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William Noble and Iain Davidson

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CHAPTER 1

AN EVOLUTIONARY APPROACH TO THE ORIGIN OF MIND

In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history.—
Darwin, 1968[1859], 458

In speculating in this way about ‘the necessary acquirement of each mental power and capacity’, it is clear that Charles Darwin meant something like, ‘how mental capacity emerged in humans through processes of evolution’. In the century-and-a-half since 1859, there has been much speculation upon this phenomenon, but little attempt to come to grips with the enlarging body of evidence about the behaviour of the creatures, ancestral to modern humans, in which this ‘mental capacity’ emerged.

Our book attempts to show how ‘mental capacity’ might best be conceived in the light of recent developments in psychology, social science (including philosophy), and animal ethology. Following that conceptual clarification we turn to consider the evidence of the archaeological record to evaluate how, in a context of natural selection, such a capacity did emerge. We begin with a foretaste of the arguments we will expand and defend throughout, to the effect that mindedness in human terms is inseparable from language use, and that gestures and fixed visual images have a key function in the origin of behaviour that today may be described as linguistic. We justify later our preference for calling linguistic behaviour communication using symbols.

Speaking and intentionality

Any discourse about language confronts us with an almost insurmountable problem. What would it be like for there not to be language? If this question were to have been asked a hundred years ago, the answer from most people engaged in debate about the matter would have been quite straightforward (Harris 1988). If there were no language, some other way would be found to communicate our ideas. For most of the length of time, historically, that any thought has been given to the matter, language has been considered by most theorists to be simply a mechanism whereby

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we transmit our thoughts to one another. Those thoughts (or ideas) were held to be independent entities, forms that were clothed in suits of words so that they might promenade in society in a recognisable manner.

Due to the efforts of people like Ferdinand de Saussure, Edward Sapir, Ludwig Wittgenstein, Lev Vygotsky and George Mead—a cast of characters we will encounter through several of the following chapters—the proposal was developed in this century that thinking and speaking cannot be detached from each other; that ideas are not to be found other than as the strings of words we utter. Words, indeed, *are* words insofar as they convey meanings. It was Saussure's insistent point that a word (as a sound image) and its meaning (as a concept) were as the face and back of the same sheet of paper. You could not cut one without cutting the other, and you could not have one without the other. So far from the view that words were merely like clothes, in which our ideas were dressed, ideas without words became considered an impossibility.

With this line of argument came a parallel recognition that to speak is to exercise intent. We rely upon aspects of a scheme for grappling with intention whose pedigree may be traced through the 19th century philosopher/psychologist Franz Brentano to the medieval scholar Thomas Aquinas (Gregory 1987), and which has been articulated more recently by Daniel Dennett and others (Dennett 1987). The term 'intention' means 'aboutness'. When anyone speaks, they speak *about* some thing, some one, or some event. What's more, we speak about matters *to* one another. This is best represented in the theorising of Mikhail Bakhtin who observed that '... the word is a two-sided act. It is determined equally by whose word it is and for whom it is meant.' (Holquist 1981, 170). Part of what it means to say someone speaks is that they are aware of what they do, and that they are addressing someone (even if only themselves). What they say may be mistaken; the person they say it to may not be listening, or may be other than the one they *suppose* they are saying it to; but, in all the conditions of everyday life, words are addressed knowingly by persons to others. To put it succinctly, to speak is to know that you mean something.

There is a danger when discoursing about language, which is to regard the words that are uttered in speaking as tokens of a more abstract system that lies behind and beyond any actual use of words. Because we can identify 'languages', we are able to consider the concept of 'language', and then to entertain the idea of 'language' as a more abstract system than any instance of speaking ('langue' in Saussure's terminology, as distinct from 'parole'). Saussure, who is usually held as a founder of present-day linguistics, never intended that language be seen as detached from human social existence. Nonetheless, reification of 'language' has intensified following his distinction between 'langue' and 'parole'. From Harris's treatment of Saussure (Harris 1987, xiv–xv) it may be taken that the reifying effort lies at the door of Chomsky (e.g., 1964, 52), who saw Saussurian 'langue' as equivalent to his 'linguistic competence', an abstract system innate to the human mind, and distinct from any actual 'linguistic performance'. The transformation of a form of conduct (speaking) into an abstract entity (language) in turn gives birth to almost mystical

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views about language, the mind, rationality, and aspects of human existence as standing outside of evolution.

