Massively representational minds are not always driven by goals, conscious or otherwise

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Abstract: The language of conscious and unconscious goals is rooted in a folk-taxonomy that is likely to inhibit progress in cognitive science. Severing the commitment to this taxonomy would allow Huang & Bargh to consider a wider variety of representational forms with motivational force, and to entertain the intriguing possibility that variations in the number of active-but-redundant representations accounts for variance in social behavior.

Social psychologists often avoid questions about cognitive mechanism, and for good reason. Socially significant behavior is complicated, and it's fiendishly difficult to pull apart the relative contribution of environmental factors, representational states, and computational processes. The hypothesis that variations in behavior can be "meaningfully understood as the output of multiple, oftentimes competing goal influences" (4) promises to advance our understanding of the mechanistic underpinnings of social cognition. But understanding these "goal influences" in their full generality requires looking beyond winner-take-all competitions between "selfish goals" and "representations of desired end-states" (13). We encourage Huang & Bargh (H&B) to follow their logic to a natural, if more radical, conclusion – to recognize that various forms of representation have motivational force and that the language of conscious and unconscious goals is rooted in a taxonomy likely to inhibit progress in cognitive science. We embrace the thought that numerous, competing influences run in parallel and collectively affect behavior, but this thought is best pursued without the constraints imposed by the folk notion of goals, Dawkinsian metaphors of selfishness, and the assumption that conscious goal-pursuit is particularly distinctive.

There is growing evidence that human cognition relies on numerous sometimes redundant, sometimes overlapping representational systems, and that it trades in multiple representations of the same thing (*viz* properties, situations, objects; cf., Huebner forthcoming, Rupert forthcoming). Some of these representations are abstract and linguistic, others are action-oriented representations (Millikan 1995; Clark 1997), and still others appear as parts of emulator-circuits and forward-models (Grush 2004; Shultz et al 1997). All of these types of representation seem to contribute to the production of goal-directed

behavior, and their heterogeneous nature suggests that it unwise to treat representations of end-states as the mind's ultimate motivational foundation.

Consider the representation "do A, if condition C is met." Neither A nor C is an end-state, and it is unclear whether this representation counts as a goal (or whether it matters). H&B (37) rightly note that a person will recognize that C is met more quickly in tasks that are associated with C, and they take this fact to support *Reconfiguration*. Specifically, they claim that the desire to follow instructions primes a subject to recognize C, thereby facilitating the recognition of C. But in a parallel processing system that utilizes competition, it is equally likely that the prime-related words appearing in the instructions activate more representations of C than would be active at baseline (cf. Gendler 2008*a*, 2008b; Schröder & Thagard forthcoming), that visual stimuli activate additional representations of C, and that this parallel activity pushes the cognitive system past the threshold for *A*-production more quickly than would visual processing on its own. This does not appear to be a process by which a representation of an end-state commandeers cognitive resources. In general, fast and accurate biological motion is likely to require the integration of multiple representations from emulation-circuits as well as perceptual and goal-driven systems; thus, manipulating an object in a way that violates sensory expectations generates conflicts between visual and motor representations, resulting in incompatible task-demands as well as slower behavior, even where there are no representation of end-states, or of such goals as pleasing an experimenter (Wexler et al 1998).

We contend that human behavior is often affected by the accumulation of redundant representations, some of which are produced by independent subsystems, and some of which are produced within the same subsystem. Admittedly, this talk of multiple, redundant representations is likely to sound strange, and this is part of our point. The claim that *goals* reconfigure *cognitive* states presupposes a folk-psychological taxonomy, but the operation of *cognitive mechanisms* often outstrips the capacities readily described in such terms. This fact becomes especially clear in cases where competitive algorithms integrate, strengthen, inhibit, and recode the various representations distributed throughout a cognitive system (Akins 1996). By severing the commitment to traditional folk-taxonomies, we can examine the theoretically and computationally important possibility that variations in the number of active-but-redundant representations might account for variance in reaction-times and error rates.

Traditional assumptions about psychological processing also make conceptual mischief in the discussion of *Similarity*. H&B (13) embrace standard assumptions about our awareness of goals, our conscious intentions to pursue them, and our experience of control over the goals that we pursue. Thus, they find

it striking that conscious and unconscious behavior manifest deep similarities. Yet they also acknowledge that the conscious self "is not so much involved in the guidance of our purposive behavior so much as it is in the business of producing rationalizations and socially acceptable accounts for the actions produced at the goal level" (56). This latter view yields *Similarity* almost for free. As H&B note, conscious goal-pursuit relies on the mechanisms that guide unconscious goal-pursuit (conscious states are "built upon pre-existing unconscious processes" (6)), with the addition of mechanisms for rationalization. But if *goal-pursuit* is implemented by the same mechanisms – regardless of whether the subject can report accurately on her motivation – *Similarity* holds trivially. Admittedly, conscious goal-pursuit might engage working memory and meta-cognition in distinctive ways, but, primarily, this reflects the activity of a processing stream that independently produces representations grounding verbal report, rationalization, and the experience of conscious will. Sometimes these representations match the content of the processes that produce behavior (and *sometimes* this yields facilitation); sometimes they don't (and *sometimes* this yields inhibition); and sometimes conscious representations are absent altogether.

it is at least a rhetorical mistake to distinguish two fundamental forms of goal-pursuit – conscious and unconscious – and to note their similarities; better to think of a single, perhaps complex, form of motivational processing, and to ask how motivational processes interact with systems that produce verbal report. While we agree that numerous motivational states collectively affect behavior, we think that H&B could strengthen their position by adopting a broader taxonomy of state-types. By abandoning the emphasis on (selfish) goals and the distinction between their conscious and unconscious forms, H&B might pursue a massively representational model of mind that fully harnesses the resources afforded by the cognitive sciences.

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