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How cognitive psychology hijacked thinking

(Commentary to Jytte Bang: Steps towards an ecological approach to thinking)

Knowledge of the world cannot be explained by supposing that knowledge of the world already exists. All forms of cognitive processing imply cognition so as to account for cognition. (Gibson, 1979, p. 253)

Unlike physics, chemistry or geology, the 'objects' of psychological science are unusual. It is not really an option for an astronomer, for example, to insist that the planets stay on course because they are clever, say, in solving differential equations. Yet the objects of psychology are *subjects*, and as such, are - among many other things - *intelligent*. And, with the rise of cognitive theory, modern psychology has come to stake its scientific reputation on the cleverness of its *subjects*. First they are credited with the highest levels of abstract intelligence, and their cleverness is then invoked to explain the whole range of psychological phenomena.

Along with such *intellectualism*, psychology has also gone mad with *illusionism*. Here is a recent puzzling case:

Everything we know, whether it is about the physical or the mental world, comes to us through the brain. But our brain's connection with the physical world of objects is no more direct than our brain's connection with the mental world of ideas. By hiding from us all the unconscious inferences that it makes, our brain creates the illusion that we have direct contact with objects in the physical world. And at the same time our brain creates the illusion that our own mental world is isolated and private. Through these two illusions we experience ourselves as agents, acting independently upon the world. *But, at the same time, we can share our experiences of the world. Over the millennia this ability to share experience has created human culture that has, in its turn, modified the functioning of the human brain.* (Frith, 2007, p. 17; emphasis added)

But if *everything* we experience is an illusion created by our brains, how exactly do we "share our experiences of the world" and break out of our individuality to engage in the creation of a common human culture? And how, indeed, can Frith be so sure that *everything* must be an illusion. What could he possibly rely upon as *evidence*? Unfortunately, Frith does not attempt an explanation, but, instead, 'out-sources' the problem to *us* in our capacity as just plain folks. Fortunately, *we*, at least, are very clever. Or, to sound more scientific (since Frith is, after all, a neuroscientist), it is our *brains* that are truly the clever ones.

So, here, first of all, is the really big problem of communication, as formulated by Frith:

I have in my mind some idea I want to communicate to you. I do this by turning my meaning into spoken words. You hear my words and turn them back into an idea in your mind.

But how can you ever know that the idea in your mind is the same as the idea in my mind? There is no way you can get into my mind and compare the ideas directly. Communication is *impossible*. (Frith, 2007, p. 165; emphasis added)

And here is Frith's big solution to a problem that has been puzzling us all since the time of Descartes:

Our brains have solved this impossible problem of communication. (Frith, 2007, p. 165)

But *how*? In place of an adequate explanation, we are simply informed about the relevant regions of the brain that are supposed to 'light up' when they are solving the problem as though situating the problem within the brain or parts of the brain somehow solves rather than merely relocates the original puzzle (for extensive criticisms of 'Theory of Mind' accounts of communication, see Leudar & Costall, 2004).

James Gibson had the wisdom to realize that *impossible* problems do not have solutions, not even clever ones. The impossible problem that Gibson attempted to *dissolve* (rather than resolve) was that of perception. For, according to the assumptions of all the traditional theories, perceiving of our surroundings is not just complicated but impossible:

1. The information available to us, as perceivers, is drastically impoverished.
2. Much of what we experience and attribute to the world is an illusion, namely qualities such as colour, warmth, and meaning.

Traditional theories of perception have pretended to 'solve' this impossible problem in the following way. They assume that perceivers *already* know a good deal about the world, thanks to their individually acquired experience, or else innate knowledge that has either been divinely implanted or else developed in the course of evolution. And, in order to deploy this prior knowledge effectively, they must also be extremely *clever*. To go beyond the highly limited information, perceivers must be engaging either in explicit intellectual activities, such as deduction, or else their automated counterparts: 'unconscious inferences,' or the kind of innate intelligence now widely assumed to be crammed into specialized neural modules.

Over the last fifty years, this theoretical scheme has predominantly taken the form of representationalism. Prior knowledge about the world is supposed to be embodied in internal representations, and the sensory input is 'processed' on the basis of these representations and internal cognitive rules. Furthermore, this (meta)theoretical scheme is no longer limited to the domain of perception, but is now applied across most fields of psychology.

