7 See, e.g., Lorblanchet (1988, p. 282). P. Bahn (1998, pp. 171, 247). Both authors have recently concluded that prehistoric art generally conveyed "spiritual concerns that went far beyond the need for survival", mentioning "magic" and "religion", Lorblanchet and Bahn (2017, Conclusion).

8 For the purpose of this paper, I do not address the abundant literature on Vico. Vico's approach to art as a key to understanding human cultures is mentioned in Haskell (1993, pp. 217, 235).

9 See Rossi (1969, pp. 132-164).

poetry, religion, law, and philosophy across time. Vico formulated a fundamental claim concerning the possibility of historical knowledge: although we lack the capacity to explain natural phenomena, whose cause is ultimately God, historical facts are made by humans and we can trace human actions back to human capacities and motivations in order to explain them. Vico's objective was to write a history of law, poetry and religion and other institutions as belonging to a "shared nature of Nations" (as he puts it in the title of the 1744 edition). He maintained that different "nations" displayed the same "ideas", such as religion and the burial of the dead, without being in contact with each other, and that this could only be explained by a "common principle": "common sense", defined as a "judgment with no reflection, shared by the whole human race"[10]. On the other hand, he wanted to avoid the mistake of projecting ideas of the present onto the past, blaming the "conceit of nations" and the "conceit of scholars", that mistakenly identify present views with the ancient ones instead of attempting to grasp their difference[11]. In this perspective, he argued that the earliest condition of humans was a "childhood" of the world, dominated by the senses and the imagination[12]. Bringing together data from literature and language, history and antiquarianism, Vico sketched a narrative of historical ages, beginning with the "Age of Gods", which corresponded to the time of prehistoric humans – conceived as savages or "beasts" [*bestioni*].

Vico has often been hailed as a precursor of successive theories, and I do not share this approach. To salvage a grain of truth from his doctrines, separating it from the providentialism of his philosophy of history, his many mistaken and occasionally fanciful historical and linguistic interpretations and his conclusion that there are three fixed stages of history, is a problematic and historically far-fetched endeavor. Nevertheless, his philosophical approach marks a seminal moment in the early investigation of prehistoric cultures. First of all, the very idea of a free rational investigation of prehistoric art and religion, which is a central topic of Vico's *New Science*, was a breakthrough that must not be taken for granted: as shown by the example of Australian Aboriginal cultures, rock art sites have been traditionally considered closed to foreigners and to members of different clans, and knowledge of their meanings restricted to initiated people.

Second, Vico's idea of using "common sense" as a key for the interpretation of historical and archeological data suggests a valuable insight concerning the study of prehistoric art: to understand prehistoric art, archaeology must be integrated with philosophical and scientific disciplines that would later be brought together in cognitive sciences. In particular, philosophy of mind and cognitive neuroscience can help develop hypotheses about the cognitive and emotional conditions of picture-making among prehistoric humans, before introducing ethnological analogies with modern cultures and examining the role of the changing environment.

10 Vico (1744, pp. xii-xiii). In Vico's words, common sense is "felt" (in Italian: "sentito").
11 Vico (1744, pp. iii-iv).
12 Vico (1744, pp. l-lii).

Of course, a similar view has been developed in the discipline of cognitive archaeology to investigate the mind of prehistoric humans and the origins of human expression. Focusing on art, I want to outline how this approach can be combined with history and ethnology. I maintain that a viable method for the study of prehistoric art – broadly reminiscent of Vico's pioneering approach – can be articulated into two stages. First, the interpretation of artefacts by means of our knowledge of the human *capacities* operating in the natural environment of prehistory. Second, the interpretation of their *meaning* by means of analogies with historical cultures.

This first stage (broadly corresponding to Vico's appeal to "common sense" and his conjectures about the life of "savages" in a forested landscape after the Deluge) includes investigations in phenomenology, psychology and cognitive archaeology. It does not seek to unveil the meaning of rock art; rather, it aims to clarify the cognitive and affective capacities that underlie art-making and the experience of art. Through these perspectives, we can gain valuable insights concerning the different hypotheses about prehistoric art. For example, given our knowledge of the daily life of prehistoric hunter-gatherers, we can focus on the physiological, cognitive and emotional grounds of "animism" and interpret prehistoric "religion" as the expression of a deep sense of interdependence and familiarity with other animals. Because this inquiry rests on well-established biological parameters for understanding the basic conditions of artistic production and reception, it has the potential to yield comparatively robust results.

In the second stage, we can examine historical and ethnological cases to develop interpretative hypotheses about the meaning of the artwork. This is an intrinsically conjectural step, and one that must consider that prehistoric humans were repeatedly confronted with pictures from a remote past. For example, the cave of El Castillo in Spain was visited and decorated at different times, at intervals spanning up to ten thousand years. In other words, prehistories predated prehistories. The "meaning" of pictures is always subject to change over time. Even if we postulate a long-lasting cultural continuity in a region – as is the case in Australia – no cultural tradition persists over tens of thousands of years without loss and transformation of its contents.[13] Given this proviso, we can nevertheless formulate plausible conjectures. For example, in many cases we can plausibly argue that dance, music and other artistic activities accompanied the experience of rock art, and we can attempt to determine archaic myths that could explain fundamental features of rock art.

