

Many groups of speakers might have had an embryo language, but full language may have developed among a small group whose language had evolved further than those of others. This could have enabled them to outwit existing groups, to whom they may have taught their language.

## 6 A devious mind: The basic requirements

My mother... predicted that  
Future rulers would conquer and control  
Not by strength, nor by violence,  
But by cunning.

Aeschylus, *Prometheus bound* (fifth century BC)

No truth appears to me more evident, than that beasts are endow'd with thought and reason as well as men;<sup>1</sup> commented the eighteenth-century Scottish philosopher David Hume. The words 'thought' and 'reason' are wide-ranging. But increasingly, we humans are found to share with our ape relatives some basic aspects of thought and behaviour, including some that are crucial to language.

Humans, like other primates, are often called 'social animals'. But this vague term applies equally well to herds of cows. The quality of the links is what counts. Primate social structure is characterized by strong family ties, active interaction at the group level, and a well-defined ranking or 'pecking order'. To promote these, two types of behaviour have emerged: a predisposition to groom one another, and, among the more intelligent species, an ability to make guesses about the mental state of others. This ability to 'put oneself into another person's shoes' can be used to aid others or to deceive them.

These key properties may underlie the development of language. They tie in with the two things language is especially good at: aiding interaction with others, and influencing them (chapter 2). This chapter will explore the matter further. It will then assess an oldish theory, but one which still surfaces at intervals—that gesture was the missing link between primate communication and human language. Finally, it will discuss a brain-first versus language-first controversy: was a big brain a prerequisite for language? Or did language cause the large human brain?

**Gossip not grooming?**

The people of Bartledan were remarkably like human beings to look at, but when you said 'Good evening' to one, he would tend to look around with a slight sense of surprise, sniff the air and say that, yes, he supposed that it probably was a goodish evening.

Humans love yacking to one another, even when they have nothing of importance to say (chapter 1), as satirized above in Douglas Adams's science-fiction novel *Mostly harmless*.<sup>2</sup>

'Do gossip and lack of grooming make us human?' is a question asked by some researchers.<sup>3</sup> Social chit-chat may be the human equivalent of the friendly grooming found in other primate groups. It's even been called 'grooming talking'.<sup>4</sup> 'You can stroke people with words', comments the novelist F. Scott Fitzgerald.<sup>5</sup> 'Tina knows how to stroke', said the former deputy of magazine editor Tina Brown.<sup>6</sup>

Widespread grooming may be feasible only when groups are small, and substitute procedures may have to be found when they get large. A group size of 150 led to its abandonment, it has been claimed.<sup>7</sup> A more sophisticated social structure could have led to increased brain size. This larger brain made language possible, and also desirable, given the need to find a grooming substitute.

The grooming theory fits in with the observation that language is an intimate type of interaction, better at close quarters than across vast spaces (chapters 1–2). But group size alone may not be particularly important, and bands of 150 may have occurred earlier, with no language development.<sup>8</sup> The quality of the interactions matters more than overall numbers: the bleating of sheep might turn into language if herd-size alone was crucial.

Gossip rather than grooming might have been promoted by several factors. Humans are 'naked apes' with little hair for grooming. Spoken language leaves the hands free for other activities, perhaps important in open savannah where humans possibly lived at one time (chapter 5). Sounds can be heard in the dark, and messages can be transmitted rapidly.

Parent and baby contact may also have played a part. Mothers and fathers probably smiled and cooed at their infants even before

language evolved. 'It would have made excellent biological sense for any new communicative displays to "piggy back" onto this open channel – to take advantage of a long-standing commitment to maternal–infant attachment by embedding new information in the same stream of clues... I have speculated that this is what our ancestors did when they invented spoken language', suggests one researcher.<sup>9</sup>

Quite how humans hit on language is still unclear in its details, but chimp pant-hoots give a clue. They show that expressions of solidarity via vocalization come easily to primates. These deep huhh-uhh huhh-uhh in-out pants are uttered primarily by male chimpanzees. At one time, they were thought to be a simple cohesion call, but this turned out not to be the case. So primatologists were left with a problem: 'Males seemed to be communicating something to each other, but just what it was nobody quite understood.'<sup>10</sup> Some recent research may have solved the question.<sup>11</sup> Males pant-hoot most often when they are close to other males with whom they have some type of alliance. This indicates that the pant-hoots are connected with male–male bonds. They also differ slightly from group to group, suggesting that group membership is reinforced by hearing them. Some human male sporting teams appear to be carrying on the tradition.