In our view attention should be directed to what people *do* in their communicative interactions with each other; we should not be sidetracked by tendencies to abstraction. Here we suggest a parallel; indeed, one which is pertinent to our evolutionary story in several respects. Most people with two legs engage in a range of behaviours using them. Amongst other things, they use their legs to walk. Usually they do this effortlessly. Nonetheless, humans had an ancestor which walked on all fours—a gait we discuss in chapters 2 and 6. Walking bipedally emerged in our ancestors during their evolution. More closely tied to everyone's experience, infants and babies do not walk as adults do. They learn to walk that way. The way people walk varies within and between communities; it varies from time to time, and on different occasions, for individuals (Cutting et al. 1978; Patla 1991). There are many different ways of walking, yet communities, and persons within communities, have a characteristic way of doing it. We recognise people by the way they walk (Cutting & Kozlowski 1977), even from the *sounds* of their footsteps. How walking is done is quite complex; it involves the coordinated use of many sets of muscles. And by walking, many different things can be accomplished. We can appreciate all these things about walking without having to invoke a mysterious abstract entity called, say, 'ambulation', of which the more everyday activity of walking is somehow a material expression.

Saussure stated (1983[1916], 10) that 'it has not been established that the function of language, as manifested in speech, is entirely natural: that is to say, it is not clear that our vocal apparatus is made for speaking as our legs for walking.' But we do not believe it is altogether clear that 'our legs [are made] for walking'. Photographic documents of the locomotor habits of some so-called feral children (MacLean 1979) suggest that bipedalism may not be an inevitable behaviour of modern human morphology. And contrariwise, Lieberman (1984) has argued for the recent evolution of the upper laryngeal airway system as being *for* speech. The only points that we want to read into these remarks are that, in typical cases, (only) the lower limbs in humans are *used* for locomotion, and the upper laryngeal airways are *used* for speaking.

We need only change one phoneme in the word 'walking' to show the parallel with talking. It is legitimate to consider the actual communicative (or ambulatory) behaviour of persons in real settings without inventing an abstract system that somehow enables or supports this behaviour. In the case of speaking, the behaviour may be said to support itself. Through being continually performed it is maintained as a form of communal conduct. But, as with walking, the behaviour is only available to organisms with morphologies that can express it. Equally with walking, however, that morphology had to have been naturally selected from a variable range.

The ancestors of modern human beings, for some period close to the branch point with other apes, did not habitually walk on their legs alone. In just the same way,

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those ancestors, for some time subsequent to the branching with other apes, did not talk. How either behaviour came to be expressed, and why it was selected, are intelligible questions within an evolutionary framework, and we aim to answer the second of them in this book. Of continual concern in the argument is to explain how human speaking (or its equivalent in Sign language), as a behaviour, is distinct from all other forms of communication. If we explain this properly we believe the nature of the human mind is made comprehensible.

A theorist we rely on initially to launch the argument is philosopher/psychologist George Herbert Mead (1934). He said that communication is *only* recognisable as a form of *behaviour*. Furthermore, behaviour can only be recognised as communicative in virtue of its evoking a response. A signal is not communicative if it is not responded to.

This scheme does not adjudicate upon questions of intentionality of communication or upon synergy (mutual communication). It also leaves the activity of certain forms of life unclear, and we need to be clearer. Behaviour is usually attributed to *animate* life, which thus excludes plants. Mead did not say anything about plants, though Darwin was very much concerned with them, and their various ‘movements and habits’ (Darwin 1875a; 1875b; Gruber & Barrett 1974). Mead would likely have said that as plants, for the most part, do not join in responding to communicative signs, they are largely outside his scheme of things. Here we can borrow a term from Gibson (1966), who speaks about objects *broadcasting* information about their presence. Plants, it may be said, exude chemicals, or reflect light, in ways that attract animate life, but they do not, typically, respond to signals within their vicinity. We say ‘typically’ and ‘for the most part’. This is because the movements of, for instance, carnivorous, climbing or phototropic plants are due to reactions to forms of energy that equate with those eliciting sensory responses in animals (Shropshire 1979); and the mechanisms of reception in such plants are akin to those in animate life (Bentrup 1979). There are no sharp boundaries to be drawn here.

