

Cave Art, Autism, and the Evolution of the Human Mind

Nicholas Humphrey

The emergence of cave art in Europe about 30,000 years ago is widely believed to be evidence that by this time human beings had developed sophisticated capacities for symbolization and communication. However, comparison of the cave art with the drawings made by a young autistic girl, Nadia, reveals surprising similarities in content and style. Nadia, despite her graphic skills, was mentally defective and had virtually no language. I argue in the light of this comparison that the existence of the cave art cannot be the proof which it is usually assumed to be that the humans of the Upper Palaeolithic had essentially 'modern' minds.

'Man is a great miracle', the art historian Gombrich was moved to say, when writing about the newly discovered paintings at the Chauvet and Cosquer caves (Gombrich 1996, 8). The paintings of Chauvet, especially, dating to about 30,000 years ago, have prompted many people to marvel at this early flowering of the modern human mind. Here, it has seemed, is clear evidence of a new kind of mind at work: a mind that, after so long a childhood in the Old Stone Age, had grown up as the mature, cognitively fluid mind we know today.

In particular it has been claimed that these and other examples of Ice Age art demonstrate (i) that their makers must have possessed high-level conceptual thought: e.g. 'The Chauvet cave is testimony that modern humans . . . were capable of the type of symbolic thought and sophisticated visual representation that was beyond Neanderthals' (Mithen, quoted by Patel 1996, 33), or 'Each of these painted animals . . . is the embodiment and essence of the animal species. The individual bison, for example, is a spiritual-psychic symbol; he is in a sense the "father of the bison", the idea of the bison, the "bison as such" (Neumann 1971, 86); (ii) that their makers must have had a specific intention to represent and communicate information: e.g. 'The first cave paintings . . . are the first irrefutable expressions of a symbolic process that is capable of conveying a rich cultural heritage of images and probably stories from generation to generation' (Deacon 1997, 374); or, more particularly, 'This clearly deliberate and planned imagery

functions to stress one part of the body, or the animal's activity . . . since it is these that are of interest [to the hunter]' (Mithen 1988, 314); and (iii) that there must have been a long tradition of artistry behind them: e.g. 'We now know that more than 30,000 years ago ice age artists had acquired a complete mastery of their technical means, presumably based on a tradition extending much further into the past' (Gombrich 1996, 10).

The paintings and engravings must surely strike anyone as wondrous. Still, I draw attention here to evidence that suggests that the miracle they represent may not be at all of the kind most people think. Indeed this evidence suggests the very opposite: that the makers of these works of art may actually have had distinctly pre-modern minds, have been little given to symbolic thought, have had no great interest in communication and have been essentially self-taught and untrained. Cave art, so far from being the sign of a new order of mentality, may perhaps better be thought the swan-song of the old.

The evidence I refer to, which has been available for more than twenty years now (although apparently unnoticed in this context) comes from a study made in the early 1970s by Lorna Selve of the art-work of a young autistic girl named Nadia (Selve 1977, 1983; 1985).

Nadia, born in Nottingham in 1967, was in several respects severely retarded. By the age of six years she had still failed to develop any spoken language, was socially unresponsive and physically