**Man of many wiles**

Tell me, O muse, of the man of many wiles...

said the Greek epic-writer Homer, introducing the devious hero Odysseus, the man who, by living on his wits, finally arrived unscathed at his home island of Ithaca after a ten-year voyage.<sup>12</sup> Odysseus is a successful human, in that he achieved his goal of reaching home. He was a winner, not a loser. And he sometimes deceived others to achieve his ends.

The ability to deceive may be an important prerequisite for language. But it's not confined to humans, in spite of popular sentiment. In the last century, animals were often assumed to be straightforward, and humans to be dishonest self-seekers. Take the nineteenth-century biologist T. H. Huxley:

A man has no reason to be ashamed of having an ape for his grandfather. If there were an ancestor whom I should feel shame in recalling it would rather be a *man*... who... plunges into scientific questions with which he has no real acquaintance, only to obscure them by an aimless rhetoric, and distract the attention of his hearers from the real point at issue by eloquent digressions and skilled appeals to religious prejudice.<sup>13</sup>

The extent of animal deception is only now becoming clear. Stick insects, for example, have a natural camouflage which makes them hard to spot among twigs. But some animals can intentionally deceive: they can knowingly alternate their behaviour between the misleading and the straightforward.

A wide variety of animals deceive intermittently: 'There is no doubt that clever dogs can dissemble up to a certain point', noted the famous ethnologist Konrad Lorenz.<sup>14</sup> His dog Stasi had an inflamed front paw. If Lorenz bicycled in a direction which was ungenial to her, she limped pitifully. But the pain appeared to disappear if he turned in a direction she liked. Old dog Bully had failing eyesight, and sometimes inadvertently barked at homecoming members of the family. After realizing his mistake, he would push past Lorenz, and bark furiously at a neighbour's gate, as though he had been addressing an enemy in that garden from the beginning. Such anecdotes led to the realization that intentional deceit was not confined to humans.

But the deceit of dogs is not well-planned. True deceit involves 'tactical deception': 'Acts from the normal repertoire of the agent, deployed such that another individual is likely to misinterpret what the acts signify, to the advantage of the agent.'<sup>15</sup> Such intentional deceptive behaviour can properly be called 'lying'.<sup>16</sup> Most primates can do it. Humans are very good at it (chapter 1), and can even reason about it, as in Ruth Rendell's novel *The crocodile bird*:

Liza listened outside the door. She heard Eve tell Jonathan it was half-term. Perhaps it was. In that case what she said wasn't really untrue. Of course, that depended on what you meant by a lie. It was a lie if by lying you meant intending to deceive. Eve certainly intended to deceive Jonathan in thinking Liza went to school.<sup>17</sup>

The *ability* to deceive is not necessarily a bad thing. In order to hoodwink intentionally, it is essential to understand someone else's point of view. This is a powerful skill, which may be used selfishly or unselfishly. To exercise it, it's necessary to mentally 'put oneself into another person's shoes'. Humans can do this: they can imagine alternative possible worlds, and treat others as if they had 'mental states'.

Those who can represent the minds of others in their own minds are said to have a 'theory of mind', something possessed by all normal humans.<sup>18</sup> A few unfortunate suffer from a puzzling deficit, an inability to understand another's point of view. This condition is sometimes referred to as 'mindblindness', and it is a major symptom of autism.<sup>19</sup> To 'mindblind' humans, the world is a confusing place which they never 'get the hang of'. Some can talk, but they have great difficulty in fully understanding other people.

Animals who possess a theory of mind are good at social manipulation. A recent survey carried out by researchers at the University of St Andrews has assessed which primates, alongside humans, are particularly good at hoodwinking one another.<sup>20</sup> Successful deceit often involves secrecy, so the task was a difficult one. But the results were surprisingly clearcut. Intentional deception was found among most primate species, but some are much better at it than others. Monkeys are fairly poor at it. Baboons and great apes are good at it. Among the great apes, chimps, our nearest relatives, turn out to be exceptionally skilled deceivers. And it starts young. An infant chimp may scream as if it is being attacked in order to persuade its mother to comfort and feed it. An older chimp may lead others away from hidden food, then double back and scoff the lot itself while the others are elsewhere.

Great apes engage in complex social manipulations which show remarkable cunning, the researchers concluded. The manipulations are always selfish, at least in non-humans. This ability to deceive has been labelled 'Machiavellian intelligence',<sup>21</sup> after the fifteenth-century Italian Niccolò Machiavelli who wrote a guide showing ways in which a future ruler could manipulate others.<sup>22</sup>

Open-country living may have aided this aptitude for deception, since both chimps and baboons who are good deceivers are less tree-oriented than monkeys who are poor deceivers.<sup>23</sup> Away from

the trees, more social organization among large groups might be needed, with more opportunities for deception. The use of cunning perhaps helped to cause an enlarged brain, which in turn made it possible to use this large brain for developing a superb manipulative device: language.