Bees that are attracted by the light or odour of plants do more obviously communicate, certainly among themselves (Frisch 1954); though perhaps not by ‘language’ conveyed in ‘dancing’ (Wenner 1971). What about with the rest of the animate world? Under Mead’s scheme of things the bee’s buzz as it drifts into the hearing of humans is communicative, for it brings about a response.

The question unresolved is whether, as in the case of the bee, there is an *intention* to communicate. Human beings necessarily come up with such a question because we know how to ascribe intentions to ourselves and other people. We are clear about the fact that human behaviour is (often) intentional in nature, and we can express ourselves on that point. The nature of the consciousness (hence intentionality) of creatures which do not speak is enigmatic. We return later in this chapter, and in Chapters 4 and 5, to the concept of ‘consciousness’.

For the sake of forecasting the argument about mind and language it must be stipulated that we are, ultimately, telling a story about how communication became such that its intentional character is unquestionable. That state of affairs must stand

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in contrast to one in which communication does *not* have an intentional character. But this is where language actually gets in the way, for we are considering a circumstance we cannot possibly imagine, namely, a condition of being aware without the use of language as a feature of that awareness. ‘Awareness’ is another word for ‘consciousness’, and is hence taken up in later discussion. This chapter began with the question: ‘what would it be like for there not to be language?’ The answer is that, as language users, we cannot know what it would be like, even assuming that it would ‘be like’ anything. It may not be possible even to approach an answer, since the question, in being *posed*, can only be from the perspective of a language-using questioner (cf. Nagel 1974). Hence, as Wittgenstein remarks (1961[1922], 151 ¶7), ‘What we cannot speak about we must consign to silence’.

Communication using symbols

Human communication of the form we call linguistic is communication using symbols. In our usage, a symbol is anything that, by custom or convention, stands for something else. A symbol is a representative of another thing; it is like an ambassador for that other thing. There are two important elements in this definition: (1) that the thing stands for something other than itself; (2) that it does so by convention, that is to say, by social custom. Anything can be a symbol and, in human life, almost anything is. Pictures are things that stand for other things. If you draw a house, what you have is a symbol for a house—although we will have to argue for that, and do so in Chapter 3. How we can come to see a mere set of lines as representing a house is an intriguing achievement (Gibson 1966); it is one, we argue, that points to the product as a symbol. The picture is a symbol, just as the words used to indicate it (‘this is a house’) are symbols. The word ‘house’ stands for the object it refers to. The meaning of the word (or the picture) depends upon social convention. No one can introduce an utterance others have never heard before and expect it, there and then, to be taken as standing for anything. The representations we make must at all times be tied communally to the objects they are made to represent.

A behaviour expressed by a (not so) close relative of modern human beings is the set of vocal utterances made by vervet monkeys in the face of different classes of predators. In response to the sight of snakes heading for them through the grass they make one sort of cry; in response to the sight of eagles flying overhead they make another sort. These calls have the effect of alerting other monkeys to the different sources (and whereabouts) of the different predators. The others look down in response to a ‘snake cry’ and up in response to an ‘eagle cry’. We could call these utterances symbols if only we could be sure that the monkeys used them with intent; that they knew that one call stood for ‘snake’ and the other stood for ‘eagle’. We do not know that; but it looks from all the evidence that the monkeys do not have these cries as symbols (Cheney & Seyfarth 1990).

What the monkeys could have is the makings of a symbol system, if they were to *notice*, to *discover*, that the different calls may be made to stand for objects in the

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world. We suspect that this is not a straightforward discovery to make, and we do not know how it was made prehistorically. In Chapter 8 we offer a chain of carefully constrained speculation about contexts for the expression of behaviour which might ultimately lead to such discovery: we outline it below. The reasoning we bring to bear on the matter is that it is legitimate to frame the problem as one of discovery, and, given that, to propose some feasible steps for making it.