In the way that John Dewey (1896) pointed out the incoherence and dualism of the “reflex-arc concept,” or stimulus-response thinking, years before that scheme came to predominate psychological theory (which it *still* does, see Costall, in press), James Gibson was wise to the deep problems with representationism long before the rise of modern cognitivism:

1. Knowledge is invoked to explain perceiving, rather than the other way round. Perceiving (or indeed acting) cannot, according to this scheme, be the primary way of knowing the world.
2. Intellectual or quasi-intellectual processes are assumed to exist prior to the development and evolution of perception.
3. Representationalist theories (save those that invoke God) fail, in principle, to explain where representations come from or how they connect adaptively with the world. Such theories cannot invoke knowledge based on ‘past’ experience, because the dualism between perceiver and world assumed in such theories could have been no less stark in the *past* as it is supposed to be in present.

Cognitive psychology is still heralded as the revolutionary development that finally brought thinking and also ‘mental representation’ back onto the agenda. Yet, the cognitive psychologists, despite their early, good intentions, never shook off the *methodology* of neo-behaviourism, including its dualism of behaviour and mind, methodological behaviourism, the stimulus-reponse framework, and the hypothetico-deductive method (see Costall, 2006). In this way, modern psychology keeps setting itself impossible problems, for which intelligence and representation are then invoked by way of *solutions*. In this way, ‘thinking’ and representation are now top of psychology’s agenda, yet not as serious *problems* but, rather, as *catch-all solutions*. Their existence and origins are simply taken for granted.

James Gibson made two important contributions to modern psychology. He attempted to establish an alternative “ecological approach”, and, perhaps more importantly, he was also one of psychology’s most ruthless critics. He is widely accused of being a reductionist, denying the existence of “the higher mental functions” or, indeed, any role for representations in human psychology. His real purpose, however, was to stop psychological theorists playing fast and loose with concepts such as “representation”, “rule-following”,¹ “inference”, “classification”, or, indeed, “cognition” in its current highly intellectualized sense. “Representation”, for example, should not be assumed to be universally applicable to every aspect of human and non-human life. Nor should “classification” be assumed to be a psychologically “given” common across all species; it may be highly specific to certain, human practices. We cannot *base* any serious developmental, evolutionary, or historical

¹ “behaviour is regular without being regulated. The question is how can it be.” (Gibson, 1979, p. 225).

psychology on the *outcomes* of human development. We cannot start from *there*.

Gibson’s apparent reductionism was, in fact, an attempt to clear the way for a properly founded psychology that would treat thought and representation as problems as opposed to ready-made solutions to everything else:

The redefinition of perception implies a redefinition of the so-called higher mental processes. ... I am convinced that none of them can ever be understood as an operation of the mind. They will never be understood as reactions of the body, either. But perhaps if they are reconsidered in relation to ecological perceiving they will begin to sort themselves out in a new and reasonable way that fits with the evidence. Gibson (1979, p. 255)

Here are just some of the traditional problems to which cleverness (i.e. thinking or the intellect) continues to be invoked as the solution:

1. To impose structure and meaning upon the chaos of immediate experience. (Jytte Bang refers to this traditional scheme as a three-step model of knowing: “to sense, to perceive, and to think.” Yet the order assumed in this scheme, in fact, is: “to sense, to *think*, and, only then, to perceive.”)
2. To intervene between the ‘stimulus’ and ‘response’. (Cognitive psychology, despite its claimed rejection of mechanistic behaviorism, still keeps formulating its problems in neo-behaviorist, Hullian, terms.)
3. To act as a multi-purpose mental ‘glue,’ for example, to stick together the past to the present, and the present to the future.

Gibson’s simple point was that if we could only try to ‘get over’ – rather than solve – problems such as these, then we might no longer keep invoking *thinking* as a *precondition for mental development*. Thus, the point of his concept of information was to stop us supposing that intellectual order had to be imposed upon sensory data. The point of his concept of affordances was to stop us assuming that ‘meaning’ is purely subjective, and projected on meaningless matter, for example, by means of classification: “to perceive an affordance is not to classify an object” (Gibson, 1979, p. 134). The point of his emphasis upon ‘event structure’ was to stress the interconnectedness of past, present, and future, within nested event structures (see Gibson, 1975). And, though seldom appreciated, his emphasis upon embodied agency was to eliminate stimulus-response thinking once and for all (see Costall, in press).