Possibly only one primate branch, the great apes, has a true theory of mind, the ability to attribute intentions to others. Among them, only the *Homo* line made the final step to language. But we are not so far away, perhaps, from our ape cousins: 'Modern great apes may completely lack the formalizing systems of language, but they do not appear to lack understanding of what this kind of communication is about.'<sup>24</sup>

Arguably, humans may not be as self-seeking as other primates. Our enlarged brain allowed a greater awareness of others, and the brain's use for unselfish, as well as selfish, purposes. Almost certainly, a theory of mind is a desirable acquisition, even if it can be used for deceit: it allows human language to discuss people and events removed in time and place. This property of displacement is one of language's most valuable characteristics.<sup>25</sup>

### The search for the missing link

But there's a missing link. Exactly HOW did language get started? According to one controversial view, sign language provided a stepping-stone. Humans with their pliable, tool-making hands devised a system of gestures before the human vocal tract could handle a full range of sounds. At a later date, the signs were transferred to vocal noises.<sup>26</sup>

The gesture theory is an old one. The eighteenth-century French thinker Abbé Etienne Bonot de Condillac suggested that early humans might instinctively point at something they wanted.<sup>27</sup> The gesture became conventionalized, as 'little by little they succeeded in doing deliberately what at first they had done only by instinct'.<sup>28</sup> These gestures were sometimes accompanied by sounds, he surmised: 'One, for example, who saw a place where he had been frightened, would imitate the cries and actions which were the signs of fright in order to warn the other not to expose himself to the same danger'.<sup>29</sup> The original preference for gesture, Condillac

suggested, was because primitive humans did not suspect that the human voice could be far more variously modulated and articulated than those few natural cries. Consequently they opted for 'action language' which was, he assumed, easier and more natural than phonetic language. In the long run, the sounds became more important than the gestures—though Condillac does not fully explain this mysterious process.

Modern supporters of the gestural theory emphasize four points. First, language is not inevitably spoken. Second, gestures are universal and obvious (a mistaken belief). Third, signs are easier to acquire than 'full' languages. Fourth, language and gesture may be linked in the brain. Let us consider these.

'Language is independent of speech, and does not presuppose its prior existence' notes the linguist John Lyons,<sup>30</sup> pointing out that language is 'a multi-layered or multi-stranded phenomenon, each of whose layers or strands may be of different antiquity and of different origin'.<sup>31</sup> He proposes a gestural origin of speech, though he accepts that evidence in favour of it is 'admittedly, not very strong'.<sup>32</sup> Certainly, the observation that language need not be spoken provides very little support for the idea: alternative media, such as sign, writing and touch (braille) are found only partially around the world, compared with spoken language which is everywhere. The existence of sign language, now firmly recognized as a 'full' language, simply emphasizes that language is biologically inbuilt in modern humans: the urge for it to emerge is so strong that it can be transferred to different modalities.

The idea that gestures are the same the world over has a wide appeal. A couple of centuries ago, the sign language of the deaf was heralded as a universal language: 'The universal language that your scholars have sought for in vain of which they have despaired, is here: it is right before your eyes, it is the mimicry of the impoverished deaf. Because you do not know it, you hold it in contempt, yet it alone will provide you with the key to all languages', claimed the eighteenth-century writer Abbé de l'Épée.<sup>33</sup> The apparent naturalness of gestures such as pointing gives the hypothesis a superficial plausibility. In the words of the nineteenth-century writer Franz Grillparzer: 'The only signs that are intelligible prior to all convention are gestures, and so the first language will

have been a gesture-language. This comes so naturally to man that even today we accompany our speech with gestures.<sup>33</sup>

Similar arguments are still put forward: 'In some respects it is more natural to communicate with the hands than with the voice... Even today, of course, we resort to gesture when we wish to communicate with those who speak a different tongue', claims a modern researcher.<sup>35</sup>

Yet this view is a mirage. Apart from a few gestures such as pointing, the remainder are not particularly obvious. Reportedly, some English students who had hired a rowing-boat were arrested off the coast of Greece as they unknowingly approached a military installation: locals had tried to warn them, but the students had interpreted the local 'go away' gesture as a 'come hither' one. As for sign languages, there are hundreds of them, and more than fifty are described in detail in a recent encyclopaedia.<sup>36</sup>

Gestures, then, are neither obvious nor universal. But the 'signs as stepping stones' supporters defend the supposed 'naturalness' of signing in another way: signs can be 'picked up' more easily than speech, it is sometimes claimed, judging by the relative ease with which primates such as the famous signing chimp Washoe and others have acquired a language-like system based on American sign language.<sup>37</sup> Some mentally handicapped children have also found signs easier to grasp than ordinary language.<sup>38</sup> But humans have never automatically taken the easiest way forwards, especially if it is inefficient: signs cannot be seen in the dark, and they occupy the hands.