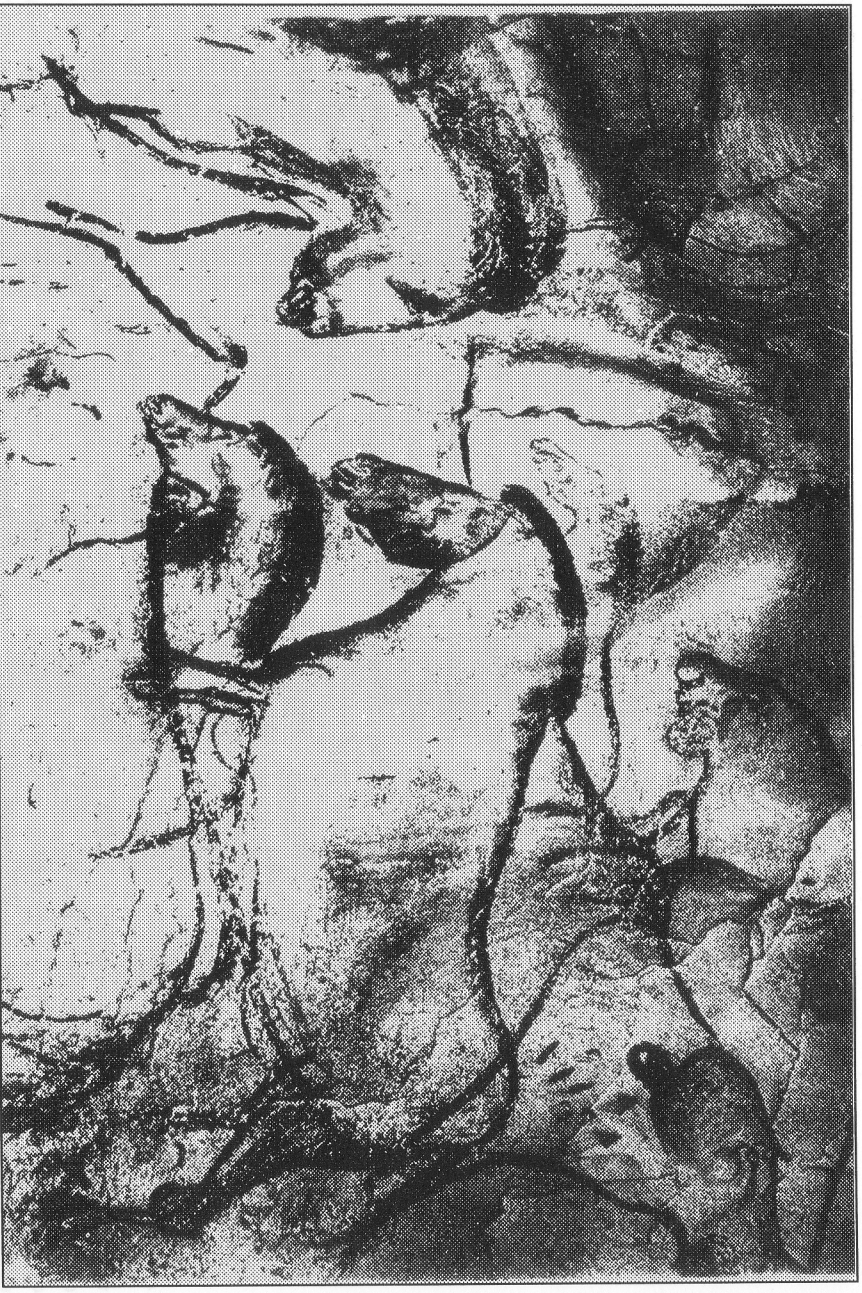


Figure 1. Painted horses from Chauvet Cave (Ardèche), probably Aurignacian.



Figure 2. Horses by Nadia, at 3 years 5 months.

clumsy. But already in her third year she had begun to show an extraordinary drawing ability: suddenly starting to produce line-drawings of animals and people, mostly from memory, with quite uncanny photographic accuracy and graphic fluency.

Nadia's ability, apart from its being so superior to other children, was also essentially different from the drawing of normal children. It is not that she had an accelerated development in this sphere but rather that her development was totally anomalous. Even her earlier drawings showed few of the properties associated with infant drawings . . . Perspective, for instance, was present from the start. (Selle 1977, 127).

These drawings of Nadia's, I now suggest, bear astonishing parallels to high cave art.

Figure 1 shows part of the big horse panel from Chauvet, Figure 2 a drawing of horses made by Nadia — one of her earliest — at age three years five months. Figure 3 shows a tracing of horses from Lascaux, Figure 4 another of Nadia's early drawings. Figure 5 shows an approaching bison from Chauvet, Figure 6 an approaching cow by Nadia at age four. Figure 7 a mammoth from Peche Merle, Figure 8 two elephants by Nadia at age four. Figure 9 a detail of a horse-head profile from Lascaux, Figure 10 a horse-head by Nadia at age six. Figure 11, finally, a favourite and repeated theme of Nadia's, a rider on horse-back, this one at age five.

The remarkable similarities between the cave paintings and Nadia's speak for themselves. There is first of all the striking naturalism and realism of the individual animals. In both cases, as Clottes (1996a, 114) writes of the Chauvet paintings, 'These are not stereotyped images which were transcribed to convey the concept "lion" or "rhinoceros", but living animals faithfully reproduced.' And in both cases, the graphic techniques by which this naturalism is achieved are very similar. Linear contour is used to model the body of the animals. Foreshortening and hidden-line occlusion are used to give perspective and depth. Animals are typically 'snapped' as it were in active motion — prancing, say, or bellowing. Liveliness is enhanced by doubling-up on some of the body contours. There is a preference for side-on views. Salient parts, such as faces and feet, are emphasized — with the rest of the body sometimes being ignored.

Yet it is not only in these 'sophisticated' respects that the cave drawings and Nadia's are similar, but in some of their more idiosyncratic respects too. Particularly notable in both sets of drawings is the tendency for one figure to be drawn, almost

haphazardly, on top of another. True, this overlap may sometimes be interpretable as a deliberate stylistic feature. Clottes (1996a, 114), for example, writes about Chauvet: 'In many cases, the heads and bodies overlap, doubtless to give an effect of numbers, unless it is a depiction of movement.' In many other cases, however, the overlap in the cave paintings serves no such stylistic purpose and seems instead to be completely arbitrary, as if the artist has simply paid no notice to what was already on the wall. And the same goes for most of the examples of overlap in Nadia's drawings. Figure 12, for example, shows a typical composite picture made by Nadia at age five — comprising a cock, a cat, and two horses (one upside-down).

