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Art in the Making: The evolutionary origins of visual art as a communication signal

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4. LIFE ARTIFIED: ELLEN DISSANAYAKE'S ETHOLOGICAL MODEL

It seems abundantly clear that representations appearing in ritual may evoke emotion and may affect cognition through their aesthetic qualities. Ritual places themselves may be works of art, and they have, since time immemorial, been embellished by works of art.

ROY A. RAPPAPORT, 1999



Across all human cultures, special occasions like weddings, funerals, seasonal festivities, contests, and even sport matches are adorned with lavish displays of music, oratory and visual arts. American scholar Ellen Dissanayake has argued for almost four decades that this is more than a curious coincidence of cultural traditions. She has suggested that there must be a biological functional explanation for the generalized presence of artistic activities in human ceremonies, where the latter may be seen as art's original source and fuel.

Having adopted the aims and views of ethology since the early 1970s, Dissanayake has recurrently made a case for art as a human universal adaptive behaviour. As I will explain in this chapter, she argues that art is innate and pleasurable, like eating or sleeping, and that like those behaviours, art too must have been evolutionarily advantageous and always functional. Dissanayake's argument for the origin and proliferation of the arts is firmly grounded in studies of human ritual activities. Humans universally perform rituals to mark socially important situations in the life of a person or a group, and these rituals are invariably accompanied by artistic displays. Because of the crucial role that artistic performances play in ritual ceremonies, Dissanayake has hypothesized that the arts must have originated within that context in the remote past. In ritual, art acts as an expressive outlet that allows people to express and cope with emotion and uncertainty, on the one hand, and instigates a sense of unity between the participants, on the other. These functions, she argues, were beneficial at both the individual and group level, contributing to the survival of those who participated in ritual and art. In this way the arts were retained and flourished throughout human evolution. On this basis, she maintains, artistic behaviour constitutes a true, naturally selected, human adaptation.

Over her prolific career, Ellen Dissanayake has produced numerous papers and three seminal books elaborating her proposal: *What is art for?* (1990), *Homo Aestheticus: Where art comes from and why* (1992), and *Art and Intimacy: How the arts began* (2000). Her ideas have been highly influential not only in evolutionary studies of visual art (Aiken 1998; Coe 2003), but also of language (Fitch 2010), music (Brown 2000), literature (Boyd 2009), and religion (Wade

2009). She is a prolific and dynamic scholar whose ideas have been developing continuously through four decades. For this reason, offering a detailed discussion of her complete work is beyond the scope of this review. In this chapter I will focus mainly on those aspects of her proposal that are relevant to the visual arts, and particularly on her most recent work. The aim of this chapter is to assess Dissanayake's ideas on the origins of visual art in light of the archaeological evidence from the Pleistocene.

The first section of the chapter introduces the discipline of ethology – the biological study of behaviour – which has served as Dissanayake's theoretical foundation. The next section lays out her specific hypothesis on the origins of art, highlighting key concepts and arguments, with special attention to her most recent work. The third section provides a critical assessment of her main arguments, particularly concerning the visual arts. Finally, the last segment of the chapter tests some predictions derived from Dissanayake's model against the data from the Pleistocene record of visual art, an undertaking that has not yet been carried out by the reviewers of her work.

4.1 The biological study of behaviour: The background

Throughout the first half of the past century, the study of behaviour was predominantly a field of psychology. Behavioural psychology as represented by figures like Ivan Pavlov and B. F. Skinner, explained behaviour as a reaction to external stimuli and thus emphasized the study of so-called stimulus-response mechanisms. By the second half of the century, the discipline of ethology had become consolidated as the study of behaviour from a biological perspective. In contrast to the stimulus-response approach of behavioural psychology that focused on the mechanisms of behaviour, ethology turned to using the methods of biology to explain the causes of behaviour, its development at the individual level, and its evolution in a population (Lorenz 1966). In this light, ethologists set out to study behaviour patterns as if they were 'organs', that is "as attributes with special functions to which they were intricately adapted" (Tinbergen 1963:413), assuming that, like the organs that constitute an individual, behaviour "evolved phylogenetically and is very resistant to any individual modification" (Lorenz 1981:107).

In ethology behaviour is perceived as a set of naturally evolved action patterns characteristic of all the members of a species. Thus, it will be observable, specific and universal to a species. As explained by one of the co-founders of ethology, Dutch Nobel laureate Niko Tinbergen (1963:414):

Each animal is endowed with a strictly limited, albeit hugely complex, behaviour machinery which (if stripped of variations due to differences in environment during ontogeny, and of immediate effects of a fluctuating environment) is surprisingly constant throughout a species or population.

Following the precepts set by biologist Ernst Mayr to study the evolution of biological traits (1961:1502), Tinbergen established that a comprehensive biological explanation of any behavioural trait should include an account at four distinct levels of explanation: causation, survival value, evolution, and ontogeny (1963:411). *Causation* refers to the immediate physiological and psychological mechanisms that trigger and control behaviour. *Ontogeny* refers to the developmental aspect of how a behaviour pattern emerges and changes through the life-course of the organism in its interaction with the environment. *Survival value*, or *function*, refers to the role the behaviour plays in the life of the organism, that is, how the trait contributes to its survival and reproductive success. This level is generally formulated as the question: “What is the behaviour for?”, and often constitutes the primary basis of ethological explanation, as Konrad Lorenz summarized (1966:274):

If we ask ‘what for?’ about a cat’s hooked retractile claws, and answer ‘to catch mice with’, this is no profession of mystical teleology, but shorthand for a query concerned with causality, namely ‘what is the function whose survival value exerted the selection pressure which produced cats with this kind of claw?’

Lastly, *evolution* or *phylogeny*, refers to the history of the behaviour, and includes explanations of origin and of the plausible selective pressures that shaped the behaviour, with the aim of explaining how the behaviour pattern arose and was retained in an ancestral population. The first two levels of causation and ontogeny are referred to as proximal explanations as they correspond to the immediate mechanisms that underlie behaviour, whereas function and phylogeny are called ultimate explanations because they attend to the evolutionary history of the behaviour pattern (Mayr 1961:1503). These four levels of explanation have become a sort of ‘golden rule’ in evolutionary analyses across disciplines (Sterelny & Griffiths 1999:19).

The first attempt to use the principles of ethology to account for art was undertaken by British zoologist Desmond Morris in his book *The Biology of Art*, where he suggested that art may well be seen “as a biological, or behavioural, phenomenon” (1962:141).