To show how this twofold model can work, I introduce another philosophical framework: John Dewey's theory of art as experience. According to Dewey, a "work of art" is not identical with an isolated physical object, the "artistic product", such as the Parthenon or the ceiling of Altamira.

> A work of art no matter how old and classic is actually, not just potentially, a work of art only when it lives in some individualized experience. As a piece of parchment, of

13 Cf. Lorblanchet (1992, p. 133).

> marble, of canvas, it remains (subject to the ravages of time) self-identical throughout the ages. But as a work of art, it is recreated every time it is esthetically experienced. No one doubts this fact in the rendering of a musical score; no one supposes that the lines and dots on paper are more than the recorded means of evoking the work of art. But what is true of it is equally true of the Parthenon as a building[14].

Aesthetic experience is the result of an interaction between the perceiving individual and the object within a broader environment. Indeed, as Dewey points out, the very isolation of objects of "fine art" is a modern idea, while any wrought object, such as "waving feathers", "domestic utensils", "bows" and "spears", could belong to the "enhancements of the processes of everyday life" that Dewey identifies with aesthetic experience – including the colored pictures in prehistoric caves[15]. From this perspective – inspired by biology[16] – art is conceived as enhancement of life force, and the basic set of human capacities to react to environmental stimuli form the core of aesthetic experience. At the same time, Dewey distinguishes universal features of artistic experience from the changing cultural traditions that direct such experience and lead to the codification of meanings. In prehistoric art, we can grasp the former, biologically rooted features of experience with greater confidence, while the historical dimension requires us to consider the difference between the present and the past points of view:

> The one who sets out to theorize about the esthetic experience embodied in the Parthenon must realize in thought what the people into whose lives it entered had in common, as creators and as those who were satisfied with it, with people in our own homes and on our own streets[17].

Dewey belonged to American pragmatism, and pragmatist and enactivist approaches have already been adopted in cognitive archaeology, where they have proved fruitful for the investigation of prehistoric art, as they effectively address both the embodiment of mental processes and interaction with the environment[18]. I think that Dewey's aesthetics is particularly valuable in its conception aesthetic experience as a matter of vital enhancement, in which art concerns the "organization

14 Dewey (1934, pp. 108-109). Dewey's view was certainly influenced by Croce's aesthetics, but stands out for its original elaboration of aesthetic experience in an environmental rather than merely idealistic perspective. I will not address this historical parallel here.

15 Dewey (1934, pp. 6-7).

16 On Dewey's reception of Darwin, and the importance of Darwinism for American pragmatism in general, see Pearce (2020).

17 Dewey (1934, p. 4).

18 The prominent approach of "material engagement" has been developed by Colin Renfrew in his seminal works on cognitive archaeology, see Renfrew (2004, pp. 23-32) and extensively developed by Lambros Malafouris in his theory of "material engagement", Malafouris (2013). On the related philosophical perspectives see the special issue Killin-Mazijk-Overmann (2025).

of energy" and experience is structured by "rhythm". At the same time, Dewey clearly separates this vital ground from the cultural codes that modify the meanings and functions of art products. In my view, this approach must be extended beyond "aesthetics", as Dewey himself suggests in several passages, for example when he argues that "primitive rituals", originally associated with art, "were enduringly enacted, we may be sure, in spite of all practical failures, because they were immediate enhancements of the experience of living".[19]

Since this approach operates at the intersection of biology and semiotics, we can hypothesize that some expressive motifs of rock art, grounded in human biology and the subconscious, recur across different prehistoric cultures. Analogous to Aby Warburg's *Pathosformeln*, these motifs return in different ages independently of conscious cultural revivals – a phenomenon that Warburg called *Nachleben* [survival] – and can underlie entirely different meanings.[20] Examples include handprints and the depiction of sexual organs. The representation of animals and therianthropes can likewise be understood as reflecting a fundamental bond with non-human animals, based on the daily interaction with both prey and predators.

The outlined twofold approach, integrated by the idea of interaction with the environment, will have a different focus depending on the case studies. For example, we can read human capacities to perceive geometrical forms and rhythmic patterns from the red discs in the cave of El Castillo in Spain. Drawing upon cognitive neuroscience, we can reduce formal patterns to a set of operators, thus sketching a "language of thought" of geometric shapes and sequences. However, we can hardly fathom the functions and meanings of these patterns and shapes, although we can recognize those capacities to recognize and compare shapes as the grounds of different systems of knowledge, from mythology to natural science. In this case, the first stage of our method plays the main role[21]. By contrast, the analogical approach will play a major role in the interpretation of rock art of Arnhem Land, because local people have been producing the art and transmitting memory of its meanings until today; yet the cognitive homogeneity of Aboriginal people to their ancestors cannot by itself justify the projection of their present views back to paintings made tens of thousands of years ago[22].

