Invited Commentary

Response: how much you need to engage with mechanism depends on what you are trying to do

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We would like to thank our 4 sets of commentators for their stimulating and supportive words. Their reactions give us some hope that our characterization of the field was not wildly off the mark and confirm our belief that the issues we identified in our paper as open questions really are open questions. We agree with many of the points raised and will not repeat them one by one here. A major theme that arises from all of them is that behavioral ecology (BE), perhaps of humans in particular, cannot afford to ignore the mechanisms by which behaviors are acquired. We would like to make 3 points about this position.

The first is that mechanism is a Chinese box. Advocates of cultural evolution models argue that these are more realistic than traditional optimality models because they take account of the mechanisms by which behavioral strategies are acquired. However, these models ignore the details of the cognitive science involved in learning, though these details could matter a lot for the outcomes you get. Cognitive science in turn does not delve into the systems neuroscience of how the brain actually implements learning algorithms. Systems neuroscience takes the neuron as a black box and does not engage with the biochemical processes within the cell, though the exact properties of these could make a lot of difference.

In practice, then, every subdiscipline is seen as mechanistically distinct, with the biochemical processes within the cell. The problem of integrating mechanisms into HBE, therefore, may partially be solved by a greater integration with the wealth of data, expertise, and empirical research that already exists in the cognitive, social, and medical sciences. To give a few examples, psychologists and neuroscientists can help us understand cognitive mechanisms; demographers and physiologists the nuts and bolts of reproductive function, including hormonal mechanisms; sociologists and anthropologists (at least those committed to a basically scientific approach) sociocultural mechanisms; archaeologists and historians historical detail. This work includes a range of methodologies that speak to several different levels of mechanism. Some of these methodologies are denied to animal BE, and certainly there are few species on which so much data of so many different kinds exist. For those questions where mechanism is important, HBE is perhaps relatively fortunate among BE in having the opportunity to integrate its own work into this existing (and ongoing) body of knowledge.

We conclude by fully supporting Borgerhoff Mulder’s comment that HBE mustn’t give up on its traditional strengths of collecting its own data on small-scale societies, while calling for a continued expansion of HBE’s boundaries into new methods, topics, and study
populations. This will achieve the twin aims of HBE made explicit by Barrett and Stulp: contributing to basic science by adding to the broader field of BE and improving our understanding of human behavior. There is still much to learn about the BE of humans living in “traditional” small-scale societies, in the modern postindustrial world and, perhaps most of all, in those populations in the developing world currently undergoing rapid demographic, economic, and cultural change. Research on the latter, in particular, also has the potential to add a third aim to HBE research: to contribute new insights on how humans interact and respond to their environments to the real world of policy-making, a very significant goal in its own right.

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