There are several interesting features in the evolution of the ancestors of modern humans. (1) The brain gradually expanded over a period of about 2.5 million years; (2) stone was being flaked through most of the same period; (3) flaked stone was continually being used in association with scavenging food from dead animals; (4) over a period of at least 1.5 million years, little seemed to change in the behaviour of these creatures whose brain size was increasing. Many hypotheses have been put forward to account for the increase in brain size. Besides an hypothesis that accounts for some portion of the increase as a change in overall body scale, the further one we find plausible is that the hominids were increasing the refinement of their motor control, particularly their forelimb control. The archaeological record establishes the expression of bipedal locomotion by about 3.5 million years ago. The forelimbs were thus increasingly useable for the transport and breaking of stones. In the motor control hypothesis—proposed by Darlington (1975) and developed by Calvin (1982)—the particular capacity that was continuously improving was stone throwing. The capacity to throw further, faster, and with increasing accuracy, and thus to throw stones at rivals, at predators and at prey, would confer endless advantage over fellows who could not do this. Such an improvement can explain the expansion of the brain *and* the absence of any other change in the archaeological record.

We have argued that the aiming of missiles for successful throwing can in turn support aiming without throwing: what is called pointing in the modern world. Pointing is an intentional behaviour—one original meaning of the word ‘intend’ is ‘point’—and it seems to be unique to humans (Butterworth 1991). In fact infant bonobos (pygmy chimpanzees) make a pointing gesture, but do so in contexts such that their natural caregivers cannot witness the behaviour, as when an infant is being carried on an adult’s back (Savage-Rumbaugh 1984). Of course, even if this gesture were expressed in ways more visible to adults, it might not call forth a response from them. Uniquely human is that human infants witness older others pointing long before they themselves do it, and are keenly attended to and imitated by those adults whenever they start to. Children, and bonobos in certain laboratory arrangements, learn the efficacy of pointing through the attention paid to it by human experimenters, and themselves start to imitate such mimicking gestures. We return in Chapters 2 and 4 to contrasts in interaction between human adults and infants compared with other primate adults and infants.

To complete the synopsis of our evolutionary scenario: pointing can reveal the whereabouts of predators or prey to fellow creatures, and in silence, thus without warning of one’s own presence. The refinement of control of the forelimbs allows for the possibility of their controlled movement in following the path of a prey or

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predator animal; it also allows for the possibility of making gestures that distinguish prey from predator.

We round off this story with the proposal that the leaving of a trace of such a gesture in a persistent form creates a meaningful object for perception. The trace of the gesture is meaningful because of the salient links among the gesture, the object that provoked it and the communicators. It is in this complex of behaviours and their products that we see the prospects for the sign itself (the trace of the gesture, hence the gesture itself) to become noticed, as against being simply the means for drawing attention to something else. The vervet calls draw the attention of the others to something significant in the landscape (Burling 1993). Inscriptions of analogous utterances, i.e., forelimb gestures, following the sort of evolution just outlined, may be the mechanism whereby such signs are discovered as objects that represent things other than themselves. Thus are symbols born.

Humans and language—some issues about definition

In order to proceed we need to define what it is we are going to talk about in this account of the evolutionary emergence of the distinctive uniqueness of human behaviour. Many of the features which we regard as unique are more or less direct consequences of the emergence of language, of communication using symbols. In order to make this argument we will cover territory unfamiliar to some parts of the audience which might be interested in our story. There will be archaeologists and prehistorians unfamiliar with the philosophical and psychological aspects of the account, and there will be philosophers and psychologists unfamiliar with the archaeological aspects. Much of the work will address these aspects and show how they are tied together.

Not all the possible definitions of what it means to be human can be reconciled. One approach is to look to the anatomy of modern humans to define human uniqueness, but this runs into problems arising from the variation existing in different populations around the world (e.g. Brown 1990). Moreover, for humans and our ancestors, there is an unparalleled record of fossil specimens which tends to emphasise the continuity of anatomical variation across geographical space and also through time—bearing in mind that variability in space and time must be considered together (e.g. Stringer 1988). Such definitions may, therefore, be practically unsuitable if we wish to identify the point in time, or the place at which, our ancestors became human.

