The growth of the growth point


Jana M. Iverson¹ and Robert H. Wozniak²

¹University of Pittsburgh, Department of Psychology, University of Pittsburgh, 3415 Sennott Square, 210 S. Bouquet St, Pittsburgh, PA 15260, USA
²Bryn Mawr College, Department of Psychology/BYC, Bryn Mawr College, 101 N. Merion Ave, Bryn Mawr, PA 19010, USA

Ever since psychology emerged as a science in the late 19th century, psychological theories have repeatedly defined themselves in oppositional contrasts: the static (e.g. Titchener’s structuralism) versus dynamic (e.g. Angell’s functionalism), and the holistic (e.g. gestalt psychology, Tolman’s purposive behaviorism) versus analytic (e.g. Hull’s S–R learning theory, modern-day information-processing). Occasionally, some brave soul (such as the Russian developmental psychologist, Vygotsky) will call attention to these oppositions and even attempt some sort of reconciliation between them; but until now, nobody has managed to do this with lasting success. Whether David McNeill’s newest book, Gesture and Thought — radically influenced by his reading of Vygotsky — will achieve this goal, only the future can tell; but there is no question whatsoever that it is a major contribution to this effort.

In 1992, McNeill published Hand and Mind, the foundational text in the psychological study of gesture. Despite great progress in gesture research over the past two decades, Hand and Mind is still the first book given to any student aspiring to work in the area and remains the ‘bible’ for many senior gesture researchers. Whereas the emphasis in 1992 was on how thought is revealed in speech, the current work focuses on how gesture participates actively in speaking and thinking. Indeed, McNeill presents nothing less than a full-fledged theory of utterance generation in the service of thinking.

The theory is constructed around several fundamental principles. The first is that each nascent idea unit is a ‘Growth Point’ (GP) constituted by a dialectical opposition between two contrasting yet simultaneous modes of structuring meaning: (1) spatial, analog, holistic, imagistic and (2) sequential, digital, combinatorial, linguistic. McNeill terms this the ‘imagery–language dialectic’. The second principle is that meaning in both modes involves the differentiation of a ‘newsworthy’ contrast from a context of possible contrasts, so that context always inhabits the core of the GP. The third is that the dialectical opposition between the imagistic and linguistic modes of the GP and its need for resolution both drive and are concretely enacted in synchronous, co-expressive gesture and speech. The fourth is that it is by dynamically unpacking the GP in an utterance consisting of gesture and well-formed linguistic structures that this resolution is achieved; and the fifth is that it is through this dynamic process of utterance generation that thought takes shape and enters the speaker’s concrete experience. Put more simply, for McNeill gesture, speech, thought and experience constitute a single system in the most profound sense.

Having articulated the GP model, McNeill then uses it in semantic analysis, and to elucidate issues in ontogenesis, language effects on thinking, neural underpinnings of the GP, and the evolution of language. The semantic analysis unfolds in a brilliant case study illustrating the sophisticated, multi-faceted approach that the theory supports. In such an analysis, identification of the meaning contrasts underlying a given GP exploits evidence provided not only by the semantic content and grammatical construction of the co-expressive speech, but by the moment of gesture–speech synchrony, the form of the gesture movement co-expressive with speech, the timing of gesture preparation, and clues to meaning context provided by recurrences of gesture forms that index cohesive linkages in the discourse.

Discussion of ontogenesis and the effects of language on thinking reflect McNeill’s view of the role of the imagery–language dialectic in the dynamic expression of thought and the reconstruction of experience during the process of utterance formation. With regard to ontogenesis, he makes an intriguing case for ties between the development of the dialectic and children’s growing awareness of self as agent and understanding of other minds.

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Corresponding author: Iverson, J.M. (jiverson@pitt.edu).
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effects of language on thought, he argues for the adjustment of imagery within the GP to mesh with varying constraints of different languages to account for cross-linguistic differences in thinking for speaking.