In Nadia's case, this apparent obliviousness to overlap — with the messy superimpositions that resulted — may in fact have been a positive feature of her autism. Autistic children have often been noted to be unusually attentive to detail in a sensory array, while being relatively uninfluenced — and even maybe unaware of — the larger context (see the discussion by Frith & Happé 1994). Indeed such is their tendency to focus on parts rather than wholes that, if and when the surrounding context of a figure is potentially misleading or confusing, they may actually find it easier than normal people to ignore the context and see through it. Shah & Frith (1983) have shown, for example, that autistics perform quite exceptionally well on the so-called 'hidden figure' test, where the task is to find a target figure that has been deliberately camouflaged by surrounding lines.

There is no knowing whether the cave artists did in fact share with Nadia this trait which Frith (Frith & Happé 1994) calls 'weak central coherence' (see also Pring *et al.* 1995). But if they did do so, it might account for another eccentricity that occurs in both series of drawings. Selle (1977, note to pl. 33) reports that Nadia would sometimes use a detail that was already part of one figure as the starting point for a new drawing — which would then take off in another direction — as if she had lost track of the original context. And it seems (although I admit this is my own *post hoc* interpretation) that this could even happen half-way through, so that a drawing that began as one kind of animal would turn into another. Thus Figure 13 shows a strange composite animal produced by Nadia, with the body of giraffe and the head of donkey. The point to note is that chimeras of this kind are also to be found in cave art. The Chauvet cave, for example, has a figure that apparently has the head of a bison and the trunk and legs of a man.



Figure 3. Painted and engraved horses from Lascaux Cave (Dordogne), probably Magdalenian.



Figure 4. Horses by Nadia, at 3 years 5 months.

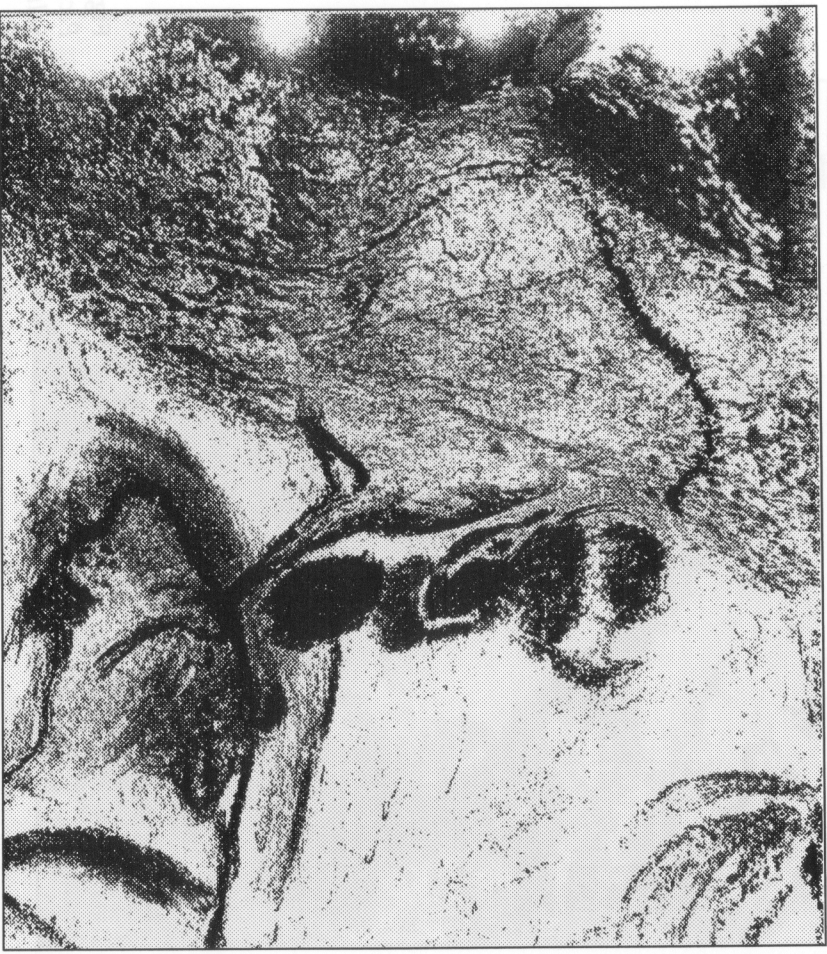


Figure 5. Painted bison from Chauvet Cave (Ardèche), probably Aurignacian.