One of the problems in defining ‘human’ in terms of anatomy is that the limits are not currently in dispute, but in evolutionary time they have been. Despite bestial metaphors for antisocial behaviour (‘that person is a pig’) there is less difficulty in adopting a social definition of ‘human’: humans are those organisms identified by other humans as human. (This approach has pragmatic limits: one way that prejudicial and even more unspeakable acts get sanctioned—so-called ‘ethnic’ so-called ‘cleansing’—is to define victims as non-human.) But, in the main, most

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people have little difficulty in identifying the difference between humans and all other animals, including chimpanzees and bonobos, despite close similarity of anatomy (Huxley 1906), genetics (Rogers 1993) and behaviour (McGrew 1992).

At one time, a convenient behavioural limit identified humans as ‘toolmakers’. Jane Goodall’s (1964) documentation of chimpanzee tool-making was not the first observation of this ability of apes in the wild, but it was a timely one, given popular interest in the new discoveries of very early stone tools (e.g. Leakey 1966) and the fossilised remains of their makers. It effectively ended the use of this definition. Another approach, which we prefer, is to point to the widespread use of items external to the body (one way of conceptualising ‘tools’) among non-human and human animals, a matter discussed in the next chapter. In this way we avoid assuming that the making of stone tools, in and of itself, provides the fundamental distinction between humans and other animals.

We return to what we see as the only viable distinction, namely, that humans are unique, under natural conditions, in being creatures who communicate using symbols, thus, among other things, allowing tool manufacture to take the social (symbol-guided) forms that it does (Ingold 1993a; Reynolds 1993). Our criterion for symbol-based communication is ‘all-or-none’; we have difficulty with notions of ‘protolanguage’, ‘rudimentary language’, or ‘language as we know it’. Such ideas have been voiced to try to gradualise the development of symbol use. We do not think this can work. As with the notion of something having, or not having, ‘meaning’ (Noble & Davidson 1991), symbols are either present or absent, they cannot be halfway there. Such an argument is consistent with the idea expressed earlier of *discovery* of the property of one thing as able to stand for another. ‘Discovery’ is an achievement, a binary condition—something is discovered or it is not. Nothing can be ‘half-discovered’, though something may be discovered that turns out later to be but half of something larger, hence ‘half-discovered’ can make sense in that case.

The idea of ‘language as we know it’, with its implication of ‘language as we do not (or not quite) know it’, may be used to illustrate the conceptual difficulty that lies in wait for a gradualist approach on this sort of question. What might be ‘language as we do *not* (or not quite) know it’? We are not talking about *a* language (such as Russian) that a native English speaker may not know, or not know too well (‘not quite know’). We are concerned with some description of ‘language’ as a form of communication that is not fully like a language such as English or Russian (and, again, we are not talking about archaic or precursor versions of these languages, such as Anglo-Saxon or Old Slavic; nor, for that matter, about the limiting case, described in Chapter 8, when the very first symbolic sign/s occurred). To the question, ‘what is language as we *do not* know it?’, there is only one answer. There is no such thing as language as we do not know it, when what we are considering is the communicative use of symbolic signs. If something is not thus language as we (actually or potentially) know it then it is misleading to refer to it as language at all.

The conceptual difficulty for a gradualist approach can be seen by considering

something that is not language yet might be thought of as ‘protolanguage’, namely, ‘body language’. The proposition of those who refer to ‘body language’ is that bodily postures may be taken by an observer as communicating feelings or motivational states of the person posturing. As such they are what Liska (1986) would call ‘symptoms’ of the posturer’s feelings or desires. An observer’s response to those symptoms may be spontaneous, insofar as ‘body language’ is naturally expressive (Darwin 1981[1871]). But attention may be drawn to the possibility that there *is* a predictable set of postures expressive of such symptoms, and we may thus see the postures as the products of deliberate intent. Their original effect, in authentically communicating some feeling or desire, is dependent on their spontaneity. Once the posturer, likewise aware of the communicative possibilities of the posture, chooses to manipulate it to deliberately convey a symptom, the observer cannot rely on its authenticity, and it ceases to communicate anything reliably.

