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Kamikazes and cultural evolution☆

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ABSTRACT

Is cultural evolution needed to explain altruistic selfsacrifice? Some contend that cultural traits (e.g. beliefs, behaviors, and for some "memes") replicate according to selection processes that have "floated free" from biology. One test case is the example of suicide kamikaze attacks in wartime Japan. Standard biological mechanisms—such as reciprocal altruism and kin selection—might not seem to apply here: The suicide pilots did not act on the expectation that others would reciprocate, and they were supposedly sacrificing themselves for country and emperor, not close relatives. Yet an examination of both the historical record and the demands of evolutionary theory suggest the kamikaze phenomenon does not cry out for explanation in terms of a special non-biological selection process. This weakens the case for cultural evolution, and has interesting implications for our understanding of altruistic self-sacrifice.

1. Introduction

It has been noted that social science lacks a unifying theoretical structure. There is no consensus about whether its explanatory targets are individuals or aggregates, nor is there an accepted set of general explanatory principles, nor even agreement about whether its aims should be interpretive and normative, or strictly predictive and descriptive (Rosenberg, 2008, pp. 6, 24). Some suggest that progress depends on incorporating evolutionary ideas, such as natural selection, into models of cultural change. Perhaps, with apologies to Dobzhansky, it should be said that culture is unintelligible except in light of evolution. One articulation of this idea treats culture as a kind of shadow cast by our genes.[1] Then there are those who see cultural change as an autonomous process that has broken free from biology, though operating according to Darwinian principles (Boyd & Richerson, 1985, 1988; Fehr & Fischbacher, 2003; Ghirlanda, Enquist, & Nakamaru, 2006; Richerson & Boyd, 2005). A key motivation for this latter view turns on the fact that human beings seem to often help each other even when they don't stand to gain anything. Acts that are genuinely altruistic—characterized as those that cannot be explained in terms of either reciprocity or benefits to kin—would seem to be maladaptive. For this to be so, some wonder, how can Mother Nature's "leash do any serious constraining?" (Dennett, 2001, p.323).

Social scientists and philosophers have proposed that cultural evolution can account for behavior that is inexplicable from the point of view of biology alone, especially altruism, "the central theoretical problem" (Wilson, 1975, p. 3). For many altruistic *self-sacrifice* is a most compelling example, as killing yourself on behalf of nonrelatives would seem to unambiguously present an action that works against individual biological fitness. One case in point sometimes highlighted, e.g. by Boyd and Richerson (1985) and Sober (1991/2006), is the phenomenon of kamikaze attacks in wartime Japan. This example has appeared from time to time in the literature attesting to a special cultural mode of evolution that can counter biology.

What is at stake is our understanding of the role of culture in shaping social institutions and human behavior. Though one need only consider the honeybee to see that altruistic self-sacrifice does not require culture, this allows no inference to be drawn about humans, since insects restrict aid to those whom they are very closely related, and, in any case, implementing mechanisms for behavior commonly vary from one species to the next. So, does the explanation of altruistic suicide in humans require cultural evolution? I will argue the case for thinking so is actually weakened by a consideration of kamikazes. In fact, the kamikaze phenomenon can be plausibly dealt with using standard models in human behavioral ecology.

Though this is only one example, kamikazes are interesting and call for further scrutiny for several reasons: (1) They seem to stand in the way of a general application of biological theory to altruism;

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[1] "The genes hold culture on a leash. The leash is very long, but inevitably values will be constrained in accordance with their effects on the human gene pool" Wilson (1975, p.167).

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(2) It is a showcase example used by many for years starting with Boyd and Richerson and in philosophy, Sober[2]; (3) Yet there has been little to no pushback; (4) There is a subgenre developing around the topic of suicidal altruism, though cultural models seem to dominate; (5) The kamikaze phenomenon is especially well-documented though (I think) this would be the first philosophy paper to appraise the details; (6) Its failure to convincingly support cultural models ought to put us on guard when it comes to less extreme varieties of altruism.

To be more specific, if cultural models are favored over biological models, then we would expect to witness it foremost in cases of extreme altruism where the chances of raising biological fitness are minimized. Kamikazes ought to grab our attention because standard Darwinian mechanisms, i.e. reciprocal altruism and kin selection would not seem to apply—at least initially. As others have noted (e.g. Orbell & Morikawa, 2011, p. 5), this means kamikazes seem to stand in the way of a general application of biological models to an understanding of altruism, and indeed this has been the approach of many social scientists and philosophers for decades.