Figure 6. Cow by Nadia, at approximately 4 years.

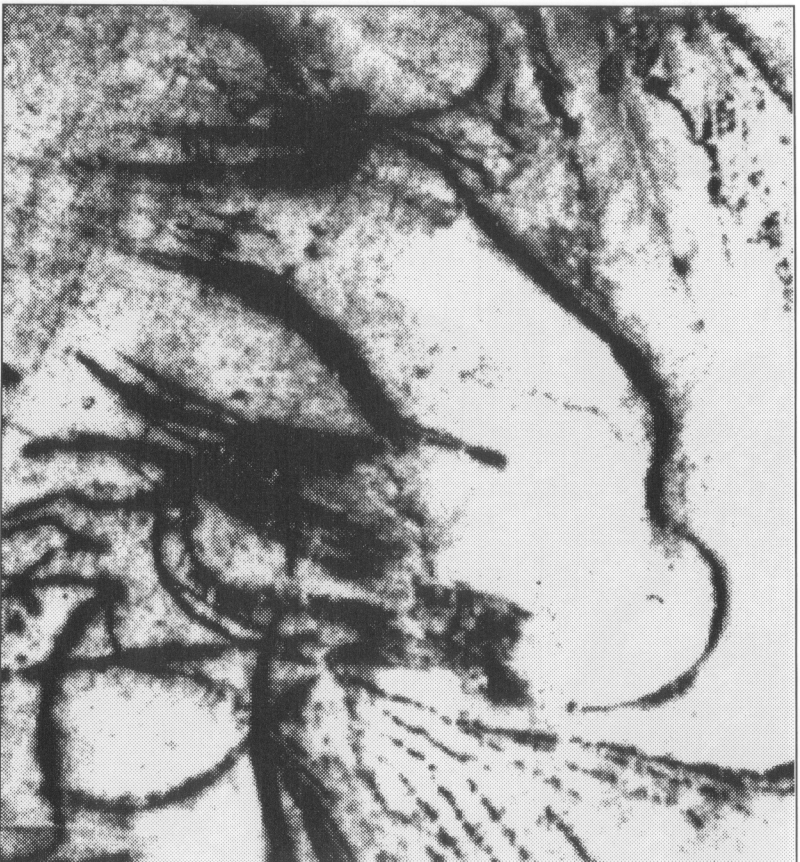


Figure 7. Painted mammoth from Pêche Merle (Lot), probably Solutrean.



Figure 8. Elephants by Nadia, at approximately 4 years.

What lessons, if any, can be drawn from these surprising parallels? The right answer might of course be: none. I am sure there will be readers — including some of those who have thought longest and hardest about the achievements of the Ice Age artists — who will insist that all the apparent resemblances between the cave drawings and Nadia's can only be accidental, and that it would be wrong — even impertinent — to look for any deeper meaning in this 'evidence'. I respect this possibility, and agree we should not be too quick to see a significant pattern where there is none. In particular, I would be the first to say that resemblances do not imply identity. I would not dream of suggesting, for example, that the cave artists were themselves clinically autistic, or that Nadia was some kind of a throwback to the Ice Age. Yet, short of this, I still want to ask what can reasonably be made of the parallels that incontrovertibly exist.

To start with, I think it undeniable that these parallels tell us something important about what we should *not* assume about the mental capacities of the cave artists. Given that Nadia could draw as she did *despite* her undeveloped language, impoverished cognitive skills, apparent lack of interest in communication, and absence of artistic training, it is evident that so too *could* the cave artists have done. Hence the existence of the cave drawings should presumably *not* be taken to be the proof, which so many people have thought it is, that the cave artists had essentially modern minds. Tattersall (1998, 16), for instance, may claim that '[Chauvet] dramatically bolsters the conclusion that the first modern people arrived in Europe equipped with all of the cognitive skills that we possess today'; but he is clearly on less solid ground than he supposes.

Next — and I realize this is bound to be more controversial — I think it possible that the parallels also tell us something more positive about what we *can* assume about the artists' minds. For suppose it were the case that Nadia could draw as she did *only because* of her undeveloped language and other impoverishments. Suppose, indeed, it were more generally the case that a person not only *does not need* a typical modern mind to draw like that but *must not have* a typical modern mind to draw like that. Then the cave paintings might actually be taken to be proof positive that the cave artists' minds were essentially pre-modern.

In Nadia's case there has in fact already been a degree of rich speculation on this score: speculation, that is, as to whether her drawing ability was indeed something that was 'released' in her only because her mind failed to develop in directions that in



Figure 9. Engraved horsehead from Lascaux (Dordogne), probably Magdalenian.



Figure 10. Horsehead by Nadia, at approximately 6 years.

normal children more typically smother such ability. Selfe's hypothesis has always been that it was Nadia's language — or rather her failure to develop it — that was the key.

