

## **The Evolution of Cognitive Viruses**

**Research in cultural evolution by natural selection is making great progress but there are still some theoretical biases and blind spots. In addition to the nativist bias criticized in several of the papers in this volume, there is the widespread neglect of the fundamental insight of Dawkins (1976): just like evolved viruses, evolved cultural items--memes--have the own fitness, largely independent of the effect they have on the fitness of their hosts.**

## The Evolution of Cognitive Viruses

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Research on cultural evolution is growing and maturing rapidly, and going through an awkward adolescent stage, to continue the metaphor. There is still a fair amount of miscommunication and needless squabbling, but some measure of collaboration and mutual understanding is now evident. It is now widely accepted that gene-culture coevolution is not just an occasional freak phenomenon but a widespread and important process in the evolution of *H. sapiens*. There are still those who are trying to find bright lines where they should expect gradual transitions and mixtures—they should adopt Darwinism about Darwinism, to use the apt phrase of Glenn Adelson (see Dennett, 2017, p48). Essentialism is almost a reflex among philosophers, but it can be repressed, and the quest for “necessary and sufficient conditions” and its adversary, counter-example-mongering, can usually be set aside, or given a less than central role, allowing for more constructive approaches to the many fascinating puzzles that remain to be solved.

One of the leading recent contributions to this exploration is Cecilia Heyes’ *Cognitive Gadgets* (Heyes 2018), and it attracts useful attention in a number of these essays, in addition to Heyes’ own contribution on whether morality is a “cognitive gadget.” A cognitive gadget is something “constructed in the course of development, through social interaction, from old, genetically inherited parts, and ‘designed’ by selection operating on cultural rather than genetic variants.” (this issue, article p.3). These are what I call “memes,” following Dawkins (1976), but the term is rather pointedly avoided in these essays, largely, one gathers, for politico-rhetorical reasons. Whatever you want to call them, they are not genetically installed hardware, but more like apps downloaded to our necktops (Dennett, 2017, esp p304). We don’t have to understand how or why they “work” and hence some of them don’t help us at all; they are just good for getting themselves downloaded, “viruses of the mind” (Dawkins, 1993). (It is also worth reminding ourselves that all but a tiny fraction of viruses that inhabit our bodies by the trillions are harmless and a few may well be beneficial or even obligate, although to my knowledge this has not been established.) Cognitive gadgets endow us with a host of competences we can exploit without comprehension (Dennett, 2017) just as we can be the beneficiary of “instincts” and “reflexes” that may often baffle us. (What good does shivering do? We know now, but what about yawning?)

There are still elements of bias in the imagination of some theorists of cultural evolution. There is lingering nativist bias, against which Heyes inveighs, in spite of much good work in both human and nonhuman animals that demonstrates that many “instincts” are learned, or have large learned components, targets, adjustments (for relevant discussion, and criticism of Heyes’s rejection of appeals to instinct, see Turner & Walmsley, this volume). I don’t think that we need to legislate a bright line, between “pure”(?) genetically transmitted instinct and “pure”(?) culturally transmitted thinking tool, and I also am not convinced that Heyes’ attempt (this

volume) to distinguish learning *from* and learning *about* will serve its intended purpose. As Heyes herself notes, the distinction in the first place is not crisp—if I hear my older sibling being scolded for doing something I didn't think was wrong, have I learned *from* my parent or learned *about* our culture? When immigrants settle into a new culture and learn at least the rudiments of a new language they acquire habits that they are aware of and may even practice assiduously, but also habits of which they are oblivious. Whilst Heyes maintains that this blurriness is not fatal to the distinction, I am less convinced. It's all cultural transmission. Or so it still seems to me. Instruction, observation with reflection, and what might be called cultural infection all occur and are typically combined without visible seams in people's repertoires, both in language and in mores.