The arts as ritualized behaviours

One of the most prevalent subjects among ethologists has been the ritualization of behaviour.⁷⁸ Ritualized animal behaviours typically include repetitious, stereotyped movements, gestures, and vocalizations displayed for instance in

⁷⁸ In 1965 this was precisely the topic of a big discussion meeting organized by British ethologist Sir Julian Huxley – “Discussion on ritualization of behavior in animals and man”- and attended by the most renowned behaviour experts of the time, such as Konrad Lorenz, Erik Erikson, and Desmond Morris. The 1966 proceedings of this meeting, cited at length in this section, reveal how the ethological approach became consolidated as the standard framework of research in animal and human behaviour.

play, courtship, aggression, or under stress, such as the chest-beating of gorillas, or the 'dance' displays of many male birds. These 'action patterns' or behaviours are presumably adaptive, generally innate, and characteristic to each species (Lorenz 1966:274). These types of behaviours are also identifiable among humans, where they take on a new dimension in relation to mental capacity, as Julien Huxley argued (1966:259):

The process of ritualization in man is far more complex, elastic and various than that in animals, and leads to a much wider range of results.

In man, we find not only the adaptive canalization and ritualization of overt behaviour, but also that of thought or 'inner behaviour', resulting in motivated idea-systems and in internal (psychological or mental) organizations.

In humans, ritualized behaviours include a variety of everyday actions such as greetings, manners, stereotyped gestures of aggression, affection, and emotion. The formalization of such behaviours through collective convention constitute 'proper' ritual and ceremonial activities (Erikson 1966:523). The latter have been described in anthropology as "conventional acts of display through which one or more participants transmit information concerning their physiological, psychological, or sociological states either to themselves or to one or more of their participants" (Rappaport 1971:25).

In both the animal and human cases, ethologists suggest, the three main functions of ritualized behaviours are to communicate the condition or disposition of the individual, to canalize emotions and to form or reaffirm bonds between individuals (Lorenz 1966:279). However, as psychologist Erik Erikson clarified, although human rituals include a combination of ritualized behaviours, not all ritualized behaviours qualify as ritual (1966:523).

Erikson further suggested that the ontogeny of human ritualization begins with the mutuality and the bond between mother and child, and in time includes a wider range of individuals and groups. So, according to Erikson, the minimum requirements of ritualized behaviours in humans are found in mother-infant interactions (1966:337):

Behaviour to be called ritualization in man must consist of an agreed-upon interplay between at least two persons who repeat it at meaningful intervals and in recurring contexts; and that this interplay should have adaptive value for both participants. And, I would submit, these conditions are already fully met by the way in which a human mother and her baby greet each other in the morning.

Similarly, John Ambrose proposed that the dyadic routines of greeting, smiling, kissing and hugging between mother and baby constitute innate ritualized human behaviours whose adaptive function is to maintain a strongly cohesive bond between the two, as a result enhancing the infant's survival and establishing the baby's basic social capacity (1966:360). In the "rites and rituals

conducted by communities of adults”, whose purpose is often to mark “recurrent events as the phases of the year of the stages of life”, the infantile feelings of security, unity and awe experienced in the mother-baby relationship are re-evoked for all their comforting and bonding effects through actions like repetitive utterances and gestures (Erikson 1966:340).⁷⁹

There seems to have been a consensus among early ethologists that there were some common elements between artistic creation and ritualization, such as bonding, communication, symbolism, and the manipulation of affect (Erikson 1966:524). It was agreed that the arts –i.e. human practices such as dance, song, music-making, oratory, poetry, drama, and visual representation– could count as part of the set of ritualized behaviours of humans.⁸⁰ Huxley himself wrote (1966:259):

The arts involve ritualization or adaptive canalization of the creative imagination. [...] Creative works of art and literature show ritualization in this extended sense, in being ‘adaptively’ (functionally) organized so as to enhance their aesthetic stimulatory effect and their communication function.

In the works of scholars like Morris, Lorenz, Tinbergen, Huxley and Erikson, we already find the seeds of Ellen Dissanayake’s ideas and the basis of her ‘artification hypothesis’ (2007, 2008, 2009, 2010), founded on the notion that the arts may be seen as human ritualized behaviours (1979:27). Dissanayake adopted an ethological approach (1974, 1979) and aimed at explaining the evolutionary origin of human artistic behaviour in terms of phylogeny, ontogeny, causation and function, as summarized below.⁸¹

4.2 The artification hypothesis: Key arguments

Having adopted the evolutionary ethological view, Dissanayake set out to explain “how art arose and why it was retained” (1982:146). Her starting point would be that art, having been observed in all human cultures, is a universal feature of our species, and therefore it must have a selective value.

⁷⁹ Erikson’s work, as much of early human ethology (Cairns & Cairns 2006), was highly influenced by the Freudian theory of psychoanalysis (see for example Erikson 1966:340). Thus, there is a general tendency to over-emphasize the influence of early development in the behaviour of the individual.

⁸⁰ Art historian Ernst Gombrich, who also attended the discussion meeting, disagreed that art and ritual could have a common purpose. He recognized that “the schema used by artist is generally pre-formed in ritual and that here as elsewhere art and ritual, using the word in its narrow cultural sense, cannot easily be separated”. But he later objected: “Important as are the areas of contact between ritualized behaviour in animal and man, and far reaching as is their bearing on a study of art, I could not agree to an equation of that discharge of emotion that occurs in ritual with the motivations of human art” (1966:396-7).

⁸¹ Dissanayake has made this aim explicit. However, she is not always clear about which aspects of her hypothesis precisely correspond to which level of explanation (see for example: Dissanayake 2008). The present analysis is partly my personal reading of how her model matches each level.

Indeed, an evolutionary maxim dictates that evolved species-specific behaviours, particularly complex and costly ones, probably improve survival chances otherwise, if their cost were higher than their benefit, natural selection would tend to eliminate them over time. As anthropologist Roy Rappaport explains (1971:23):

Anything which is universal to human culture is likely to contribute to human survival. Phenomena that are merely incidental or peripheral, or epiphenomenal to the mechanisms of survival are hardly likely to become universal, nor remain so if they do.

Dissanayake's first premise, then, is that art-making is a universal innate human behaviour, meaning that any normally developed individual of our species, will be able to make art (independently of any judgment of quality), and what is more, will have a natural predisposition towards it.⁸² So, to have persisted as it did, she argues, art must have served an important function that throughout human evolution somehow contributed to the survival and reproductive success of the individuals that presented it. To find out what this function may have been, she first asks what is 'the core' or the common element to all the arts, and concludes that it is a sense of 'specialness' (1980:401):

If there is such a thing as a 'behavior of art' we must assume that it developed in human evolution from an ability or proclivity that our pre-paleolithic ancestors could have shown. I should like to suggest that this root proclivity is the ability to recognize or confer 'specialness,' a level or order different from the everyday.