Now, in trying to think *differently* about the relation between thinking and knowing, the very term “cognition” does not help at all. Over the last twenty or so years, we have come to take this previously esoteric term for granted, and yet it is deeply ambiguous. In fact, this ambiguity is reflected in my opening quote from Gibson. The term ‘cognition’ refers in the same breath, as it were, to *knowing* and *thinking*, and itself keeps us fixed in the supposition that thinking (of the intellectualised kind assumed in cognitivist theory) must always go along with knowing.

Gibson's own attempts at developing an alternative, ecological approach to the the higher mental functions were sketchy. In his 1966 book, he seems to try to subsume thinking to perceiving (see Gibson, 1966, p. 286), but Reed (1991) has argued that Gibson was setting out an approach to the higher mental functions based on the individual's appropriation of socially shared representational practices, along broadly Vygotskian lines. So Jytte Bang's attempt to extend Gibson's approach to the higher mental functions, and to draw upon other theoretical resources, is welcome.

I have four main comments. First of all, I think she underplays the importance of developing an alternative 'ontology' as a basis for a non-dualist, ecological alternative to standard cognitivist theory. She gets into the detail too soon before taking note of Gibson's wider project. This is not to claim that Gibson's own attempt at such an alternative ontology was perfect. His treatment of affordances and information was, in my view, contradictory, lurching between realism and pragmatism (Costall, 2004). But I am convinced he was right that we will need to do a lot of ground clearing before we can establish a well founded naturalistic and developmental psychology of the higher mental functions.

Second, Jytte Bang's example of anticipation is an intriguing one. However, I think it would have been valuable to make reference to Gibson's own views on events, and also to his special sense of 'proprioception' in her discussion of behaviour that is directed towards 'the future.' I think there are some serious challenges to Gibson's framework once we consider examples like the ones introduced in Jytte Bang's article. However, given her own emphasis on the occurrence of anticipatory behaviour even in so-called lower organisms, I would like to have learned more about her views on how such animals engage with the future, and the continuities and differences between a protozoan searching for food and a child planning to buy a present and imagining their friend's reaction. Clearly, even lower organisms are not the stimulus-response machines or preprogrammed robots assumed in standard psychological theory. But do we have to assume, in the end, that they, too, must also be engaging in 'thinking' and 'representation' (cf. Gibson, 1966, pp. 279-280)?

My third comment concerns what a post-cognitive psychology should understand by thinking. Jytte Bang, in her commentary, refers to thinking as "this process" as though it were just one 'thing,' and seems to regard anticipation as the definitive example of thinking in general. The terminology of 'cognition' and especially 'cognitive processing' certainly encourages us to assume the existence of an ultimately unitary phenomenon, but I think one of the important tasks of an ecological re-take on thinking will be to tease apart a whole range of quite diverse psychological functions.

Finally, to the extent that we 'live in' our imaginations, ecological psychology needs seriously to reconsider what could be meant by 'environment.' One option is to assume that, with the emergence of anticipation, imagination, and representation, the relation between animals and their environments was thereby ruptured. John Shotter has made this point, specifically with reference to Gibson's approach:

To be creatures of intelligence rather than instinct, agents must be able to project themselves into the future, to act not as

their circumstances require, but as they themselves require. Thus for them, there cannot be a *direct* relation between their environment and behaviour" (Shotter, 1983, p. 38).

An interesting alternative is to regard the animal and environment relation not as a fixed, morphological separation between the 'inside' and 'outside' of the body, but as a 'fluid', functional distinction (see Palmer, 2004). Viewed in this way, anticipation, imagination, or representation no longer have to be regarded as always 'getting in the way' - mediating between ourselves and an essentially 'external' world (see Costall, 2007). They make a difference *in* the world. The emergence of a new psychological capacity, such as symbolism, "constitutes objects not constituted before" (Mead, 1934, p. 78). This, for me, is the fundamental implication of Gibson's relational concept of affordances.

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