At the age of six years Nadia's vocabulary consisted of only ten one-word utterances, which she used rarely. And, although it was difficult to do formal tests with her, there were strong hints that

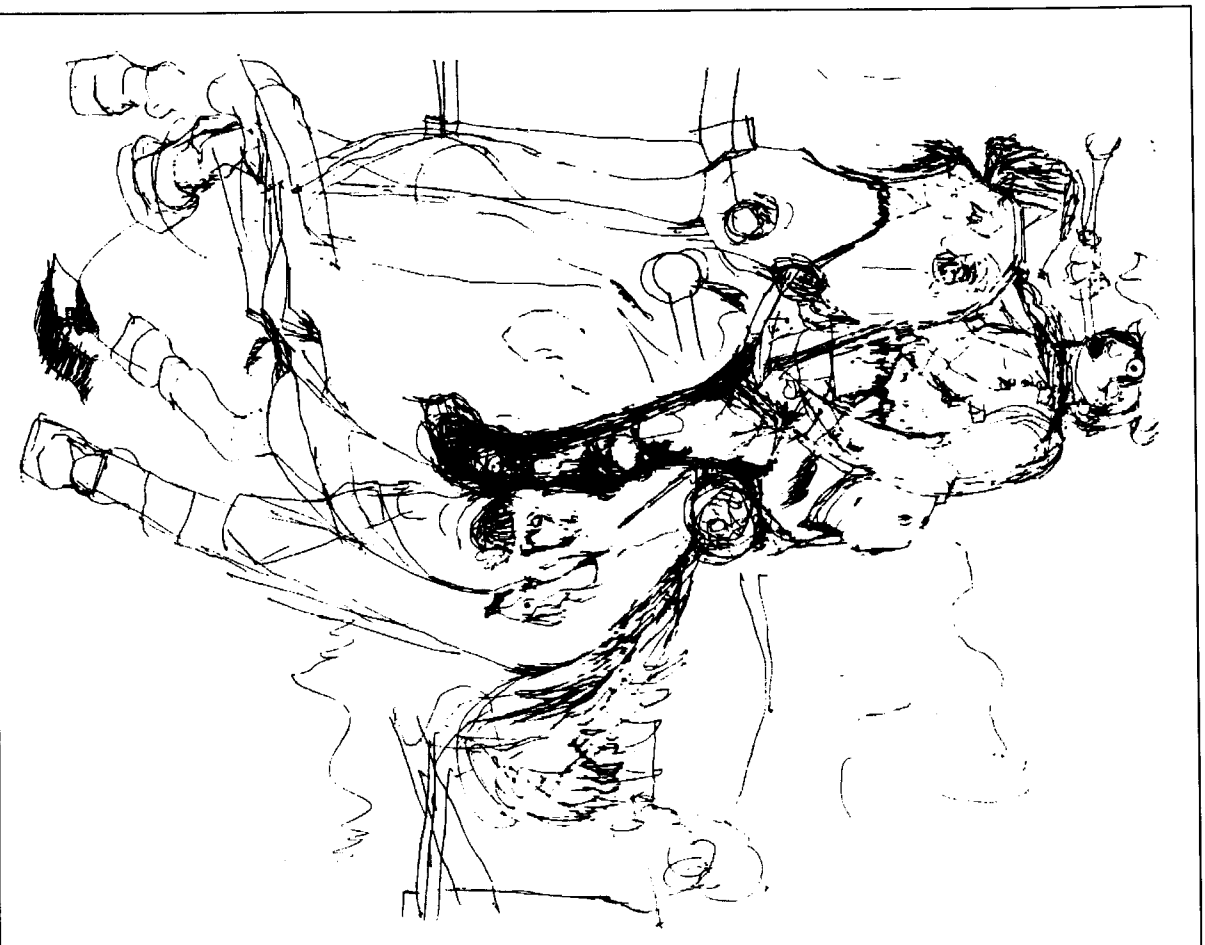


Figure 11. *Horse and rider by Nadia, at 5 years 6 months.*

this lack of language went along with a severe degree of literal mindedness, so that she saw things merely as they appeared at the moment and seldom if ever assigned them to higher level categories. Thus

it was discovered that although Nadia could match difficult items with the same perceptual quality, she failed to match items in the same conceptual class. For example, she could match a picture of an object to a picture of its silhouette, but she failed to match pictures of an armchair and a deck chair from an array of objects that could be classified on their conceptual basis (Selfe 1985, 140).

It was this very lack of conceptualization, Selfe believes, that permitted Nadia to register exactly how things looked to her. Whereas a normal child of her age, on seeing a horse, for example, would see it — and hence lay down a memory of it — as a token of the category 'horse', Nadia was simply left with the original visual impression it created.