The proclivity for specialness, which she calls "making special" (1982, 1990, 1992, 1999, 2000) and more recently "artification" (2007, 2008, 2009, 2010), refers to the act of transforming something ordinary (e.g. an activity or object) into something extra-ordinary by treating or making it in a special manner. To her, this universal tendency towards artification has been moulded by natural selection (1992:56), and is "the ancestral activity or behavior that gave rise to and continues to characterize or imbue all instances of what today are called the arts" (2008:252).⁸³ Hence, her model attempts to unravel the human tendency to 'make special' or to 'artify' in terms of Tinbergen's scheme of four levels of explanation.

82 With the term 'art' or 'art behaviour' Dissanayake denotes 'all the arts': music, dance, performances, storytelling, and the various forms of visual ornamentation and representation, or visual art (1999). Her evolutionary model further makes no distinction between art and craft, nor between 'great', or 'fine' Art and kitsch, or 'folk' art. To be sure, the aesthetic value of artworks is irrelevant to the discussion of the evolution of art as a trait, just like the correct spelling of modern languages would be of no concern to research on the evolutionary origins of human speech.

83 To draw a sketchy biological analogy, if the different arts were emotions, 'making special' or 'artification' would be the nervous system.

Phylogeny

This level of explanation refers to the evolutionary history of the behaviour, that is, its origin in an ancestral population, its development through time, and the potential selective pressures that shaped it.

Dissanayake has suggested that the ancestral interactions between mother and child constitute the evolutionary behavioural basis of artification (2008:253). She situates the origin of this behaviour early in human phylogeny, by the time of *Homo erectus*, some 250,000 years ago (1979:29, 1982:148, 1992:51). Most researchers agree that the human pattern of growth and development, otherwise known as 'life history', started to take its present form among *H. erectus*, who shows a significant increase in brain and body size with respect to previous hominins (Hopkinson et al. 2013:62). These changes had major implications for hominin females (Aiello & Key 2002). On the one hand, the energetic costs of motherhood became higher as infant growth slowed down. And on the other hand, the extended period of child dependency strengthened the human mother-child bond, which is the strongest and longest-lasting among all primates (Bell 2001:226). According to Dissanayake, the most important component of the mother-infant interaction, which creates and structures the bond between the two, is baby-talk. In her model, baby-talk, with its typical stereotyped, exaggerated and ritualised movements and vocalizations constitutes a human universal adaptation that underlies both ritual and art behaviour (1980:401).

Like the ritualization of behaviour, the process of artification is achieved through the operations of formalization, repetition, exaggeration, elaboration, and manipulation of expectation (Dissanayake 2007:9).⁸⁴ For instance, bodily movements when repeated and exaggerated become dance; speech, patterned and embellished, becomes poetry; song emerges from elaborated, amplified vocalizations; and in visual art, regular objects and surfaces are made special by emphasizing their shape, pattern, texture, and colour (1999:36, 2008:252). The roots of these basic operations, as Erikson noted, are already present in the communications between mother and baby (Dissanayake 2008, 2009, 2010). In baby-talk the participants formalize, repeat, exaggerate, elaborate, and manipulate their expressions, sounds, and movements to engage and sustain each other's attention. The mother (or caregiver), for example, employs baby-talk to attract the child's interest, to which the baby responds with loud vocalizations and exaggerated movements. Furthermore, this interaction generates the release of pleasurable prosocial hormones (oxytocin), reinforcing the bond between mother and infant (Dissanayake 2010:3), and generating an emotional response that is also found in the aesthetic response to the arts (Dissanayake 2001:98).

84 At least three of these operations – formalization, repetition, and surprise – are also cited by Erikson as basic elements of ritualization (1966:339).

In sum, Dissanayake suggests that the typical stereotyped, exaggerated and repeated actions that constitute the mother-baby dyad served as the evolutionary basis for ritual and artistic behaviour, they constitute art's phylogenetic precedent (2001:98, 2008:253, 2010:4).

Ontogeny

This level of explanation relates to the development of a behaviour in the life-course of the individual, from infancy to maturity, and how it shows up in interaction with the environment. It refers to questions of innateness, learning, conditioning, etc.

In Dissanayake's model, art is understood as an innate proclivity that shows up in early infancy becoming increasingly complex with age. As mentioned before, the operations that constitute the basis of artification are first exercised in babyhood during spirited interactions with caregivers (i.e. formalisation, repetition, exaggeration, elaboration, and surprise). These are further developed during childhood in play (Dissanayake 2010:4).⁸⁵

Regarding practical ability for visual art, Dissanayake argues that humans also show an inborn impulse to manipulate objects and make artefacts. This is prominently present in visual art-making, where children from an early age spontaneously begin playfully exploring form and composition. In this manner, "children's drawings emerge from a self-propelled impetus to initiate and then follow their mark-making impulse where it leads – often to the operations of artification" (2010:5).

Thus, in Dissanayake's view, the ontogeny of art is mostly innate, and intensely developed in early infancy and childhood, whence it becomes later co-opted in normalized adult artistic behaviour (Dissanayake 2010:6).

Causation

This level of proximal explanation refers to the immediate mechanisms and motivations or 'causes' (e.g. physiological, psychological) that trigger a behaviour.

Dissanayake understands the arts as a derived category of human ritualized behaviours that in several aspects overlap with play and ritual, but which involve a particular aesthetic dimension. Huxley noted that "human ritualized activities have a strong autesthetic or self-rewarding component" (1966:259), which has been also highlighted in artistic behaviour (Morris 1962:158). As discussed above, ethologists and psychologists have often used the term 'ritualized

⁸⁵ For Dissanayake, play is very similar to art in various aspects. Both are 'removed' from reality, carried out in special contexts with special rules, both are pleasurable and encourage novelty and creativity, and both develop innately (1974:215). In fact, in her earlier work, she suggested that art may have evolved from play (1974, 1979).

behaviour' to refer to repetitive, stereotyped actions of a pathological nature, like the compulsive movements of caged animals and distressed children.⁸⁶ Many animals turn to ritualised behaviours to release tension, that is to canalize and reduce anxiety in stressful situations (Rappaport 1971:25). Humans, too, perform repetitious movements to calm down under stress. Erikson suggested that because this type of behaviour arises in similar circumstances among both animals and humans, it "seems to provide a 'natural' link with a possible phylogenetic origin of ritualization in its more stereotyped and driven forms" (1966:337).