There are, of course, benign (and everyday) forms of ‘inauthentic’ expression of ‘body language’, such as when people imitate the non-verbal performances of another—an ability that, practised up, forms a key part of the activities of acting and miming. In everyday settings, gesticulations can function as metaphoric statements (the vulgar ‘finger’ sign indicating ‘up yours’). The readiness of response to all such forms of ‘body language’ lies in the audience seeing them as contrived versions of spontaneous symptoms (as in mime), or as derivatives of bodily actions (as in the rude sign). They are responded to as *symbols*—deliberately made gestures and postures that either stand for spontaneous versions of those things, or that state something in place of words (Langacker 1987). There may thus be ‘vocabularies’ of such signs: conventionalised ways of gesturing and posturing (Kendon 1993, 50) that both performers and audiences are familiar with, hence know the meanings of. Body language, when thus ‘linguistic’, is symbolic, not proto-symbolic.

Where spoken or signed language is concerned, a community of language users, in learning the uses of language from their caregivers and peers, can *only* communicate by conforming to the conventions of the language, there being, nonetheless, a constant play of social and historical forces concerning conventional ‘meanings’ (Bakhtin 1981[1975]). Due to the constraint about conventionality, there is a fundamental opposition between language and spontaneous ‘body language’. In natural ‘body language’, the communicative aspect of the posture depends on its being ‘symptomatic’—neither symbol-guided nor symbolic. If it becomes self-consciously conventionalised, then its communication is untrustworthy, or (mere) art, or in lieu of spoken utterance, and in any such case is symbol-guided and/or itself symbolic. Language as we know it (the only form there can be), can only function communicatively under *any* conditions (‘artful’ or otherwise) if the arbitrary signs are conventionalised. The point about ‘artfulness’ in the context of language as we know it is to indicate that we are not so naive as to overlook the fact that natural language can also be used to deceive. Our point is that body language *only* becomes language-like when it is used to delight or deceive (or convey a common meaning); deception can *only* occur (successfully) with language if it is a rare use.

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On this basis we can proceed to examine the story of the evolutionary emergence of humans by looking for the signs of language. Whilst not without potential to generate confusion, this definition of human-ness (language-using) can be made robust if we stick to the core point that signs of language are to be found in communication using symbols. There is a caution to be expressed here. Many experimental settings that involve chimpanzees manipulating plastic tokens, Sign language signs, or illustrated computer keys, could be described as ‘communication using symbols’. That form of description may only be intelligible to the human participants in the experiments. Our main aim is to identify the emergence of symbols prehistorically.

Some recent approaches to the evolutionary origin of mind

Recent years have seen a spate of publications about the issues of the evolutionary emergence of mental capacity or its correlates, by psychologists, linguists, philosophers, biologists, biological or social anthropologists and archaeologists. These scholars differ among themselves about the nature of ‘mind’, whether it is synonymous with, more, or other than the brain, whether it can be said to exist at all, whether its characteristics are innate, or acquired during early life experience—a process known as ontogenetic development—and whether it is other than or synonymous with language. We will side with ontogenetic development, supported by evolutionary history, and align ourselves with the position that ‘mind’ is a term used to account for ways that humans go about their business, rather than a ‘thing’ for which we might search. This echoes an earlier point about ‘language’ as a conceptual abstraction from the behaviour of speaking, signing, writing or otherwise communicating with symbols.

All writers on this topic acknowledge that language is somehow important to ‘mind’, but they differ among themselves about the form this importance takes. We recognise that individual positions depend on particular definitions of language, and on particular understandings about what ‘minds’ are taken to accomplish. In broad terms we suggest that the activities humans engage upon as a consequence of their language use are central to the concept of ‘mind’ (Ryle 1949). This position has been argued by Saussure, Mead and others. The problem is displaced by such an argument, and it becomes essential to consider what language is, as well as to look at how language and ‘mental activity’ are related. Should the view of mind and language as co-extensive be persuasive, the payoff is that the evolutionary issue comes down to explaining the emergence of linguistic behaviour.

Writers on this topic differ in the weight given to the *evidence* of evolution, some ignoring it altogether in preference for thought experiments and ad hoc evolutionary scenarios (why let evidence get in the way of a good story?), some leaning solely on anatomical data as if ‘mind’ might have a physical relationship with that. Others depend on uncritical interpretation of the archaeological record. We will argue that there *is* good evolutionary evidence, but it is not in the fossilised remains of human