Selfe went on to examine several other autistic subjects who also possessed outstanding graphic skills (although none, it must be said, the equal of Nadia), and she concluded that for this group as a whole the evidence points the same way:

It is therefore proposed that without the hypothesized domination of language and verbal mediation in the early years when graphic competence was being acquired, these subjects were able to attend to the spatial characteristics of their optic array and to represent these aspects in their drawing. . . . These children therefore have a more direct access to visual imagery in the sense that their drawings are not so strongly 'contaminated' by the usual 'designating and naming' properties of normal children's drawings. (Selfe 1983, 201).

Thus, whereas a normal child when asked to draw a horse would, in the telling words of a five-year-old, 'have a think, and then draw my think', Nadia would perhaps simply have had a look at her remembered image and then drawn that look.

This hypothesis is, admittedly, somewhat vague and open-ended; and Selfe herself considers it no

more than a fair guess as to what was going on with Nadia. Most subsequent commentators, however, have taken it to be at least on the right lines, and certainly nothing has been proposed to better it. I suggest therefore we should assume, for the sake of argument at least, that it is basically correct. In which case, the question about the cave artists immediately follows. Could it be that in their case too their artistic prowess was due to the fact that they had little if any language, so that their drawings likewise were uncontaminated by 'designating and naming'?

There are two possibilities we might consider. One, that language was absent in the general population of human beings living in Europe 30,000 years ago. The other, that there were at least a few members of the population who lacked language and it was from amongst this subgroup that all the artists came. But this second idea — even though there is no reason to rule it out entirely (and though the philosopher Daniel Dennett tells me it is the one he favours) — would seem to involve too much special pleading to deserve taking further, and I suggest we should focus solely on the first.

Then we have to ask: Is it really in any way plausible to suppose that human beings of such a relatively recent epoch had as yet not developed the capacity for full-scale language? The standard answer, coming from anthropology and archaeology, would certainly be: No. Human spoken language surely had its beginnings at least a million years ago, and most likely had already evolved to more or less its present level by the time the ancestral group of

