A shrug is not a sentence

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Abstract: Corballis's claim that the origin of syntax lies in solely gesture is contested. His scenario does not explain why constraints on syntactic "movement" are apparently part of the human biological endowment for language. It also does not pay enough attention to the internal structure of sentences, and how they contrast with other linguistic units such as noun phrases.

Michael Corballis's scenario raises fascinating questions for physiologists and neurologists. I will concentrate here on three linguistic points, the last being the most important.

Corballis's use of the term *voicing* is odd. It is true, as he says in section 3.2, that [p], [t], and [k] are in many languages distinguished from another series of plosives, [b], [d], and [g], by voicing, in that the vocal folds vibrate during the production of the latter but not the former. But that is not the main way in which the so-called *voiceless* and *voiced* stops are distinguished in English, as it happens (more important factors are voice onset time in following vowels and the length of preceding ones). Besides, there are many languages in which contrastive voicing plays no role at all; that is, vibration of the vocal folds is entirely predictable (vowels, liquids, and nasals being voiced and plosives being usually voiceless). But that does not mean that in those languages the vocal folds are redundant. Consonantal place of articulation is signalled acoustically by formant characteristics of neighbouring vowels, even when the consonant itself is voiceless. So adding vocal fold vibration to facial gesture (if that is what happened) would have served mainly not to increase the repertoire of consonant sounds, but rather to increase their audibility at a distance and in particular to render them auditorily more distinct.

In section 2.5, Corballis argues that the origin of syntax can be traced to iconic gesturing. Different aspects of syntax almost certainly originated at different times and in different ways; but at least some of those aspects that belong to our biological endowment (rather than our cultural environment) more probably originated at a time when language was primarily spoken rather than signed, I think. Consider the sentences *When did the boy say he hurt himself?* and *When did the boy say how he hurt himself?* The first is ambiguous (it may relate to the time of the boy's injury or the time of his statement), whereas the latter is not (it can relate only to the time of the boy's statement). This is apparently not a cultural fact, relating to the English language in particular, because it is not something that children learning English natively make mistakes about (like saying *bringed* or *brung* for *brought*, for example). Yet, there is nothing semantically odd about interpreting the second sentence as relating to the time of the injury. Indeed, that interpretation is available to the variant of it, without "WH-movement," that conveys incredulity ("Surely my ears deceived me!"): *The boy said how he hurt himself WHEN?!* Why this discrepancy between the two sentences? It seems to have to do with constraints on the sort of "movement" that transports question-words such as *when* and *how* to the beginning of the clause in English. This relates to the gestural origin theory as follows. It is not clear whether syntactic movement plays such a large part in sign languages as in spoken languages. Indeed, it is understandable why it should not: some manual signs can be superimposed on one another, or made simultaneously, whereas spoken words cannot be superimposed in an utterance. The role of linear order is thus somewhat different in the two kinds of language. So, because that part of the human endowment for syntax which rules out one conceivable interpretation of the *When . . . how . . .* sentence seems crucially to do with constraints on reordering, it seems unlikely to have originated at a stage when language was mainly gestural (even if such a stage existed).

Corballis bases his belief in a gestural origin for syntax on suggestions by Armstrong et al. (1995). He says (sect. 2.5): "there are many gestures in common use that can be understood as a simple sentence, such as the shrug, or the dismissive wave of the hands that says, in effect, 'forget it.'" But what makes a sentence a sentence, (e.g., *Columbus discovered America*) rather than, say, a noun phrase (e.g., *Columbus's discovery of America*) is not its meaning but its internal structure. It is true that some sentences in some languages consist of a single word, and in that sense lack structure. But that is the exception rather than the norm. The gesture of grasping the left forefinger with the right hand does indeed have a structure that can be interpreted as sentence-like, but many other gestures do not – including the shrug. That is the flaw in Armstrong et al.'s scenario for the origin of syntax (Carstairs-McCarthy 1996). Indeed, it is precisely the lack of structure in the Neapolitan equivalent of the shrug that, according to one famous anecdote (Malcolm 1958, p. 69), persuaded the philosopher Wittgenstein that the analysis of "propositions" proposed in his *Tractatus Logico-Philosophicus* was on the wrong track.

What research on language evolution urgently needs is input from experts on the grammar of sign language. It is they who can comment most expertly on whether or not any biologically fixed characteristics of syntax-as-it-is, spoken as well as signed, can plausibly be seen as the residue of a predominantly gestural stage. Sign language experts may be reluctant to become involved in this area because it hints at the possibility that sign languages are different from spoken ones in a fundamental fashion that is not purely attributable to the medium – which in turn hints at the discredited notion that sign languages are inferior. However, difference does not imply inferiority. It may be that some of the poor design features of spoken language grammar (and poor design features certainly exist!) are attributable to an origin in something other than gesture (namely, the structure of the syllable in the phonology of spoken languages), and it may even be that contemporary sign languages lack some of these poor design features simply because deaf children are not exposed to spoken syllables (Carstairs-McCarthy 1999).

Vocalisation and the development of hand preference

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Abstract: What do the relationships observed in the occurrence of various limb, facial, and speech apraxias following left hemisphere damage mean for Corballis's theory? What does the right hemisphere's role in non-propositional and automatic speech production tell us about the coevolution of right hand preference and speech; how could the possibility that the right hemisphere may be "dominant" for some aspects of speech be accommodated by his theory?

We have supposed an evolutionary relationship between speech and handedness for a long time, as Corballis points out, but for many theorists the causality went the other way – from early gestural communication to the development of speech. Surprisingly, perhaps, Corballis does not discuss the relevance of apraxias to his interesting theory. One hundred and fifty years of lesion data suggests that both action- and gesture-processing and speech production are predominantly left hemisphere responsibilities. Impairments to the action system, causing a range of apraxias, are a common consequence of prefrontal and parietal left hemisphere damage, and different types of apraxia – limb, speech, buccofacial – commonly co-occur (but also dissociate), further supporting a close phylogenic relationship. Since the time of Liepmann, apraxia of speech has been seen as a variant of limb-kinetic apraxia. Liep-

https://doi.org/10.1017/S0140525X03290063 Published online by Cambridge University Press