According to Dissanayake, as the cognitive capacities of hominins increased with encephalization, individuals would have become progressively concerned with vital life-changing and life-threatening situations (e.g., birth, death, puberty, marriages, seasons, hunts, migrations, etc.), which caused uncertainty and stress. Ceremonies, Dissanayake argues, were developed in hominin evolution as a communal strategy to cope with the anxiety and uncertainty generated by those situations, and because artistic behaviours were innately pleasurable, they were eventually co-opted in ritual ceremony (1992:59-60):

The arts, biologically endowed predispositions, have been physically, sensuously, and emotionally satisfying and pleasurable to humans. By using elements that pleased and gratified the human senses [...] and arranging and patterning these elements in unusual 'special' ways, early humans assured the willing participation in, and accurate performance of, ceremonies that united them. The arts 'enabled' ceremonies because they made ceremonies feel good. Before they were ever consciously used to make things special, the satisfactions of rhythm, novelty, order, pattern, color, bodily movement, and moving in synchrony with others were fundamental animal pleasures, essential ingredients of life. Using these bodily pleasurable elements to make ceremonies special –elaborating and shaping them– the arts, and art, were born.

In ceremonies, which involve a collective and emotion-laden event that marks significant occasions in the life of an individual or a group, many of the artifying operations and behaviours take place because they replicate the comforting feeling of the mother-child interactions, thus "relieving tension and anxiety and instilling a sense of coping with uncertainty" (2007:10). So, the naturally pleasurable and soothing ritualized behaviours of the mother-infant dyad were collectively re-enacted by jointly engaging in repetitive and stereotyped actions, displays, utterances, and movements, some of which eventually constituted what we now call 'the arts' (1999:36, 2008:252). In time, different media were incorporated to reinforce the effects of ceremonies. These new components, intended to attract and sustain attention, were embellished to make them

⁸⁶ Although Morris and Erikson, for instance, oppose the use of the term 'ritualization' in this clinical sense (Erikson 1966:523).

perceptibly extra-ordinary:⁸⁷ “In the visual arts, ordinary objects like the natural body, the natural surroundings, and common artifacts are made special by cultural shaping and elaborating that make them more than ordinary” (Dissanayake 1999:36). In this manner, Dissanayake sees ritual ceremony as the probable context in which the arts originally evolved and flourished (2008:257), and sees the canalization of emotion along with its pleasurable and therapeutic effects against uncertainty as the original motivation or proximate cause of art behaviour (2001:98; 2008:254, 2009:156).

Function

In evolutionary terms, function refers to the survival value of a behaviour, or the effect for which it was selected. It accounts for the plausible ways in which the behaviour may have conveyed a survival and reproductive advantage to the organisms that manifested it.

In Dissanayake’s model, as explained above the aesthetic elements that constitute the arts were innately gratifying to humans but offered no real survival or reproductive advantage until they were incorporated in ritual. In this context, she explains (2001:98):

The arts may serve [...] as ways of creating and sharing emotional communion with other humans, thereby transmitting group knowledge and instilling a sense of ‘coping’ that could relieve individual anxiety, and foster one-heartedness and social solidarity.

Hence, besides providing an emotional outlet and being self-rewarding, ritual interactions have the effect of forming a bond between participants (Erikson 1966:524; Lorenz 1966:276). And the arts, by attracting and directing collective emotion and attention in ritual, also give rise to or support shared feelings and ideals, thereby strengthening social cohesion among the partakers in a ceremony. For Dissanayake, this may have added adaptive value (1992:52):

Groups whose individual members had the tendency to make things special would have had more unifying ritual ceremonies, and thus these individuals and groups would have survived better than individuals and groups that did not.

Dissanayake, thus, argues that the arts coevolved with ritual ceremony, acquiring adaptive value and social function by providing psychological relief and promoting social cohesion, which can potentially enhance survival of individuals and groups (1999:39, 2001:98).

Summarizing, Dissanayake’s model for the origins of art states that the ritualized behaviours that constitute artistic activities are a human biological adaptation with a) [phylogeny] a deep evolutionary history in the hominin lineage that may go as far back as *Homo erectus*; b) [ontogeny] a developmental

⁸⁷ The process of “making special” or “artification”.

basis in mother-baby interaction and infant play whence; c) [causation] they became co-opted as self-rewarding emotional outlets; d) [function] whose psychological effects of reducing anxiety and promoting unity between individuals ultimately conferred adaptive benefits to those who engaged in them.⁸⁸ It should be noted that this model refers to the origins of the 'behavioural basis' of all the arts, that is of 'making special'. So, on the one hand, Dissanayake envisages the emergence the human tendency for making special early on in human evolution, but on the other hand, she perceives the origins of visual art, in particular, as a late development, unique to our species (2007:12).

4.3 What is art for? Critical assessment

Ellen Dissanayake's model states that art behaviour is a natural human proclivity towards making things special – or 'artifying'. Thus, she has argued that adopting an ethological approach will help to explain the evolution of this behaviour of art, as well as the origin of all the practices we now know as 'the arts'. The following assessment concentrates on three main problems in her model. First, it may not be viable to formulate a unified explanation for the evolution of the arts as a whole because they constitute different traits. Second, the evidence for visual art does not support a view of art as an innate biological predisposition expressed in a universal pattern of ontogenetic development. And lastly, the ethological framework adopted by Dissanayake, by overemphasizing function and adaptive value, and asking 'what is art for?' might not be an appropriate strategy to solve crucial questions of emergence and development in evolution. Nevertheless, the assessment also indicates that the model does identify important effects and selective pressures that might have contributed towards the retention and success of human artistic practices.

The evolutionary diversity of the arts

As mentioned before, the artification hypothesis is concerned with explaining the origins of a general behaviour of art, which includes all the arts. Dissanayake has defended the view that an ethological explanation of the origins of art should account for all its forms, and that models that are based only on one of the arts (e.g. music, storytelling, visual art) are inadequate (2008:250). While I agree that research on the evolution of one art form should not be used to

88 This is how the four aspects work together in her model: "Adult aesthetic response (to arts like poetry, music, and dance, which unfold in time) is built upon the same fundamental or innate competencies and sensitivities to temporal and dynamic elements that are spontaneously used by mothers in babytalk to engender and sustain affiliative emotion and accord. If this is so, engaging in the arts may serve [...] as ways of creating and sharing emotional communion with other humans, thereby transmitting group knowledge and instilling a sense of 'coping' that could relieve individual anxiety, and foster one-heartedness and social solidarity" (Dissanayake 2001:98).

formulate a general model for all the arts, I also believe that a monolithic explanation of art is both unattainable and undesirable. The main reason for this is that music, storytelling, and the visual arts, i.e. the manifestations that Dissanayake considers as variants a single behaviour of art, may in fact constitute very different traits in themselves, which evolved at different moments, under different selective pressures, with their own cognitive mechanisms and functions.

