Review of: "Necessity Was the Mother of Human Cultural Invention"

Jose Yong[1]

1 Northumbria University

Potential competing interests: No potential competing interests to declare.

The article is a commendable piece of work that explains how culture differentiated humans significantly from other species and how the suppression of genetically hardwired instincts co-evolved with the emergence and complexification of culture. The main idea is somewhat simple enough, but what seems more impressive is the integration of lots of knowledge areas, including neuroscience, physiology, developmental biology, the cultural history of things like pornography and food production, etc. It is a decent effort at trying to weave many ideas and details together.

The main problem that arises in the midst of this endeavor is the loss of clarity across a number of segments. Some points are somewhat vague, and while a knowledgeable reader can infer the meanings or read between the lines, less knowledgeable ones may struggle to grasp them. Some examples include:

“The evolution of social species in which individuals play specialized roles is particularly fraught with potential conflicts between instinctual and learned behavior…”

“Many of the labile social behaviors [….] while humans are capable of them all”

“The beginnings of such dependence on learned behaviors can be seen in the extant primates most closely related to Homo sapiens such as orang-utans” [makes a point without elaborating]

“More subtle, layered interactions occur among the subsystems involved in emotions and desires […] the more likely they are to succeed under usual circumstances but to miss opportunities offered by changed circumstances.”

“The most complex social animals benefit from heterogeneity in the physiognomy and behavioral tendencies of individuals within a breeding population (Montiglio et al., 2013), which the behaviors of the group must accommodate”

… just to name a few. Conversely, some parts are well written, especially when a point is made that is backed up with elaborative evidence/support/examples, such as:

“It is useful to distinguish between the evolution of the body and the evolution of behavior (Ingold, 2006). […] Those behaviors might be driven by genetically specified physical circuits similar to the protozoan (herein called instinctual) or they might depend on memory of the consequences of previous behaviors (herein called learned).”

"The layered structure of the information processing system provides a substrate in which older, more preprogrammed subsystems can persist but be modulated by more recently evolved subsystems for learned behavior. […] Learning, i.e.,

“inventing” how to walk, enables humans (but not horses) to learn to play soccer, which requires coordination patterns that are not available in genetically specified central pattern generators."

… once again, just to name some. Some segments were also interesting and would be highly informative to new readers (e.g., the sections on odors/pheromones, cooking, play).

However, more effort can be made to tie some of the discussions back to the main point about how culture promotes evolutionary fitness, such as the section on pornography. That seemed to go on quite indulgently without sufficient linkage to how it brings forth the idea of sex being divorced from its original reproductive functions and why this happens. This seemed done more adequately for the food and cooking example (“Cooking and food preservation required large and phylogenetically recent behavioral changes that were driven by human invention (fire, agriculture, animal husbandry) rather than genetic evolution”).

Some things that came to mind as perhaps an addition to the food/cooking discussion are how food also facilitates status signaling, and how religion may not only provide information about what foods are safe to eat (at least during the time the rules or scriptures were written) but also compel people to eat safely (e.g., banning of pork in Islam).

It seems like another way to describe the biological vs. cultural evolution distinction is one of function vs. form. A trait would emerge to serve a specific adaptive function first, after which culture may shape the forms it takes.

Nevertheless, whether genetic/biological or cultural evolution is more important or emphasized more seems to depend on what is being focused on. Scholars who attend more to genetic/biological evolution appear more interested in universalities, whereas those who attend more to cultural evolution appear more interested in how and why differences emerge. Biological evolutionists would likely tend to view human cultural evolution as yet another evolutionary adaptation that makes humans no more unique than any other organism with their own unique adaptations trying to survive and reproduce, though on the other hand, humans are certainly unique because they have the special capacity for cultural complexity. Perhaps what is particularly interesting (at least to me) is how cultural evolution influences genetic evolution (“If cultural evolution was enabled by genetic evolution that suppressed some instinctual behaviors, then this would also create an opportunity for acceleration of genetic evolution”), how culture and biology mutually constrain one another, and how culture itself can be understood as a complex, higher order emergent state from simpler, lower order elements (genes, instincts). Once again, the cultural evolutionist is dazzled by the multiplicities of that emergence, whereas the biological evolutionist isn’t. Ultimately, all cultures, no matter how unique, unorthodox, weird, or peculiar they are, must abide by survival and reproductive rules (see Yong & Li, 2022; Yong et al., 2021a; 2021b). That still seems like the fundamental necessity that anchors any discussion of human heterogeneity.

Yong, J. C., & Li, N. P. (2022). Elucidating evolutionary principles with the traditional Mosuo: Adaptive benefits and origins of matriliny and "walking marriages". Culture and Evolution, 19(1), 22-40.

Yong, J. C., Li, N. P., & Kanazawa, S. (2021a). Not so much rational but rationalizing: Humans evolved as coherence-seeking, fiction-making animals. American Psychologist, 76(5), 781-793.

Yong, J. C., Park, G., & Spitzmuller, M. (2021b). From the savannah to the corporate office: The evolution of teams. Small Group Research, 52(1), 33-67.