

Why do we gesticulate?

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If you rely on hand gestures to get your point across, you can thank fish for that! Scientists have found that the evolution of the control of speech and hand movements can be traced back to the same place in the brain, which could explain why we use hand gestures when we are speaking.

Professor Andrew Bass (Cornell University), who will be presenting his work at the meeting of the Society for Experimental Biology on the 3rd July, said: "We have traced the evolutionary origins of the behavioural coupling between speech and hand movement back to a developmental compartment in the brain of fishes."

"Pectoral appendages (fins and forelimbs) are mainly used for locomotion. However, pectoral appendages also function in social communication for the purposes of making sounds that we simply refer to as non-vocal sonic signals, and for gestural signalling."

Studies of early development in fishes show that neural networks in the brain controlling the more complex vocal and pectoral mechanisms of social signalling among birds and mammals have their ancestral origins in a single compartment of the hindbrain in fishes. This begins to explain the ancestral origins of the neural basis for the close coupling between vocal and pectoral/gestural signalling that is observed among many vertebrate groups, including humans.

Professor Bass said: "Coupling of vocal and pectoral-gestural circuitry starts to get at the [evolutionary origins](#) of the coupling between vocalization (speech) and gestural signalling (hand movements). This is

all part of the perhaps even larger story of [language evolution](#)."

More information: www.pnas.org/cgi/doi/10.1073/pnas.1201886109

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