For example, several researchers have suggested, as Darwin did, that music and dance may have a very long evolutionary history, perhaps pre-dating language ability (Brown 2007; Cross & Morley 2008; Dunbar 2004; Fitch 2005b; McDermott & Hauser 2005; Mithen 2009). In fact, some scholars suggest that singing might have constituted an early proto-linguistic communication system that eventually supported the rise of speech (Dunbar 2004; Fitch 2005b; Mithen 2009). The origin of musical abilities has recently received much attention from evolutionary and cognitive scientists (Brown 2007). As a result, several important advances have been made towards an evolutionary explanation of music.⁸⁹ These studies in fact seem to support Dissanayake's model. Cross-cultural evidence indicates that there are some innate components to music perception and production. Humans are responsive to music and rhythm from early infancy (Fitch 2005b). Moreover, McDermott and Hauser (2005) have noted that music is nearly universally produced from an arrangement of pitches similar to the pentatonic and diatonic scales. And, at least one genre of human music has been identified as truly universal: lullabies, slow in tempo, simple, repetitive and infant-directed. All three points seem to support a scenario of music origins related to human mother-infant interactions (Cross & Morley 2008; Dissanayake 1992, 2000; Fitch 2005b). In contrast, as Dissanayake herself (2007:12) and others have noted (Coe 2003; Lewis-Williams 2002; Zilhão 2007), the visual arts evolved later and separately. From our review of the archaeological record in chapter 2, it becomes evident that visual art certainly did not flourish until the Late Pleistocene, which in itself requires clarification.

Finally, neuroscience research has shown that linguistic abilities, musical faculties, and visual art-making (e.g. drawing and painting), each involve different cognitive mechanisms, and are located in different areas of the brain (Fitch 2005b; Zaidel 2010). This is most clearly observed in persons with Parkinson's and Alzheimer's diseases whose memory, as well as visual and linguistic capacities are often impaired, but generally are still be able to remember and even learn songs and melodies, as the curious neurological anecdotes of Oliver Sacks ([1985]2011) illustrate. This indicates that musical memory is independent of visual and linguistic memory (Prickett & Moore 1991). Neuroimaging studies of music perception and production point towards the possible existence of music-specific cognitive processes and circuitry in the

⁸⁹ Music is minimally defined as "structured sounds produced directly or indirectly by humans" (McDermott & Hauser 2005:30).

human brain (Brown 2007; McDermott & Hauser 2005). Similarly, patients with impeded linguistic faculties (e.g. dysphasia, apraxia) can retain normal visual-artistic abilities (Donald 1993:742; Humphrey 1998), which are more related to visual-motor skills. This implies the dissociability of language and visual art; i.e. that language and visual art are not neurologically interconnected. Therefore, if the aim is to account for the evolution of 'the arts', they should be separated as independent sets, each with their own ontogenetic and phylogenetic history and mechanisms. In this assessment I concentrate particularly on Dissanayake's views related to the emergence and development of visual art.

Against the innateness of visual art

Dissanayake has often argued that art is likely to be a human adaptation because it is an innate behaviour; i.e. it arises spontaneously in children – is unlearned, it follows a fixed pattern of development, and it is universal (1992:xix; 2007:2).⁹⁰ There is, however, little ground to support at least the first two of these three statements with regards to visual art. First, visual art does not arise spontaneously in ontogeny. Certainly, when stimulated, children are highly motivated to engage in visual art-making. In literate societies where the development of drawing skills is particularly encouraged from an early age, children do acquire this aptitude relatively easily (independently of talent). For this reason, some researchers have suggested that the development of drawing skills to some extent mirrors the gradual process of language acquisition (Kellogg 1970; Morris 1962). However, neither visual art nor language are unlearned. Several studies in deaf (Mayberry 2010) and socially isolated children – neglected and 'feral' children (Candland 1993) – confirm that there is a critical period for language learning, meaning that "a lack of language acquisition in early life impedes the ability to learn language throughout life" (Mayberry 2010:286). And although I am not aware of comparable studies for visual art-making, at least the cases of neglect also indicate that children do not 'spontaneously' engage in, for instance, drawing (Candland 1993:34). Visual art, like language, is a behaviour that depends on human social interaction.

Second, Dissanayake follows the classical Piagetian models of child development which suggest that visual art production follows a fixed pattern of progressive stages. These models, based on the maturation of children's drawings (Baker & Kellogg 1967; Kellogg 1970; Morris 1962), suggest that the achievement of visual representation follows an inner scheme of universal successive phases that start with making marks and lines (scribbles), to geometrical shapes, to composite figures, and culminate with representational sketches (Dissanayake 2010:5). Certainly, most children in modern literate societies are encouraged to start experimenting with drawing by the age of two,

⁹⁰ Innate traits are "determined by factors present in and individual from birth, even though the traits in question may not emerge until later in development" (McDermott & Hauser 2005:30).

when they begin to develop the muscle co-ordination required for the manipulation of tools like crayons or pencils (Morris 1962), producing only lines, scribbles, and eventually circles. Between the ages of three and five, they gradually go from typically drawing circles, to cross circles, to 'mandala' and 'sun' motifs, to making more complex aggregates eventually arriving at representational images. Over the next few years children will master drawing, independently of their talents. However, this pattern does not seem to be either innate nor universal. The 'scribble' stage, may be parsimoniously explained by the development of motor skills (e.g. hand-eye coordination and dexterity). As for the others, more recent data from developmental psychology suggests that there is a strong social component to children's art-making, and thus the content of these supposed stages more likely correspond with the instructor's influence and expectation, and even peer-pressure. For example, when infants develop Theory of Mind and a sense of their social self, the influence of their cultural environment grows stronger, constraining individual 'creative freedom', as developmental psychologists Francesca Happé and Pedro Vital explain (2009:1370):

Typically developing (TD) children lose aspects of originality in, for example, their art as a result of acquiring stereotyped forms from their peers (think, for example, of rays drawn on a sun or birds drawn as 'ticks'). Without doubt, the obligatory and automatic recognition of others' mental states, and the desire to be viewed by others as part of the in-group, place blinkers on most TD young people.

Furthermore, despite the universalist claim, the model is based on Western case studies (e.g. Kellogg 1970). However, (figurative) representation should not be seen as the highest level of development of visual artistic behaviour either at the individual or the species level, as psychologists Jeniffer Drake and Ellen Winner make clear (2010:167):

At the heart of artistic talent is the ability to master one's culture's representational conventions. It is a mistake [...] to see Western-style realism as the prime sign of artistic talent, when this style is but one of the many possible representational conventions.

In contrast to innateness, the statement of universality is better supported. As explained in the previous chapter, there is enough evidence to claim that some forms of visual arts are, at least since the Late Pleistocene, truly universal (e.g. body ornamentation). But if this claim is meant to include all forms of visual art, it becomes weaker. The above does not necessarily disprove that visual art constitutes a human adaptation. As philosopher Nicholas Shea has recently discussed, evolutionary research on human behaviour needs to detach innateness from adaptation, and being an adaptation from being unlearned, and do away with explanations of the type "X is an adaptation → X is innate → X's development does not depend upon learning" because "many recent human adaptations depend crucially on learning" (2012:2235). Early ethologists also

recognized that much of human behaviour depends upon “man’s unique learning capacity” so that “the process of human ritualization in psychological evolution has a primarily ontogenic, not a phylogenetic basis; is directed mainly by psychological selection, not by the genetic mechanism of natural selection” (Huxley 1966:258). So, visual art may be universal, though not innate, and it may have adaptive value, without necessarily being an adaptation.

