

The body remembers

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The title of this article comes from a book by the French mime artist, Jacques Lecoq (Lecoq 2002). Fundamental to Lecoq's artistry and to his training methodology is the view that the body is, effectively, an extension of the mind. And that the body itself – with all its movements and gestures – not only enacts, but physically *embodies* memory, thinking, feeling, and desire.

In a sense, Lecoq's insight pre-dates recent developments in both cognitive psychology and cognitive linguistics, developments that have already begun to re-draw the traditional division (also a French invention!) between the mind and the body. In the seventeenth century, Descartes formalised this separation (the so-called mind-body dualism) and, in the twentieth century, it was given a new lease of life thanks to developments in the computer sciences. The mind was re-imagined as a kind of computer: Pinker (1997: 92), for example, describes the mind as 'the on-board computer of a robot made of tissue'. Hence, 'mental life can be explained in terms of a computational process' (Johnson-Laird, 1988: 26). Since mental life includes both language and language learning, these, too, have been construed as forms of information processing. According to this cognitivist view, for instance, language acquisition results when input and output engage in a feedback loop, such that input becomes intake. The whole process is not only described in the language of cybernetics, but it is effectively detached from any physical reality: it is both disembodied and asocial.

This 'computer metaphor' has dominated the field of cognitive science, including second language acquisition theory, ever since the 1980s. However, in recent years it has been challenged on at least two grounds: that cognition is *socially* constructed (and mediated), and that it is *embodied*.

It is the second of these perspectives – what is known as *embodied cognition* – that I want to explore here.

Recall what you do when you're mentally calculating, say, how many students in your class have submitted their end-of-course assignments. Quite likely, you are running through a list of names in your mind, while at the same time marking them off on your fingers. Could you do the task as easily without using your fingers? Arguably not. In order to ease the task, part of the cognitive process has been off-loaded on to the fingers. In other words, it has been *embodied*.

Examples like these suggest that mental functions *extend* beyond the physical brain itself, and as Clark (2011: 81) puts it, 'body and world come to share the problem-solving load with the biological brain'. He goes on:

Extended systems theorists... reject the image of mind as a kind of input-output sandwich with cognition as the filling.... Instead, we confront an image of the local mechanisms of human cognition quite literally bleeding out into body and world (Clark 2011:70).

One way that cognition extends into social space is by means of gesture. As Streeck (2009: 171) argues, 'gestures ... occupy a unique position in human behaviour: they are bodily actions, but they are also cognitive actions.' That is to say, they are not simply the way that the body re-enacts thought, after the event, as it were, but they are the physical tools by means of which we actually mediate our own thought processes.

As examples of how this seems to work in children's cognitive development, one study reported that third-graders who were asked to gesture while learning algebra were nearly three times more likely to remember what they had learned than classmates who did not gesture. Another experiment determined that college students who gestured as they retold short stories recalled the details of the stories better, suggesting that gesturing during recall helps retrieve the information from memory.

A further study demonstrated that fourth-graders learning how to solve a math equation identified the correct answers more often when they imitated a helpful gesture shown to them by an adult than when they simply repeated the adult's words.

In our own field – second language learning – similar results have been found. Drawing on research into L1 vocabulary learning, Lindstromberg and Boers (2005) showed that when learners were asked to enact or mime a 'manner-of-movement' verb (such as *hurl*, *pounce* or *sway*), better retention resulted than if they were asked only to explain it. Enactment also appeared to prime learners to understand not only the literal but the figurative meanings of these verbs. Moreover, simply watching someone else enact the meaning of these verbs was equally effective, bearing out research in the field of cognitive neurophysiology 'which suggests that simply watching the performance of an action may trigger imagery that is purely motoric' (2005: 244).

When cognition is envisaged as being both embodied and extended, these findings start to make sense: as Gullberg (2008: 293) argues, 'gesturing reduces cognitive load on working memory... The argument is that by gesturing, speakers upload cognition onto an external representation, thereby liberating processing resources which can be re-assigned to memorisation, planning, or other working-memory intense operations'. In other words, gestures serve a self-regulatory function by means of which speakers manage their internal thought processes. This may explain the fact that second-language learners tend to gesture more in their second language than in their first: they are using their hands to think.

Evidence for this is the fact that learners will gesture a lot when doing a speaking task, *even when they are performing behind a screen and so cannot be seen*. 'It is possible that L2 learners' gestures reflect their attempts to reduce the processing load of keeping words, grammar, and the relationships between entities in mind at the same time as planning what to say next. In this sense, gestures may help learners to keep talking' (Gullberg 2008: 293).

And, as an added bonus, gestures help build rapport and confer on their users the status of a legitimate interlocutor. 'Learners who are seen to gesture are often more positively evaluated on proficiency than those who are not' (ibid.) This suggests that, if you are preparing your learners for a speaking test, encourage them to gesture!

By foregrounding the importance of gesture in second language learning I should add that I am *not* saying that communication is largely non-verbal. (If this were true we would not be able to communicate effectively over the phone). It is not that gestures aid expression by providing a visual 'commentary': rather it is that gestures help regulate the cognitive processes that underpin communication. Nor am I offering support to the view that some learners have a kinaesthetic learning style. On the contrary, I am arguing that *all* learning – and hence all language learning – has a kinaesthetic component, in the sense that 'the body remembers'. And thinks. And learns.

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