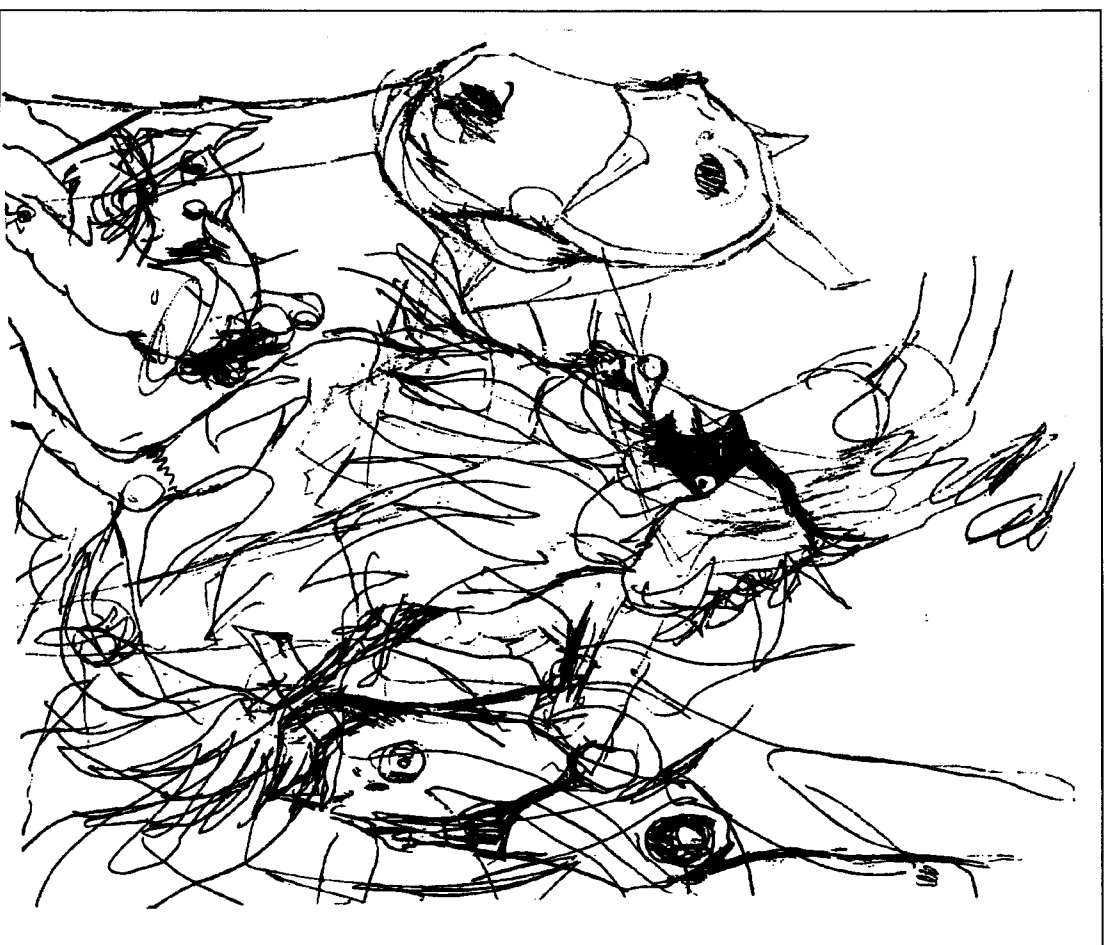


Figure 12. Superimposed animals by Nadia, at 6 years 3 months.

Homo sapiens sapiens left Africa around 150,000 years ago. By the date of the first cave paintings, therefore, there can be no question of there being any general deficiency in people's capacity to name or designate.

Yet there are revisionist ideas about this in the air. Everybody agrees that *some* kind of language for *some* purpose has likely been in existence among humans for most of their history since they parted from the apes. But Dunbar (1996), for example, has argued that human language evolved originally not as a general purpose communication system for talking about anything whatever, but rather as a specifically social tool for negotiating about — and helping maintain — interpersonal relationships. And Mithen



Figure 13. Composite animal, part giraffe, part donkey, by Nadia at approximately 6 years.

(1996) has taken up this idea and run with it, arguing that the 'linguistic module' of the brain was initially available only to the module of 'social intelligence', not to the modules of 'technical intelligence' or 'natural history intelligence'. So that, to begin with, people would — and could — use language only as a medium for naming and talking about other people and their personal concerns, and not for anything else.

Even so, this idea of language having started off as a sub-specialty may not really be much help to the argument at hand. For Mithen himself has argued that the walls around the mental modules came down at latest some 50,000 years ago. In fact he takes the existence of the supposedly 'symbolic' Chauvet paintings to be good evidence that this had already happened by the date of their creation: 'All that was needed was for a connection to be made between these cognitive processes which had evolved for other tasks to create the wonderful paintings in Chauvet Cave.' (Mithen 1996, 163). Therefore, other

things being equal, even Mithen could not be expected to countenance the much later date that this line of thinking that stems from Nadia indicates.

Suppose, however, that while Mithen is absolutely right in his view of the sequence of changes in the structure of the human mind, he is still not sufficiently radical in his timing of it. Suppose that the integration of modules that he postulates did not take place until, say, just 20,000 years ago, and that up to that time language did remain more or less exclusively social. So that the people of that time — like Nadia today — really did not have names for horses, bison, and lions (not to mention chairs). Suppose indeed that the very idea of something representing 'the bison as such' had not yet entered their still evolving minds. Then, I suggest, the whole story falls into place.

J.M. Keynes (1947) wrote of Isaac Newton that his private journals and notebooks reveal him to have been not the first scientist of the age of reason but the last of the magicians. Now likewise we might say that the cave paintings reveal their makers to have been not the first artists of the age of symbolism but the last of the innocents.

But 20,000 years ago? No language except for talking about other people? In an experiment with rhesus monkeys I did many years ago (Humphrey 1974), I found clear evidence that rhesus monkeys are cognitively biased towards taking an interest in and making categorical distinctions between *other rhesus monkeys*, while they ignore the differences between individuals of *other species* — cows, dogs, pigs and so on. I am therefore probably more ready than most to believe that early humans might have had minds that permitted them to think about other people in ways quite different from the ways they were capable of thinking about non-human animals. Even

so, I too would have thought the idea that there could still have been structural constraints on the scope of human language until just 20,000 years ago too fantastic to take seriously, were it not for one further observation that seems to provide unanticipated confirmation of it: This is the striking difference in the representation of humans as opposed to animals in cave art.

Note that the hypothesis, as formulated, makes a testable prediction. If before 20,000 years ago people had names available for talking about other human individuals but not for other animals, and if it were indeed this lack of naming that permitted those artists to depict animals so naturalistically, then this naturalism ought *not* to extend to other human beings. In other words, representations of humans should either be missing altogether from the cave paintings, or if present should be much more stereotypical and modern.

But, behold, this is exactly what *is* the case. As a matter of fact there are no representations of humans at Chauvet. And when they do occur in later paintings, as at Lascaux at 17,000 years ago, they are nothing other than crudely drawn iconic symbols. So that we are presented in a famous scene from Lascaux, for example, with the conjunction of a well-modelled picture of a bison with a little human stick-figure beside it (Fig. 14). In only one cave, La Marche, dating to 12,000 years ago, are there semi-realistic portrayals of other humans, scratched on portable plaquettes — but even these appear to be more like caricatures.