Jacob and Scott-Phillips (this volume) see circularity where I see a blend: there is indeed an innate tendency to adopt the intentional stance, but this is like the bird's innate desire to build a nest; it requires experience to shape. They seem to ignore mixed transmission when they charge "So far as we know, Heyes has not yet supplied any of the details needed to disentangle the relevant bootstrapping strategy from circularity, when looked at from close-up." Indeed she hasn't but this is probably a wild goose chase she is wise to avoid, since the required empirical investigations would be many lifetimes of work. Other essays (by Berio, Fenici & Zawidzki, Moore, Rubio-Fernandez, and Woensdregt et al.; all this volume) discuss the intentional stance or ToM (a term which I avoid because it intellectualizes a talent that can vary tremendously in its breadth, precision, and articulation—a leftover from the days of the "language of thought"). The ability of animals to predate and avoid predation, to choose mates, to compete or cooperate, for instance, all can be interpreted as exercises of their instinct for a version of the intentional stance, but we must remember not to overendow them with comprehension of all the reasons why they make the moves they do. There are reasons, just not reasons they can reason about or with. If animals are endowed with an instinct for adopting the stance, we must have that instinct as well, as much evidence demonstrates quite conclusively, but how it develops in us is a matter of some controversy. Verbal testing of false-belief attribution, for instance, aims at a much more advanced talent than the tendency to be surprised or even delighted by observing a (puppet) agent manifesting a false belief.

Another leftover trace of what Millikan (1984) calls *meaning rationalism* is the frequent allegiance to a fully Gricean vision of language (see especially Moore, this volume). Grice was not fantasizing his conditions, but he was also not describing the events that have to occur in speaker's minds. He was

reverse-engineering human communication, adducing the free-floating rationales that would naturally be uncovered by eons of cultural and genetic evolution once the basic Good Trick of using words as tools had been established. (Dennett, 2017, p292)

Once again, competence without comprehension, language-learning without a ToM capable of Gricean complexity, is a phenomenon one should always consider when explaining the "rationality" of behavior. One of the occasionally misleading habits encountered in many of these essays is the well-nigh standard and unheralded adoption of a minimalist adoption of the intentional stance in the guise of *homo economicus*. Here's what I mean: there is little "waste motion," little pointless investment of effort considered and rejected in these essays. The

assumption is that life is tough, and people have always had to conserve their time and energy; if they adopt some practice, it is bound to be *useful* in some way (see, for example, Chellappoo's discussion of the social learning biases that guide cultural selection). This is, of course, a deeply plausible rule of thumb, but that is what it is, and it is important to recognize it and be on the lookout for exceptions. Heyes' term "gadget" is delicately poised; are gadgets always, usually, or seldom as adaptive (in the sense of *genetically* adaptive) as innate, genetically evolved traits and habits? Brown (this volume) mentions dance crazes and earworms, which are deeply unlikely to be genetically adaptive, but neglects to consider the fundamental evolutionary question: *cui bono?* Who benefits? The proposition that culturally evolved items—memes—have their own fitness, just like viruses, is largely ignored. Sterelny (this volume), in his insightful and wide-ranging examination of the demographic assumptions made in the literature, and covering artifacts from the Acheulian to the Arctic, poses this question:

how often and in what circumstances does the higher price of learning the skills needed for more complex artefacts lead to those artefacts being dropped from the community repertoire?

That is a very good question to ask, especially in the context of Sterelny's analysis, but here is another: how often does the higher price of learning a skill attract adopters for a variety of reasons that they need not understand or endorse? Sterelny is concentrating on *goods*, tools and methods that are obviously beneficial, in the long tradition of treating cultural transmission as just a second highway for transmitting adaptations when they arise, but as Richerson and Boyd long ago noted, "The price we pay for our promiscuous lust for adaptive information is playing host to sometimes spectacularly pathological cultural variants." (2004)

One of the many strengths of this issue is that there is a widespread tacit acknowledgment of the importance of the Baldwin Effect, or genetic assimilation (barring perhaps Heyes, as critiqued by Brown, this volume). Learned habits or even developed anatomical features that prove to be highly adaptive can provide a selective pressure in favor of genetic mutations that favor or hasten the adopting of these novelties. For instance, our earliest language-using ancestors no doubt had a much harder time learning, and transmitting to their young, the good tricks of speaking they had learned, but the benefits were so great that selection for attentional biases and other cognitive mechanisms that eased the acquisition of language have evolved genetically. This replaces the Chomskyan fantasy of a hopeful monster leap into language in a single LAD mutation with a biologically sound and readily explorable set of empirical hypotheses about just which mutations were probably favored in response to culturally transmitted advances.

There is a wealth of insight, good criticism, and a bounty of references to the growing literature in this special issue, in the essays I have mentioned and in the others. I have used this introduction mainly to hit some provocative buttons that will entice readers into the whole issue. And, I admit, I have committed a little bit of "I told you so!" self-advertisement, for which I beg your indulgence.

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