Following Erikson, Dissanayake has also suggested that the interactions between mother and child constitute the behavioural basis of artification, especially baby-talk, which she also considers a human adaptation that underlies ritual and artistic behaviour (Dissanayake 2001, 2008:253; Miall & Dissanayake 2003). Nonetheless the assertion that baby-talk is a universal human parenting strategy has been disputed by cross-cultural studies of parental caregiving and child development (Tomasello et al. 2005:688). Some scholars have pointed out that many cultures do not interact with infants in this manner, but that on the contrary, the most common pattern of infant care found in ethnography shows that babies are often fed and further left alone to rest (Lancy & Grove 2010:147). In general, young babies and toddlers are not usually talked to or interacted with, for they are perceived as lacking understanding. In some extreme cases, as among the Korowai of West Papua, newborn babies are seen as ‘inhuman’ or non-persons (Stasch 2009:165). Frequently it is not until children become relatively independent (at 4 or 5 years of age) and can assume a social role that they become incorporated into day-to-day social interactions (Lancy & Grove 2010:152). Moreover, the ways in which mothers communicate with their infants also vary, and do not always comply with the typical high-pitched kind of baby-talk Dissanayake describes; for example among the Amazonian Pirahã, mothers use humming, or ‘hum speech’ when addressing their babies (Everett 2010:186). Dissanayake’s, and Erikson’s, assumptions seem to be modelled after an archetypal idea of motherhood. As developmental psychologist Suzanne Gaskins has noted, in childhood studies, “many of the underlying assumptions and many specific patterns of interaction (such as social games, face-to-face interaction, and motherese) experienced by Euro-American infants that have been assumed to be universal are not” (2006:288).

Another issue is that the mother-infant relationship in the *Homo* lineage probably is not ‘a unique adaptation’, but part of a caregiving behavioural control system present in all mammals (Bell 2001; Panksepp 1998). This neuro-affective system is mostly driven by hormonal cues that promote emotional preference and attachment between mother and offspring. In primates, and even more so in humans, the scope of the system incorporates not only primary care and safety of the offspring, but also the teaching of survival skills, emotional security, and life-long mutual support (Bell 2001:224). The consequences of the long phylogeny of the mother-infant relationship have been noted by Rappaport (1999:390):

It may be suggested, in the light of both Erikson's account and the pseudo-infancy prevailing in some rituals, that ritual recaptures a state having its ontogenetic origin in the relationship of pre-verbal infants to their mothers. [...] There are also phylogenetic implications. If ontogeny has a phylogeny and if the mother-child relationship among humans is but a variant of the primate or even mammalian pattern, it may be that the basis of the numinous is archaic, antedating humanity.

Indeed, if the human mother-infant bond is but an extension of the mammal or primate pattern, it would not be, as Dissanayake has suggested, "an adaptation in hominins that evolved to address the problem of ensuring continued care of highly altricial infants" (2010:3). And whereas this does support her argument that making-special behaviour has a deep evolutionary history in the hominin lineage, it still leaves unexplained why clear evidence of ritual and art-making only appears in the Late Pleistocene.

The problems of function as explanation

As a final discussion, various scholars have taken issue with Mayr's and Tinbergen's four levels of evolutionary explanation, upon which the ethological analysis of Dissanayake's model is also based. To recapitulate, these are the 'proximate levels' of causation and ontogeny, and the 'ultimate levels' of function and phylogeny. Criticisms have focused particularly on three points: the conflation of correlation and causation, the problems of 'reverse engineering' from current function, and the division between 'proximate' and 'ultimate' causes.

The first point, is that in trying to identify the causes of a behaviour, researchers often point to the preceding conditions that accompany it, but these do not necessarily hold a causal relationship, in other words "what causes something to happen has nothing to do with the number of times we have observed it happening" (Sayer 2000:14). Furthermore, identifying the conditions in which a behaviour or trait evolved is not sufficient explanation for its evolution. In this case, Dissanayake's observation that ritual ceremonies always incorporate artistic displays and that both art and ritual share many characteristics (e.g. 'specialness') is not sufficient to support the argument that the latter acted as cause for the evolutionary development of the first. Pre-existing conditions are not the same as causes, and the fact that two phenomena are observed to co-occur recurrently does not mean that they are causally linked.⁹¹

The second issue has been raised by palaeontologist Stephen J. Gould and biologist Richard Lewontin, who noted that asking the question "what did a

⁹¹ This is a logical fallacy known as *cum hoc ergo propter hoc*. For example, up until the 19th century people used to think that 'bad air' or miasma (i.e. bad odours) caused diseases like cholera and plague, evidently there is a connection between the two but as we now know, bad odours are more usually an effect or a symptom of disease-prone conditions, rather than a cause of disease.

behaviour evolve for?” can generate hypotheses that fail to distinguish between current function from cause of origin (1979:581). To take one of Gould’s classical examples, by observing the current function of feathers in birds, one could easily assume that feathers ‘evolved for’ flying, or alternatively for display, and be satisfied with either explanation. However, feathers may have evolved in dinosaurs for thermo-regulation and were only later repurposed, i.e. exapted, for flight and courtship in birds (Gould 2002:1226). So, the fact that a trait or behaviour functions in one way or context in the present, does not necessarily indicate what it ‘evolved for’.⁹² Therefore, “one must not confuse the fact that a structure is used in some way with the primary evolutionary reason for its existence and conformation” (Gould & Lewontin 1979:587). For this reason, answering the question “what was art selected for?” by ‘reverse-engineering’ on the basis of the current function of the behaviour may not be the best approach, since it can easily lead to ‘just-so-stories’ of phylogenetic origin. As Dissanayake herself has noted (2007, 2008), there are currently a dozen ‘competing scenarios’ on the adaptive function of art, all taking different effects of art as a starting point. Additionally, even if a current function could be traced back in phylogeny, it would not imply that the trait is a specific ‘adaptation for’ that function. Evolutionary processes are generally not that simple, there may be selection without adaptation, adaptation without selection, random drift, and ‘secondary’ adaptation – a.k.a. exaptation. In sum, evolutionary explanations need not couple function, selection and adaptation in a linear relationship. So, even if visual art does have self-rewarding, therapeutic and bonding functions, and even if these were originally developed in ritual contexts, it cannot be said that art was ‘selected for’ these effects.