In the next sections, I illustrate my tentative claims with two case studies, based on fieldwork and research conducted between 2023 and 2025.

19 Dewey (1934, p. 30).

20 For a valuable exposition of Warburg's ideas and their connection to Victorian anthropology and Darwinian biology see Didi-Huberman (2002).

21 For the neuroscientific investigation of human recognition of patterns see Sablé-Meyer-Ellis-Tenenbaum-Dehaene (2022, p. 101527). On geometrical forms in prehistoric art cf. Keller (2004).

22 For an introduction to Arnhem Land and its prehistoric art, based on archeological and ethnological investigations, see Chaloupka (2023).

3. *Hands and pictures*

On Vico's view of primitive humans, "common sense" was manifested in poetic wisdom and imagination rather than in the intellect. This reflected Vico's attempt to characterize the specific difference of prehistoric minds. In contrast with this view, contemporary cognitive archaeology makes two claims. First, the intellectual capacities of prehistoric *homo sapiens* were identical to ours. Second, the characterization of these cognitive capacities and their imaginative products cannot be separated from their bodily structure and their use of tools. In other words, besides judgments of common sense, the reconstruction of early art-making must include shared bodily features and physical interactions with the environment. A notable element of prehistoric art, the imprint of hands, can illustrate this point.

Gargas in the High Pyrenees is one of the caves where paintings were known but *unseen* before the official recognition of prehistoric art at the beginning of the twentieth century. It was a popular place for excursions, animal fossils had already been found, but only in 1906 did Félix Régnault report the presence of hand stencils, eventually dated to 27,000 years ago[23]. Besides the usual bestiary, this subject turned out to be a distinctive element of the site: more than 220 hand stencils of adults and children were made on the rock by blowing red and black pigments. Another unique feature of Gargas' handprints is that many of them are characterized by partially or entirely missing phalanges. The gesture of imprinting one's hand was typical of the French and Spanish Gravettian, but it has been repeated in different prehistoric periods all around the world, from Europe to Australia and the Americas, where the *Cueva de las Manos* in Argentina echoes the sheer quantity of hands of Gargas. Attribution to Neanderthal of hand stencils in Spain has challenged the view that these were an exclusive expression of homo sapiens. Most recently, the discovery of hand stencils in Indonesia, dated to at least 67,800 years BP, has been presented as the earliest known rock art in the world[24].

Tentative explanations of the meaning of "negative hands" have been diverse. Early scholars, such as Émile Cartailhac and André Leroi-Gourhan, argued that hand stencils belonged to a language of gestures, like those that are historically documented among American Indians and other peoples. The very act of imprinting has been pointed out as possibly more relevant than the lasting picture: it could be the trace of a ritual, and the act of touching the cave wall might document an attempt to contact invisible places. Alternative views supposing the practice of ritual mutilations or the occurrence of illnesses have been proved to be unlikely. Some hand stencils in Gargas (and elsewhere) are located in very secluded spaces, or high in wall fissures, where people could get only with the help of scaffolding or stairs. Hands of children were printed at heights where they had to be raised

23 For a description of the cave and an overiew of the explorations and scientific investigations of Gargas see Foucher, San Juan-Foucher, Rumeau (2007).

24 Cf. Hoffmann *et al.* (2018); Oktaviana *et al.* (2026).

by adults (in what could be a ritual or a playful event). Overall, we can conjecture that the act of imprinting hands belonged to a symbolic code and/or to a ritualized action, but there is insufficient evidence to establish its meaning[25].

From the perspective of capacities, by contrast, we can draw inferences from hand stencils about the thoughts and values of their makers. I will start from the elementary anatomical and functional fact that the hands of modern humans (*Homo sapiens*) can be used in several distinctive ways because of bipedal posture. Once more, philosophers anticipated the importance of anatomy and its implications for the very definition of humans.

Since Ancient Greek philosophy, the hand has been presented as a characteristic mark of the animal that excels through it[26]. Aristotle famously argued: "Anaxagoras says that man is the most intelligent of the animals because he has hands, but it would be better to say that he has hands because he is the most intelligent"[27]. Lucretius rejected Aristotle's teleology and reversed the priority of organ and intelligence: "nothing was born in the body so that we could use it, but when the organ is born from there the use is generated"[28]. Nevertheless, Aristotle granted that the freedom of movement of the hand was a crucial characteristic of humans: "Man alone among animals is upright, because of what is divine in him;

25 For a critical overview of alternative hypotheses see Le Quellec (2022, pp. 204-226).
26 See Longo (2000, pp. 7-27).
27 Aristotle, *De part. anim*. IV. 10, 687 a 7.
28 Lucretius, *De rerum natura*, IV, 834- 835.

for the divine element is intellect [*nous*] and thought [*phronēsis*]"[29]. He also connected intellectual capacities to the hand as a polyvalent instrument, which can simulate and replace the organs of other animals and allows the manipulation of other tools; therefore Aristotle defined the hand as "the instrument of instruments"[30].