Deaf children have been brought into this argument: children born without hearing spontaneously produce sign-like gestures at a time when hearing babies go through a vocal 'babbling' phase, the production of *bababa*, *manama* type sequences, it has been claimed. Sign 'babbling' therefore apparently replaces sound babbling.<sup>39</sup> But the study of these deaf infants is inconclusive: the authors observed the phenomenon in only two nine-month-old children, both of whom had signing parents, whom they might have been imitating.

Brain structure is another factor used by supporters of a sign-language origin for language. The left hemisphere of the human brain is specialized both for right-handedness and for

language, suggesting a neurological connection, especially as hand movements tend to occur during speech.<sup>40</sup> In addition, babies between nine and twelve months old sometimes gesture towards an object as they attempt to pronounce some type of word, though not necessarily a real word. This involves an area at the front of the brain which in monkeys plays a role in the visual guidance of reaching. It's a brain area activated also when people mentally look up the meaning of isolated words. But it plays a relatively small role in complex language processing.<sup>41</sup>

Let us therefore summarize. Gestures are regarded by some as a 'missing link' adopted before humans were capable of making a wide range of vocal sounds. Supporters of this view point out that language is not inevitably spoken, that signs are easily learnable, that humans are skilled with their hands, and that words in isolation activate a brain area used in reaching and pointing. Some mistakenly argue that sign language is universal and obvious.

But these are fairly flimsy arguments. They show only that language is often supported by visual aids, such as winks, hand-waving, and shrugged shoulders, as well as tactile aids, such as pushes, pats and kisses. These gestures presumably aided vocal communication millions of years ago, the same as they do today. But they were probably not elaborated into a complex system.

But perhaps some people cling to the gestural theory because it allows them to think of themselves as industrious and conscientious tool-users, who used their hands as extensions of their tools, and their voices as extensions of their hands. It provides a happier self-image than the probable truth, that we are a race of manipulative persuaders, albeit friendly ones.

### The pop hypothesis

'Our brain is three times as large as we would expect for a primate of our build', according to one researcher.<sup>42</sup> But there's a crucial chicken-and-egg question. Is our big brain the cause of language? Or did language cause our big brain? This is a major controversy.

The brain-causes-language supporters suggest that language is a by-product, an afterthought which made use of an existing

powerful mental apparatus. Recently, it's become known as the 'pop hypothesis', following on from a discussion on an electronic bulletin board, when one contributor asked: 'But how do we know that human language didn't just "pop" into being after the mind crossed a certain threshold for other reasons?'<sup>43</sup> It's a view supported by the prominent evolutionist Stephen Jay Gould.<sup>44</sup>

According to Gould, anyone who believes in the purposeful evolution of language is putting forward a topsy-turvy argument, and saying in effect: 'Our brains were made to carry language, so we have language.' He and a colleague label their opponents' ideas 'Panglossian', from Dr Pangloss, a character created by the eighteenth-century French satirical writer Voltaire. Dr Pangloss argued that 'Our noses were made to carry spectacles, so we have spectacles.' What we should be saying, they claim, is: 'We have this amazing brain, so we might as well use it for language.'<sup>45</sup>

'Exaptation' is the key to language, they believe: the adaptation of an existing structure for a new purpose. The spandrels in the San Marco cathedral in Venice are used to demonstrate this point. Spandrels are the inevitable by-product of mounting a dome on rounded arches which are placed at right angles to one another: they are the tapering triangular spaces formed between the arches. In the cathedral, these have been adorned with eye-catching and delightful paintings: one, for example, depicts a seated evangelist above a slender water-pourer. So stunning are these murals, that they are often the first thing noted by a visitor, who might as a first impression assume that the pillars and dome were designed purely as a mounting for the paintings. On second thoughts, however, it becomes clear that the spandrels were a by-product of the cathedral's basic design, and the murals must have been a lucky afterthought (see Fig. 6.1).