Finally, as in the first point, the ‘proximate’ and ‘ultimate’ levels of explanation are often said to refer to the immediate and the evolutionary causes of a behaviour, respectively. But as Martin Mahner and Mario Bunge explain, this is problematic (1997:40):

The distinction between *proximate* and *ultimate* causes has become common-place in biology. In order to explain any morphological or behavioral feature, such as the behavior of migrating birds, we would have to take two levels of (alleged) causation into account. The proximate level consists in the physiological mechanisms that produces or triggers the behavior, such as the effect of diminishing daylight and temperatures on the physiology of the bird, or the developmental pathways in the case of a morphological character. The ultimate cause, by contrast, would be the evolutionary history of the organ or behavior as contained in the ‘genetic program’, which thus has to be regarded as a material as well as final cause.

⁹² Gould coined the term ‘exaptation’ to denote “the cooption of a preexisting character for an altered current utility”, as opposed to adaptation, which is “the origin of a character directly for its current utility” (2002:671). Exaptation then involves “the re-use by natural selection of a structure with previously different purposes” (Pievani & Serrelli 2011:3).

As will be obvious from the previous considerations, what is called 'proximate causes' may indeed be such, but there are no such events as ultimate causes. Undoubtedly, the history of an individual and, particularly, the history of its genetic material are determinants of the developmental processes leading to its current morphology and behavior, but they do not cause it. What is true is that the history of a system provides some of the *conditions* or *circumstances* of the system's possible changes. Therefore, the expression 'ultimate cause' should be replaced by the expression *historical condition*, or *distal cause* in the case of a genuine past cause.

Certainly, phylogenetic history is relevant for understanding the origins of a trait, but it does not offer a cause of origin.

Finally, Kevin Laland and colleagues have recently noted that Mayr's model, by conceiving of causation and ontogeny as 'proximate' causes, diminishes the importance of developmental processes in evolution. Whereas, it is now recognized that developmental and epigenetic mechanisms can have strong selective powers (Laland et al.2012:1515):

Mayr's proximate/ultimate distinction has proven problematic because it builds on an incorrect view of development that fails to address the origin of characters and ignores the fact that proximate mechanisms contribute to the dynamics of selection.

The implications of the three issues raised above is that while separating evolutionary accounts in different levels of explanation may be a useful heuristic tool of analysis, in reality these four aspects do not work separately, they are all integrated in the organism, its current functioning and its history.⁹³ These criticisms also have an impact on Dissanayake's model for the evolutionary origin of art. Especially, the point that a trait's function should not be equalled to its evolutionary cause. Whereas selection does work on effects (Gould 2002:672), pointing these out does not inform us about how the behaviour arose. Indeed, the effects, results or outcomes of artistic practice (e.g. stress reduction, social cohesion, aesthetic pleasure, etc.) may have acted as selective pressures towards retaining art behaviour, but they do not explain either how visual art came about, or how it developed into its observable forms, and the latter questions should be the focus of evolutionary explanation.⁹⁴

93 As philosopher of science Brett Calcott has noted, the proximate-ultimate dichotomy is also not useful for explaining how group-level properties emerge from individual-level interactions (e.g. cooperation, complexity), or the mechanisms that are involved in such a process (2013:260).

94 Therefore an account in terms of mechanisms is preferred to one in terms of function: "Mechanistic explanation differs also from functional or teleological explanation, as in 'feature A evolved (or was set up) for function B, which is necessary for (biological or social) viability.' Indeed, conjecturing that a certain system is driven by such-and-such mechanism(s) involves no reference to adaptation or value, particularly usefulness to the given system or some other system – all the more so since certain feature of either organism or social systems can be maladaptive. The emergence of an interesting new thing or property of a thing should certainly be explained in terms of some mechanism or other but not necessarily by reference to its value, which may be nil or even negative

In conclusion, while Dissanayake's model probably points out some significant selective pressures for human artistic behaviour, it is not sufficient as an explanation of how (visual) art emerged in human evolution (the specific circumstances under which it is expected to have arisen). Pointing to a correlation with ritual, where in time the visual arts were just 'added' to enhance ceremonies (2007:12) says little, in any case, about why visual art developed when and where it did (the forms and changes observed in the archaeological record).

However, it is possible to retain the notion of the visual arts as ritualized behaviours without having to allude to a ritual origin. In fact, what early ethologists like Huxley and Lorenz called 'ritualization' was the process by which an ordinary movement, gesture, or vocalization acquires a communication function, i.e. becomes a signal. They suggested that the arts also went through such a ritualization process, and for this reason had a lot in common with animal ritualized behaviours (i.e. signals). However, as Erikson well said (1966:523), not all ritualized behaviours are (what anthropologists call) ritual or involved in ritual. In its original connotation, I agree that visual art may be seen as ritualized behaviour, in other words, that it may have originated from common behaviours that later became co-opted in communication. I elaborate on this in chapter 6.

4.4 Test against the archaeological record of visual art

Dissanayake's account for the origins of art, like Geoffrey Miller's, incorporates little archaeological evidence. She has focused mainly on suggesting a biological motivation for artistic behaviour, rather than 'reconstructing' the emergence or development of 'the arts' (1992:37). And like Miller's, her model is difficult to contrast against the early archaeological evidence of visual art. However, by following the author's line of reasoning, again it is possible to deduce some predictions to be tested against the Pleistocene record.

The hypothesis laid out by Dissanayake suggests that visual art evolved in collective ritual contexts, selected for the adaptive function of reducing stress under uncertainty, while promoting intra-group social cohesion. This model predicts that art will be most prominent in the context of communal rituals and ceremonies. Therefore, *a noticeable increase of visual art will correlate with an increase in communal ceremonial activities* (prediction 1a) *and signs of emerging group identity* (prediction 1b). And because, Dissanayake argues, "groups whose individual members had the tendency to make things special would have had

rather than positive [...] To be sure, some human actions are purposive, but indicating their (known or conjectured) purpose, function, or usefulness performs only part of the job. We also need to know (or guess) something about the mechanism(s) likely to bring about the desired goal" (Bunge 1997:413).

more unifying ritual ceremonies, and thus these individuals and groups would have survived better than individuals and groups that did not” (1992:52), *the model would expect artistic behaviour to be under strong selective pressure of environmental stress and intensive group-group competition* (prediction 2).⁹⁵

Unambiguous evidence for ritual and ceremonial activity is difficult to identify in the material record, and is often a point of debate in archaeological interpretation (Ross & Davidson 2006). It is clear that not all ceremonies leave an archaeological print, but by analogy some remains are interpreted as traces of ceremonial behaviour. From ethnographical and historical data, it is known that rituals and ceremonies may take place on a daily basis, and in a domestic environment; take for example the keeping of a home altar, morning prayers, or collective dining. But the types of ceremonies Dissanayake actually seems to have in mind – e.g. public gatherings with lavish displays of visual and other arts – are special-purpose activities that generally require special preparations and a determined time and place (Rappaport 1971:28).