The legacy of these ancient debates runs through the entire philosophical tradition. Giordano Bruno once more emphasized the importance of the hand as the condition of the human difference among animals: "Many animals may have more ingenuity and much greater light of intellect than man [..] but for lack of tools they become inferior". Bruno devised a thought experiment to emphasize that bodily conformation, and not the essence of the soul, defines the human difference: "provided that man had twice as much wits as he has", but "with that his hands were transformed into the form of feet [...] tell me where the conversations would be [...] where would be the institutions of doctrines"[31].

Now, given the unique function of the hands in humans, for both practical use and communication, their imprinting can appear to us as a "signature" of *Homo sapiens*. But what about the perspective of their makers? It is safe to say that the making of negative hands was a planned action, different from the occasional scratching of claws on cave walls by cave bears in Paleolithic Europe. Hence, the metacognitive implications of this act are most relevant, particularly as evidence of foresight and of planned action directed by values other than survival. To clarify this point, we need to distinguish the technical functions of the hand, for example in the production of bifaces, from the cognitive implications of hand printing and picture-making.

Let us first recall how the liberation of the hand and the design and use of tools were related to the evolution of human cognitive capacities in prehistoric research since the mid-nineteenth century. In 1857, just before the diffusion of Darwin's theory of evolution produced a change of paradigm in paleontology, Jacques Boucher de Perthes commented on his discoveries of hatchets and other tools belonging to the "Antediluvian" human being:

> Without being less intelligent than us, he might show that intelligence in an outward form other than ours, and, like us, be the very peak of earthly creation […] I am convinced that there are great discoveries to be made in this field, and that one day the collection of our first utensils and tools will be viewed with all the attention it deserves, for these tools are our first proof of reason, our first title to the rank of human, title of a kind no other creature on earth can claim[32].

Tools, paintings and engravings were indeed considered as proofs of specific human capacities, although the discovery of Neanderthals immediately raised the question of whether *Homo sapiens* was the only species to which they belonged. A

29 Aristotle, *De part. anim*. II.10, 656a7–27.
30 Aristotle, *De anima*, 432a, 1.
31 G. Bruno (1585, pp. 717-719, my translation).
32 Boucher de Perthes (1857, T.2, pp. 90, 459).

century later, André Leroi-Gourhan grounded the unique technical capacities of humans in the liberation of the hand through erect posture.

> Freedom of the hand almost necessarily implies a technical activity different from that of apes, and a hand that is free during locomotion, together with a short face and the absence of fangs, commands the use of artificial organs, that is, of implements. Erect posture, short face, free hand during locomotion, and possession of movable implements – those are truly the fundamental criteria of humanity[33].

On this theory, which reprises earlier philosophical ideas in an evolutionary context, humans no longer needed hands for locomotion and could use them to interact with the environment, thereby developing the capacity to project new actions. This entailed a growth of their brain cortex and the acquisition of new skills. Bipedal posture also liberated the mouth, no longer needed to hold objects with the teeth, and favoured the development of language. The co-evolution of technique and language suggested an analogy between these two capacities: both are based on sequenced action directed toward goals and on abstract thinking. Stone tools had to be designed before striking the rock, as a way of preparing future actions (Leroi-Gourhan called this the *chaîne opératoire*).

These ideas have been tested, corroborated and refined through paleontology and brain imaging. Not only are areas for language and motor coordination activated together during the manufacture of stone tools; this overlap is greater when the technology is more refined, suggesting a parallel with the evolution of brain size across the Paleolithic.[34] The notion of *chaîne opératoire* is undergoing constant elaboration in lithic studies, including revisions of its philosophical background[35]. Although the origin of language remains uncertain, the connection between toolmaking and planning is a solid result of cognitive archaeology, with different actions (for example, hafting and transportation of tools) being associated with different degrees of foresight in hominins[36]. Against this background, for my present purposes, I will now examine the implications of hand stencils and other paintings in the rock art of Paleolithic caves such as Gargas.

Other animal species collect tools and use tools; some even produce tools. Octopuses collect shells to make temporary shelters; chimpanzees break sticks to capture ants from trees. Of course, different kinds of hominins flaked stone tools to cut, chop and scrape, long before – according to present evidence – decoration and figurative art appeared. Now consider the sequence of actions leading to rock art. What is the purpose of that action? Here lies the puzzling difference. To enter

33 Leroi-Gourhan (1964-1965, p. 19).

34 See Stout *et al.* (2008, pp. 1939-1957).

35 For a recent account and interpretation in the perspective of embodied cognition see Slaughter (2025, pp. 829-852).

36 For a good archeological overview of the implications of various activities for the estimation of human foresight see Langley-Suddendorf (2022, p. 20210350).

a pit and walk down a cave for hundreds of meters, holding a fat lamp or a torch, then stop in front a peculiarly shaped stone, squat and light a small fire, set stored pigments on the wet floor and paint a cavity of the wall in red color, adding the imprints of a hand to the composition, or simply blow the pigment to produce hand stencils: structurally, this sequence of actions is not more complicated than other collective and planned activities, such as group hunting with hafted spears. But the pictures, unlike the spears, do not apparently respond to the usual vital needs, as if a significant twist in natural history had occurred here.