So according to the 'language is a spandrel' view, language is an ingenious afterthought, something which simply made use of a pre-existing powerful brain. Perhaps this happened when walking upright freed the hands to carry food and tools: 'What were the hominids to do with their mouths rendered thus relatively idle except when they were eating? The answer is: they chattered.'<sup>46</sup> But this by-product view is highly unlikely, as language is too complex. Exaptation—a re-use of an existing structure—is un-

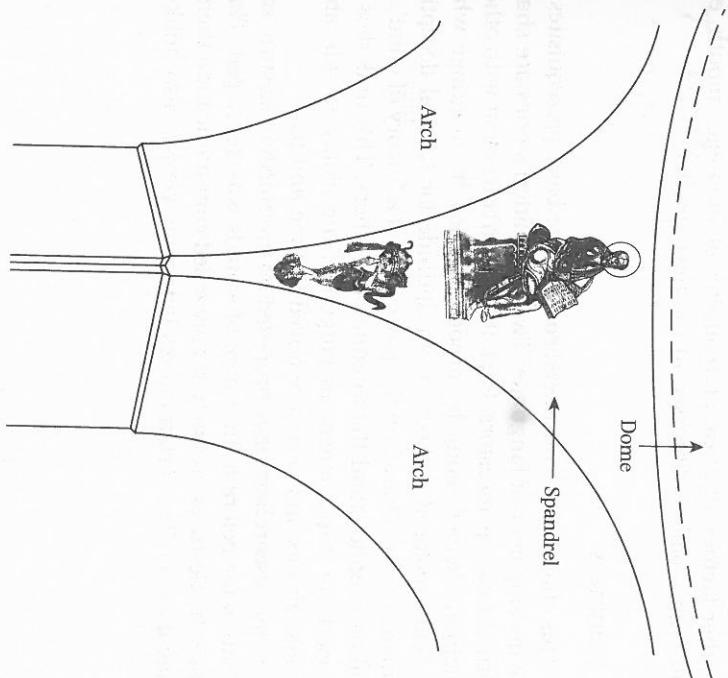


Figure 6.1 A spandrel, based on a spandrel in the San Marco cathedral in Venice

doubtedly a powerful force in evolution. But in all documented cases, complex structures are used for simple purposes, and not vice versa. A type of wading bird uses its wings as a sunshade: there is no evidence of any bird using what was originally a sunshade as wings. You can use a television as a paperweight, but you cannot use a paperweight as a television.<sup>47</sup> The complexity of language, and the interwoven adaptations of the mouth, larynx and brain make it unlikely that language could have developed as an accidental by-product.

The brain-first vs language-first controversy may be an artificial one. Language and the human big brain may have emerged simultaneously,<sup>48</sup> though the initial enlargement was possibly due

to other factors. Physical prerequisites of language – mouth, ears and brain – will be discussed in the next chapter.

### Summary

This chapter has considered some of the basic prerequisites for the development of language. Two foundation stones are shared with our chimp ancestors. First, friendly involvement with others, partially helped along by grooming, then by language which which is in turn based on the possession of a 'theory of mind', the ability to understand the intentions of others. This underlies the property of displacement in language, the ability to talk about people, things and events removed in time and place.

Some researchers have proposed an intermediate gesture stage of language before a full range of sounds was developed. This is unlikely. Gestures probably simply aided communication then, as they do now. The 'brain causes language' view is also unlikely.

## 7 Broken air:

### Inherited ingredients

Soune is nouht but eyre ybroken  
 And every spech that ys yspoken,  
 Lowde or pryvee, foule or faire,  
 In his substance ys but aire;  
 For as flaunbe ys but lyghted smoke,  
 Ryght too soune ys aire y-broke.

Geoffrey Chaucer, *The house of fame* (c.1375)

Chaucer, writing in the fourteenth century, was wrong to regard flame as lighted smoke, but right to regard speech as broken air.<sup>1</sup> But the broken air of speech is highly complex, and requires a range of physical structures for handling it. Speech is 'a thing of shreds and patches',<sup>2</sup> a hotch-potch whose ingredients probably evolved at different times in human prehistory.

At least four interlinked parts are needed. For outgoing sounds (production), there must be an organizer which decides what sounds are needed, and a sound-producing device to make them. For incoming sounds (reception), there must be a device to receive them, and another to interpret them. The organizer and interpreter are the key to the whole operation. But to be effective, they must be attached to the sound-producer and the sound-receiver – or some efficient substitute (see Fig. 7.1).

All these ingredients are partially present in our chimp cousins, some of them in a highly developed state. Our hearing mechanisms seem to be more similar to theirs than dissimilar. Our mouth and larynx (voice-box) are streamlined versions of those of other primates. Our large brain is similar in structure to theirs, but much bigger, and with more voluntary control over vocal output. The size may be partly the result of humans 'getting it all together' – acquiring the networks which link up the various language components.<sup>3</sup>

This chapter will consider the various bits and pieces, starting