Ian Watts has argued that the notable intensification of red ochre exploitation in the record of African Middle Stone Age sites “permits the inference of habitual collective ritual” (2009:80). But, as I explained in the review of the ochre record, this evidence is ambiguous. An increase in ochre use, even if used for body painting, need not imply that humans were carrying out the kind of communal ritual ceremonies Watts and Dissanayake seem to have in mind. For instance, body painting could have been an everyday, non-ceremonial (although highly symbolic) custom, as it is today among the Namibian Himba women whose hair and bodies are permanently covered in a mix of butter and red ochre. Also, many African Middle Stone Age ochre finds come from contexts with traces of multiple activities. They have often been found along with stone tools and food remains that indicate the sites were likely base camps where people carried out day-to-day subsistence activities rather than special ceremonial ones, for example at Pinnacle Point (Marean et al. 2007) and Blombos Cave (Henshilwood & D’Errico 2011:82).⁹⁶ Naturally, the fact that the ochre has been found in these locations does not preclude its use in other places; it is still possible that the ochre was processed in these domestic locations and the pigments obtained were applied and/or displayed elsewhere.

The repeated occurrence of ochre in Late Pleistocene burials (Watts 2002:1) does seem to suggest the probable use of red pigment in funerary ceremonies, but the data from ochre can be ambiguous, as we have already discussed in chapter 2. So, depending on how the evidence is interpreted, the prediction that

95 Dissanayake recognizes, though, that some scholars report the opposite: that abundance of resources promotes the need for competitive ceremonial displays of prestige items (e.g. visual art). However, for her, the emergence of art is better explained by its contribution to social cooperation rather than competition (1992:238, 2010:6).

96 With the exception of a recent find of 100,000 year-old ochre-processing toolkits at Blombos Cave, which have been interpreted as evidence of an ochre-processing workshop (Henshilwood et al. 2011).

an increase of visual art production should indicate more intensive ceremonial behaviour (1a) might find some support in the African MSA record of ochre use (cf. Power 1999, 2004, 2009).

It is not until the Upper Palaeolithic in Europe that we observe better-defined signs of the ceremonial use of space. For instance, the painted caves of France and Spain do not show evidence of having been used for regular habitation, which indicates that they often were reserved for the special purpose of painting and associated activities, which probably included some ceremonial activities (Conkey 1993:108).

The Pleistocene shell bead finds from Middle Stone Age sites like Blombos Cave in South Africa and Pigeons Cave in Morocco have been interpreted by some scholars as indicators of group identity (Wadley 2007:682). However, these items seem to be too standardized over time and space to signal group differences (Kuhn & Stiner 2007a:48). As discussed in the record review, many of the beads from different sites are made of the same marine snail family (*Nassarius*) and show similar perforation and modification patterns. Objects that are meant to tell groups apart from one another should be easily identified as distinct.⁹⁷ Like linguistic dialects, which clearly signal specific group affiliations, material social markers should show relative regional and temporal stylistic variability (Wobst 1977). Instead, the formal redundancy and stylistic consistency of these earliest ornaments might relate to individual within-group social identity in the African Middle Stone Age before 75,000 BP (Kuhn & Stiner 2007b:46; Malafouris 2008b:408), as I will discuss in chapter 6. Again, it is in the record of the European Upper Palaeolithic, especially from the developed Aurignacian onwards, where we clearly see regional stylistic variations in material culture (like tool types and personal ornaments) that might speak of interaction between distinct groups (Gamble 1999:363; Gilman 1984; Vanhaeren & D'Errico 2006). The idea that the earliest signs of visual art might correspond to emerging group identity (prediction 1b) is thus not well supported by the art record of the African Middle Stone Age up to 75,000 BP, but might apply to the evidence of the European Upper Palaeolithic particularly after 30,000 BP.

As mentioned in Chapter 2, the living conditions in Africa around 100-75,000 BP seem to have been relatively favourable for modern humans, with small populations benefiting from diverse productive environments. Under such circumstances, group-group competition is not generally expected to act as an important selective pressure. At the same time, because bands in a rich and stable environment are relatively self-sufficient and scattered, cooperation between groups and across large distances is weak (Ambrose 2010:140). In the absence of intensive inter-group competition or cooperation, group identity would remain underdeveloped, and markers of group affiliation would be

⁹⁷ Nonetheless, we cannot discard the possibility that it was how these items were displayed by separate groups which made them different (as jewellery, sewn on clothing, as part of a headdress, etc.).

unnecessary (Wobst 1977; Wiessner 1983). Hence, the conditions of precariousness and group-group competition expected by Dissanayake's model (prediction 2) are not met for the African MSA before 75,000 BP.

The archaeological predictions deduced from Dissanayake's artification hypothesis are not entirely consistent with the earliest record of visual art in the African Middle Stone Age. Nevertheless, some of the circumstances assumed by Dissanayake seem to apply well to the conditions of the European Upper Palaeolithic. So, her model appears to better explain not so much the origins of visual art as the emergence of particular (collective/group) art forms. For instance, the conditions of intensified intergroup interactions, either through competition or cooperation, that might select for internally cohesive groups and collective identity might be reflected in the regional styles of Upper Palaeolithic tool technology and visual art (Gilman 1984). This prospect will be revisited in chapter 6.

4.5 Conclusion

In this analysis, I have argued that Dissanayake's artification hypothesis is too broad in trying to account for all 'the arts' as a single behaviour of art (see also Davies 2005:304; Lewis-Williams 2002:67). I have suggested that, on the contrary, what she calls the arts may be better approached as different behaviours with individual evolutionary histories. Furthermore, I have pointed out that an ethological approach is desirable and useful to enquire about evolutionary origins, but that it should avoid relying too heavily on 'reverse-engineering' from current function and on *a priori* assumptions of the innateness of behaviour, for these blur the importance of ontogenetic development in evolution. Finally, I have shown that the original ethological connotation of art as 'ritualized behaviour' actually refers to its role as a communication signal, but not necessarily to ritual in the anthropological sense, and it is in that original sense that it should be understood.

The assessment of Dissanayake's hypothesis against the archaeological record of visual art in the Pleistocene revealed that it cannot satisfactorily explain the origins of visual art behaviour in the African Middle Stone Age prior to 75,000 BP, although it might account for the emergence of new (collective) art forms in the European Upper Palaeolithic by 30,000 BP which indeed might be related to an increase of ritual behaviour and inter-group competition. This point will be taken up again in chapter 6.