Both negative hands and pictures of animals suggest that this action manifested a distinctive capacity for reflection, connected to the use of symbols and language that could be directed towards many different goals. Let us take the case of pictures of animals. It has been disputed whether mental images of animal bodies were a precondition of "representational images of them", as argued by David Lewis-Williams, or whether image-making originated in material engagement without a prior capacity of mental imaging[37]. In any case, once picture-making began as a cultural tradition, *Homo sapiens* could certainly isolate and distinguish mental images from the individual living beings they depicted, and hence assign different meanings to these representations. In this sense, Steven Mithen's claim that the creation of pictures entailed planning, intentional communication and the "attribution of meaning to a visual image not associated with its referent" remains plausible[38]. The transition from the living animal to the picture reflects a logical capacity of our species to abstract from the present and to form general concepts.

Cognitive ethologists attribute to other species capacities to think about and represent the past and the future, and even to grieve[39]. But compared to other animals, the existence of painted or engraved pictures arguably documents a distinctive capacity for conscious and integrated representation of reality, which was plausibly accompanied by verbal language. Symbolic representation of abstract individuals, combined with the capacity to reflect on temporal sequences, allowed the formation of narratives and, most plausibly, early formulation of questions about the causes of events.

The case of negative hands suggests a similar inference. The fact that most hands stencils in Gargas lack one or more finger parts – once we reject the hypotheses of self-mutilation and disease – shows that these prehistoric humans did not merely know how to mark their presence (as other animals do), plan complex actions, and represent other beings in images and concepts; they also knew how to *modify* what is perceived. This capacity enables selective abstraction: a painted hand with a lacking finger is no longer tied to real hands in flesh and bone; it functions as a

37 Cf. Lewis-Williams (2002, p. 266); Malafouris (2007). Cf. Davis (1986), and Whitney's comments in Lewis-Williams-Dowson (1988).

38 Mithen (1996, p. 181).

39 For overviews of the huge and growing literature in cognitive ethology and philosophy of animal minds see the classic Allen & Bekoff (1997), and Andrews (2020).

symbol (possibly belonging to a language of gestures) and certainly demonstrates that its author could imagine alternative realities.

Overall, pictures of animals and hands could represent their referents as icons (hands also functioned as indexes), but they were no longer limited to these functions. They could serve to mark a place or stand for existing or imaginary beings, events, or abstract concepts. Sight was no longer referred only to living beings; it was, in a sense, "liberated"[40]. In all these cases, rock paintings referred to an absent reality that could be evoked and elaborated through speech, storytelling, song and dance. In particular, Hands could be taken to represent absent individuals, which existed in different moments of time. Paleolithic burials confirm that humans had this representative capacity, although no pictures of deceased human individuals are known.

The imprint of individuals could evoke their own past life ("I was there and printed that hand on the rock"[41]) and thus, eventually, point to their being born. That the authors of negative hands in Gargas also reflected on birth – another feature that seems unique to humans – is suggested by other remarkable paintings in the cave. A fissure shaped like a vulva is flanked by hands. A large niche, alongside a black hand, is entirely covered with red ochre, resembling a vagina. Indeed, this kind of pictorial representation of birth is common in Paleolithic caves in Europe. In this regard, the inferences drawn from the very bodily conditions of rock art can be connected to historical and ethnological evidence about the motif of the "primordial emergence" of animal life from the earth, collected in Jean-Loïc Le Quellec's book *La caverne originelle*. On this theory, the depiction of animals and sexual organs belongs to the widespread myth of primordial emergence, which caves and cavities could be taken to evoke through their very structure. This is one of the most recent and original hypotheses in the investigation in prehistoric rock art, supported by the extensive comparison of mythologies through computational tools and phylogenetic analysis – a monumental and ambitious endeavor that would require a detailed account in itself[42].

So far, I outlined an example of how, starting from rock art, we can reconstruct and connect different capacities of its authors by abduction. These capacities point to some possible meanings and functions – such as the marking of places for restricted groups of people, the personal memory of individuals, or the representation

40 To define the capacity of reflection and symbolic elaboration suggested by cave paintings, Malafouris has talked of a "liberation of sight from its ordinary experiential requirements", parallel to the "liberation of the hand", Malafouris (2007, p. 298).

41 Ethnographic analogies corroborate this hypothetical statement. E.g., the linguist Claudia Cialone (personal communication) has reported me of an Aboriginal woman who told her this sentence while visiting a rock shelter in West Arnhem Land, in Northern Australia (actually: the woman referred to a foot print).