Nadia provides a revealing comparison here. Unlike the cave artists, Nadia as a young girl had names neither for animals nor people. It is to be expected therefore that Nadia, unlike the cave artists, would in her early drawings have accorded both classes of subject equal treatment. And so she did. While it is true that Nadia drew animals much more frequently than people, when she did try her hand at the latter she showed quite similar skills. Nadia's



Figure 14. Painted bison and human figure, Lascaux (Dordogne), probably Magdalenian.

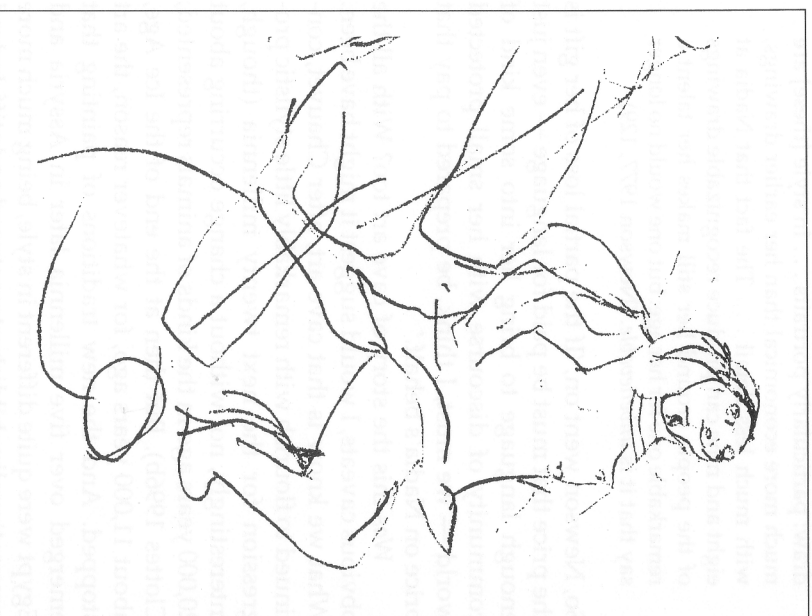


Figure 15. Human figure by Nadia, at approximately 4 years.

pictures of footballers and horsemen at age five, for example, were as natural-looking as her pictures of horses themselves. Figure 15 shows Nadia's drawing of a human figure, made at age five.

I accept of course that none of these comparisons add up to a solid deductive argument. Nonetheless, I think the case for supposing that the cave artists did share some of Nadia's mental limitations looks surprisingly strong. And strong enough, surely, to warrant the question of how we might expect the story to continue. What would we expect to have happened — and what did happen — when the descendants of those early artists finally acquired truly modern minds? Would we not predict an end to naturalistic drawing across the board?

In Nadia's case it is significant that when at the age of eight and more, as a result of intensive teaching, she did acquire a modicum of language, her drawing skills partly (though by no means wholly) fell away. Elisabeth Newson, who worked with her at age seven onwards, wrote

Nadia seldom draws spontaneously now, although from time to time one of her horses appears on a steamed up window. If asked, however, she will draw: particularly portraits . . . In style [these] are much more economical than her earlier drawings, with much less detail . . . The fact that Nadia at eight and nine can produce recognizable drawings of the people around her still makes her talent a remarkable one for her age: but one would no longer say that it is *unbelievable*. (Newson 1977, 129).

So, Newson went on, 'If the partial loss of her gift is the price that must be paid for language — even just enough language to bring her into some kind of community of discourse with her small protected world — we must, I think, be prepared to pay that price on Nadia's behalf.'

Was this the story of cave art too? With all the obvious caveats, I would suggest it might have been. What we know is that cave art, after Chauvet, continued to flourish with remarkably little stylistic progression for the next twenty millennia (though, interestingly, not without a change occurring about 20,000 years ago in the kinds of animals represented; Clottes 1996b). But then at the end of the Ice Age, about 11,000 years ago, for whatever reason, the art stopped. And the new traditions of painting that emerged over five millennia later in Assyria and Egypt were quite different in style, being much more conventionally childish, stereotyped and stiff. Indeed nothing to equal the naturalism of cave art was seen again in Europe until the Italian Renaissance, when life-like perspective drawing was reinvented, but now

as literally an 'art' that had to be learned through long professional apprenticeship.

Maybe, in the end, the loss of naturalistic painting was the price that had to be paid for the coming of poetry. Human beings could have Chauvet or the Epic of Gilgamesh but they could not have both. I am sure such a conclusion will strike many people not merely as unexpected but as outlandish. But then human beings are a great miracle, and if their history were not in some ways unexpected and outlandish they would be less so.

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Nicholas Humphrey

Graduate Faculty

New School for Social Research

65 Fifth Avenue

New York, NY 10003

USA