Finally, McNeill addresses possible neural mechanisms and brain regions likely to be involved in GP generation and gesture/speech utterance formation and extends this hypothesis to the discussion of language origins. Here, he argues for the evolutionary emergence of a dedicated thought–language–hand link in the human brain underlying the ability to orchestrate combined, sequenced actions involving the hands and vocal tract and expressing meanings other than those of the actions themselves.

This is a fascinating and revolutionary book that will intrigue the generally interested reader and provoke the specialist socialized to the modes of thinking characteristic of contemporary cognitive science. Whether in agreement with McNeill or not, how could such a reader’s attention not be arrested by statements like: ‘Context is not ‘input,’ it is an essential component of thinking for and while speaking, inseparable from the process itself’ (p. 86)’ or ‘Analysis of grammatical structure…is not a recipe for performance. Grammatical form is the point at which the process stops, not where it begins’ (p. 125).

Dewey: the first ghost-buster?


Leslie Marsh

Centre for Research in Cognitive Science (COGS) and Department of Informatics, University of Sussex, Falmer BN1 9QH, UK

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**Ghost-busting**

Ghost-busting, or less colloquially, anti-Cartesianism or non-representationalism, is a loose and internally fluid coalition (philosophical and empirical) comprising Dynamical, Embodied, Extended, Distributed, and Situated (DEEDS) theories of cognition. Gilbert Ryle – DEEDS’ anglophonic masthead [1] – supposedly exercised the Cartesian propensity to postulate mind as an apparition-like entity somehow situated in the body. Ryle’s behaviouristic recommendation was, that just as we don’t see the wind blowing but only see the trees waving, so too should we conceive intelligence as manifest though action. The Cartesian ghost of old has mutated, taking the form of the ‘Machine in the Machine’, the brain as a self-contained system within the body. This bifurcation of the person into brain and body, apparent in the methodological supposition that cognition can be studied independently of any consideration of the body and the physical and ambient social environment is, in effect, a naturalized and perhaps more insidious variant.

For Rockwell, the philosopher John Dewey should be the patron saint to the DEEDS strand of cognitive science albeit before the event. Dewey, in Rockwell’s view, has been grossly overlooked as a fertile source for non-Cartesian philosophy of mind. Indeed, Rockwell’s Dewey prefigured behaviourism and cognitive psychology, articulated the basic principles of dynamic systems theory (DST), and anticipated many Heideggerian notions central to current non-Cartesian cognitive science!

**Minds, brains and bodies**

Rockwell’s target is the mind–brain identity theory, which conceives of the brain as a self-contained causally closed organ on the basis of philosophers’ assumption that the brain–body distinction has been proven by neuroscience, rather than presupposed (p. 31). However strong the temptation may be, perhaps the brain is not a bona fide natural kind (p. 36). Rockwell, like all DEEDS theorists, disputes that the brain can be the entire supervenience base of the mind (p. 69). If mental functions have been found in the skull that’s ‘only because that is where most people have been looking for them.’ (p. 18). Of course, this generates intuitions that deny that there is an essential relation between human physicality and cognition. Rockwell’s Deweyan inspired remedy is to expand the supervenience base across the tripartite of brain–body–world (as Andy Clark said putting brain, body and world together again)[2].

What Rockwell is proposing is that the body must be factored into a satisfactory explanation of how a cognitive system works. He is not making the trivial claim that the mere fact of our having olfactory, visual, somatosensory and auditory experience implies that one’s body has a nose, eyes, skin and ears. The more interesting claim he is making is that the body is part and parcel of the cognitive system. Rockwell accepts new evidence that the neural networks that are distributed throughout the body ‘are not structurally different from the ones in the cranium’ (p. 23). The example of phantom limbs is invoked: if the embodiment of sensation is distributed throughout the nervous system would we not expect such a phenomenon? (pp. 26–27).

**I act, therefore I think**

For nigh on 350 years Cartesian philosophy of mind has had cogito, ergo sum (‘I think, therefore I exist’) as its