42 See Le Quellec (2022). A more detailed account of the comparative methodology supporting this hypothesis is provided in the works by Le Quellec's former student Julien D'Huy (2020).

of generative power – although we cannot go beyond conjectures. Moreover, we can argue that rock art could serve as a symbolic form, a way of transforming experience into physical forms with a "sense-making potential", that could take different meanings at once, depending on the context[43]. We thus find evidence that Paleolithic humans who produced rock art shared capacities of modern humans that are investigated by cognitive sciences. This recognition, besides determining the temporal origin of these capacities, can also suggest interesting comparisons between cultures, as in the above-mentioned example of the myth of "primordial emergence".

For example, negative hands in Gargas raise the question of whether Solutrean people had a sense of individuality comparable to our own. What we know of their hunters-gatherers societies and daily life suggests that group solidarity may have been stronger and the individual less sharply distinguished from the group. A similar issue concerns self-representation. Given their capacity for reflection and temporal consciousness, we can wonder why prehistoric people, with very few exceptions, represented themselves through parts (hands, vulvas, and so on) or very rough and simplified outlines, while they were able to make highly detailed and realistic pictures of other animals. This question of human self-representation leads to my second example.

4. *Theriantropes, shamanism and ecology*

The "bison-man" in the cave of El Castillo (Spain) is an example of another recurring subject in prehistoric rock art worldwide: therianthropes[44]. These hybrid figures abound in ancient mythologies (think of Egyptian gods, Assyrian lamassu and the Greek Minotaur). Their meaning in prehistoric cultures is one of the most thought-provoking puzzles of rock art. My case study is the prehistoric rock art of the San people of Southern Africa (also known as Bushmen). Most of it is scattered in rock shelters of South Africa and has been the primary focus of one of the leading theories on prehistoric art, the shamanic theory, originally formulated by David Lewis-Williams[45]. This theory – as we will see below – has been developed into a general theory of prehistoric rock art and has received sharp criticism. I choose it because it provides another good example of how the different methodological sides of investigation – notably through cognitive neuroscience and ethnological analogies – are intertwined in the study of prehistoric rock art.

The painter and archaeologist Patricia Vinnicombe, who also contributed to the shamanic interpretation, called the San "The Eland People"[46]. The eland (*Taurotragus oryx*) is a big antelope that provided a major food source for the San and

43 On rock art as a materialized "symbolic form" (in a sense that is grounded in Ernst Cassirer's philosophy and combined with other sources such as Cornelius Castoriadis and Lambros Malafouris) see Rosengren (2012, the quoted phrase is here on p. 133).

44 Ripoll Pereilló (1971/72, pp. 93-110).

45 See the synthetic exposition in Lewis-Williams (2002).

46 Vinnicombe (1976).

figures prominently in their art (their blood is often mixed with minerals in the pigment). In the Game Pass shelter on the Drakensberg Mountains, which has been pivotal for the shamanic interpretation, a group of finely painted polychrome eland floats in space among anthropomorphic figures. A scene captures the attention: a dying eland, leaning on its front legs, is held by the tail by a therianthrope with an eland's head. More therianthropes stand around this group. They are not masked humans, for they have hooves, and bristles grow on their bodies. Nearby are scenes of hunting men with bows. This contiguity of death, hunt and transformation is common in San art, hinting at a deep interconnection with eland and other game (such as rhebok).

Another significant subject of San rock art is the trance dance. The following motif can be found in different shelters in the Drakensberg area: a circle of people is dancing, some leaning forward, some on all fours, while other people are sitting and clapping their hands inside the circle. European colonialism devastated South African San societies, and no direct report about their culture is available anymore. However, a ritual in which dancers go into trance through their repeated walking in circles and stomping, strikingly similar to the painted ones, was still observed and filmed among the Kalahari San in the 1950s. Lewis-Williams connected all these elements – game, hunt, therianthropes and trance dance – into a single interpretation through an ingenious combination of comparative ethnography and neuroscience.

On the ethnographic side, Lewis-Williams started from two exceptional nineteenth-century sources. The first is the report by Joseph Orpen, a colonial administrator of the British empire with an interest in rock art. Orpen met a San survivor, Qing, and managed to befriend him. As the two spent some time together in front of rock paintings, Orpen was instructed by Qing about the alleged meaning of the paintings. We only have the English translation of those dialogues, provided by Orpen in an article, where Qing is reported to have enigmatically characterized the depicted eland as "spoilt"[47]. The second ethnographic source was the German linguist Wilhelm Bleek, an expert of Khoisan languages, who was in Cape Town studying and learning the language and lore of the ǀXam Bushmen of the Northern Cape. The conversations of Bleek and Lucy Lloyd with these men, especially with the elder ǁKabbo, were written down in thousands of pages and archived[48]. While working on this monumental project, the two linguists received the article by Orpen and asked the ǀXam people about the rock art, collecting information about rituals of trance and empowerment involving traditional medicine men.

The third missing piece of the puzzle was provided by Lewis-Williams in the 1980s. He combined these nineteenth-century documents with twentieth-century ethnographies of the Kalahari San, whose language and culture are related to those of the disappeared South African San. He concluded that the word used by Qing to describe the therianthropes – in English: "spoilt" – referred to the condition of trance attained by "shamans" in the ritual dance to enter a spirit world and tap into "power" (*n/kom*). This capacity, shared by many individuals, was used to facilitate the hunt, to heal, to control weather, and to foresee events. While in trance, visions often featured the eland, considered as the source of power, and the transformation of the shamans into these animals, which corresponded to access to the spirit world. Putting these pieces together, Lewis-Williams concluded that the main topic of San rock art was the connection to the spirit world attained through the trance dance. The therianthropes depicted shamans who symbolically tapped energy from the death of the elands.

Many details of the rock art confirmed this view. First, therianthropes often bleed from their nose, as it happens to San people during their exhausting trance dance. Second, elands and other animals appear to emerge from cracks on the walls, as if coming out of the other world. Third, figures are often surrounded by fish and eels, a condition that is linked to descriptions of the other world as "underwater". Fourth, dotted lines often connect therianthropes and animals to humans, depicting an invisible connection. In this perspective, scenes of hunting would be a metaphor of the spiritual connection to the otherworld, attained through animals – a supreme resource for the community against various challenges.

After Lewis-Williams established the shamanic theory through ethnology, he sought to corroborate it through neuroscientific studies of hallucinations, accor-

47 Orpen (1874, p. 2).

48 The archive can be consulted here: https://digitalbleeklloyd.uct.ac.za/. A published account on San folklore is Bleek-Lloyd (1911).

ding to which visions come in three stages: visions of geometric forms (entoptic phenomena), interpretation of the latter as familiar objects or beings, and the appearance of a gateway, often accompanied by the transformation of the subject into other beings. Lewis-Williams interpreted the elements of prehistoric art in general – notably abstract signs, animals and therianthropes – as representations of these elements[49]. Neuroscience investigated a universal form of experience, entoptic phenomena, while ethnological analogies provided a key to their interpretation.

The word "shaman" was used by Lewis-Williams in a broad sense that has been common in anthropology since the publication of the Mircea Eliade's monumental book *Shamanism: Archaic Techniques of Ecstasy* (1951), which greatly influenced the application of this umbrella term (originally Siberian) to different cultures. "Shaman", in this cross-cultural use, means a special person who can benefit the community through visions, mental travels and transformations that are experienced in dreams and in trances induced by dance, beating drums, hyperventilation and/or psychoactive plants or mushrooms. This theory has been applied to different prehistoric cultures, such as those of North American Indigenous peoples and those of the European Paleolithic. In *The Shamans of Prehistory* (*Les chamanes de la préhistoire*, 1996), co-authored by Lewis-Williams and Jean Clottes (former curator of the Chauvet Cave in France), the authors argued that the belief in a layered world as a source of power and visions, accessible through shamanic rituals, was a universal feature of prehistoric cultures, based on the basic human experiences of dreams and hallucinations. In this perspective, hand stencils could be conceived as attempts to contact other layers of the world through cave walls, and caves were taken as physical reproductions of the experiential path to this otherworld. Therianthropes of European Paleolithic rock art were also interpreted in this light. A notable example was the famous scene in the Lascaux cave in France, where an ithyphallic man with a bird's head seems to fall in front of a bull, who is eviscerated and apparently speared. According to this interpretation, the scene represented the trance of the shaman – often described as a near-death experience in historical cultures – who turns into a therianthrope at the apex of his mental travel.

As happened with previous theories of rock art, the shamanic interpretation has been harshly criticized. It has been argued that the analogy connecting shamanic societies with Paleolithic ones is very weak, because of both the temporal distance and the variety of shamanism; hence to take the theory as a valid explanation of prehistoric rock art in general is far-fetched[50]. In particular, it has been pointed out that there is no evidence of trance in many historical shamanic cultures, let alone in prehistory[51]. As for the neuroscientific corroboration of the theory, it has been contended that to see geometric shapes in rock art as depicting entoptic phenomena and then explaining them through the investigation of hallucinatory experien-

49 Lewis-Williams-Dowson (1988).
50 For an outline of the critiques see Lorblanchet *et al.* (2006).
51 This critique is particularly emphasized and documented in Hamayon (1995, pp. 155-190).

ces is a circular argument. They might well be produced by the imagination in its standard activity. Besides, we need to consider the dark environment of caves and shelters: nighttime fantasizing and dreaming provide sufficiently deep experiences of the unconscious and the unknown to conceive of invisible worlds and persons. As for therianthropes, they are just one of many pictorial elements of prehistoric art, whose occurrence is not sufficient to take them as depictions of the fundamental experience leading to art-making. Overall, although fascinating, the shamanic theory seems to derive too much from the extraordinary figure of the shaman and from its trance. Clottes and Lewis-Williams have replied, defending and reformulating their theory[52]. Today the shamanic interpretation, although rarely accepted as such, is still one of the working hypotheses in the field.

For our purposes, I will make two comments concerning how to address these issues in the light of the above-mentioned methodology, adding the environmental dimension to the picture. First, I point out that considering the *biological* background of rock art in the human organism does not have to be limited to extraordinary experiences such as hallucination and trance. Not only standard dreaming and imagination allowed prehistoric humans to conceive of imaginary beings as those represented in rock art. On a more basic level, I want to emphasize the depiction of eland and other game as food sources, associated with the literal event of the hunt. Elands were eaten and thereby assimilated by humans. They became, as it were, part of humans. This could partly explain the representation of therianthropes, as if death and the transfer of vital energy disclosed a deep vital continuity between human and non-human animals, which could provide a background for further ideas of kinship and exchange of "power".

A recent reframing of the shamanic theory by Mark McGranaghan and Sam Challis (who previously co-authored a book with Lewis-Williams) can be connected to this point[53]. As argued by the authors, the return to the ideas of animism and indigenous ontologies in contemporary anthropology has highlighted the problematic nature of talk of a "supernatural spirit world", a category that is conditioned by dualisms of Western origin. A fresh reading of the ethnographic sources about the San suggests that the practice of "shamans" can be better understood if connected to the hunt and to the theory of hunting magic. The authors suggest that the missing San term translated by Orpen as "spoilt" could mean "tamed", that is, indicate a state of docility of animals that allows humans to approach them, thus giving hunters a safer opportunity to hit them. The authors conclude that shamanic visions and "hunt magic" are not alternative, for both aim at fostering a good relationship with animals.

The dependence on game as a source of nutrition fits well into the "ecological" framework that I draw from Dewey's aesthetics to integrate the approach based

52 A survey of the objections that I mention in this paragraph made by the authors, with replies, can be found in Clottes-Lewis-Williams (2015).

53 McGranaghan & Challis (2016).

on abstract cognitive capacities: "Underneath the rhythm of every art and of every work of art there lies, as a substratum in the depths of the subconsciousness, the basic pattern of the relations of the live creature to his environment"[54]. The ecological context of San art proves decisive for this interpretation, and suggests further ethnological analogies, not only to shamanic cultures – where the kinship with hunted animals plays a crucial role in both mythology and rituals –, but also to societies of hunter gatherers where the interdependence with wild animals could raise the idea of a common origin and inspired the imagination of therianthropes[55].

Further evidence for this view is provided by comparing two famous examples of African rock art. The rock art of the Tassili N'Ajjer in the Algerian Sahara is considered to have been produced over thousands of years, possibly starting around 8000 years ago, when the plateau was green and crossed by rivers[56]. The development of styles in the area corresponds to the gradual transition from societies of hunters-gatherers to shepherds. Therianthropes and hunting scenes abound. Now, if we compare these cultural documents with the rock art of Predynastic Egypt, a crucial difference appears. The hunt and the capture of animals are also recurring themes in the most ancient sites of rock art in predynastic Egypt, as if a common motif crossed artistic traditions from the Western Sahara to the Nile. However, a subtle symbolic transition takes place. Based on the excavation of sites from the Western Desert to the Nile Valley and the analysis of rock art and mobiliary art, scholars have concluded that the meaning of hunting scenes gradually changed, parallel to the transition from a society grounded in hunting to one based on breeding and agriculture[57]. Eventually hunting was scarcely related to alimentary motivations and served as a symbol of the military power of the pharaoh. The tying up of wild animals now represented the capacity of the ruler to smash enemies and tame chaos. The urban and monarchic civilization of dynastic Egypt introduced a radically new relation to the environment, in which animals kept some of their former symbolic value as powerful beings, but were gradually replaced by anthropomorphic and fully human figures of divinized kings.

5. *Conclusions*

Drawing on well-established archaeological studies, I have outlined how the investigation of rock art can be methodically articulated and how some of the basic ideas of this method can be rooted in modern philosophy and were gradually developed in prehistoric studies. I have used the examples of hands and therianthropes

54 Dewey (1934, p. 150).

55 See, e.g., Rechel-Dolmatoff (1971); Hamayon (2017).

56 For an introduction see Lothe (1959); Muzzolini (2001); Lajoux (2012).

57 See Friedman (2012) from the catalogue of the exhibition at the Metropolitan Museum of Art in New York, and Hendrickx, "Hunting in Predynastic Egypt", in a presentation related to the exhibition: https://www.youtube.com/watch?v=2G4C1SkPBWs&t=2242s.

to illustrate this twofold approach, and to argue that archaeology, cognitive sciences and ecology can fruitfully cooperate, focusing on the cognitive set-up of humans and their engagement with the environment. Case studies have been merely sketched for the sake of the methodological examination. A more detailed test and elaboration of these ideas will require more focused investigations.

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