Boyd and Richerson prominently feature kamikazes and they are also showcased in Sober's "Models of cultural evolution" which appears in what is arguably the leading anthology in the philosophy of biology (and cited at least a hundred times). The example has been bandied about for years and is ripe for a critical reassessment—does it favor cultural evolution or not? Most works addressing the theme of suicidal altruism also appear to lean towards cultural models. Bowles and Gintis (2011, p.10) treat it as a textbook case, writing that kamikazes are one of several "dramatic examples that people are often motivated by non-selfish principles." Orbell and Morikawa (p.3) cite many more examples of scholars who pay little heed to the biological paradigm. While there is now some awareness in the social sciences, the point does not seem to have been made in philosophy that a biological model explaining kamikazes is possible and even attractive.

To be clear, this paper doesn't pretend to be a refutation of cultural evolution, rather its more modest aim is to convince the reader that kamikazes can be introduced as a challenge to the prevailing view, namely, that "the prima-facie case for cultural evolutionary theories is irresistible" (Lewens, 2013). If suicidal altruism doesn't require cultural evolution, this increases the burden of argument when it comes to lesser forms of sacrifice.

I also concede that one and the same process might be interpretable as cultural, biological, or both. There might be "multilevel" selection processes (Okasha, 2006) simultaneously involving both biological and cultural units (see also Sober & Wilson, 1998, pp. 149–50, Richerson, Boyd, & Henrich, 2003, p. 363ff.). There are also prominent cultural models that do not give a central place to selection over other kinds of processes when it comes to explaining cultural dynamics (Lewins, 2015, pp. 15–19). These differences are important, though the focus here concerns whether there is any cultural rival to biological models, not whether they are specifically invoking selection-like processes. I argue that biological models are not threatened either way: an explanation mentioning only a cultural process does not enjoy a special explanatory advantage. Nor do I claim that the ultimate explanation of self-sacrifice is due to a strictly biological adaptation. Perhaps the explanation of extreme altruism doesn't directly call on evolutionary theory at all.

2. Models of cultural evolution

How might evolution be significant when it comes to cultural change? Evolutionary psychology contends that the mechanisms responsible for behavior are biological adaptations (though there are also "spandrels" and side-effects). The view under consideration here goes further in its commitment to "de-biologicized" modes of evolution, in the sense of non-genetic inheritance mechanisms. Considering that "[r]umors and diseases exhibit a similar dynamic" (Sober, 1991/2006, p.538), perhaps cultural traits, such as beliefs and practices, or to invoke a popular term of art "memes,"[3] also struggle for existence according to their own Darwinian logic. Cultural evolution rivals orthodox evolutionary models of behavior insofar as it maintains that cultural factors can "swamp" genetics, and give rise to a new kind of transmission process which has "floated free" from the evolution of genes (Sober, 2000, p. 220). Some versions of cultural evolution share evolutionary theory's adaptationist outlook insofar as (1) Evolution is change in the frequency of traits in a population; (2) Traits superior to their competitors from the standpoint of an ideal engineer tend to become more frequent; and (3) Natural selection is the mechanism of change when frequency changes depend on variation in the fitness of inheritable traits (Sober, 2000, p. 9).

Evolution occurs when there is variation, selection, and retention. An understanding of cultural evolution accordingly might be expected to require concepts such as fitness and heredity be given non-biological interpretations. In his (1991/2006) Sober distinguishes between two varieties of cultural evolution corresponding to which components of a standard selection process are de-biologicized. What Sober calls "type-2" and "type-3" processes abandon the assumption that a trait can only be transmitted genetically (type-1 is orthodox biological selection). A type-2 process incorporates a mix of cultural and biological factors that can reinforce biological fitness, but could also reduce it instead.[4] Meanwhile, a type-3 process has completely broken free from biology, since fitness is also de-biologicized (e.g. in a type-3 process, a belief's fitness might be equated with its popularity).

Sober and others suspect that genuine altruism, as with kamikazes, is inexplicable if only a standard (type-1) process is assumed. Yet "Virtually *any* behavior can become stable within a social group if it is sufficiently buttressed by social norms" (quoted from Sober and Wilson, 1988, p.151). In the most general terms, perhaps there is a type-2 process, where those who acquire the kamikaze belief are diminished in biological fitness, working in conjunction with a type-3 process, according to which a cultural evolutionary mechanism spreads a trait, such as being a kamikaze in the minds

[2] Pinker (2015, p.876) remarks: "many group selectionists … write as if … kamikaze attacks … and other forms of voluntary martyrdom have long been the norm in human conflict" and Morin (2016, p.90) notes it is one of Boyd and Richerson's "most widely quoted examples." More recently Richerson and Boyd (2008, p.216) reassert their commitment to psychological altruism in writing that "suicide bombers give their lives to further their cause." Bowles and Gintis (2011, p.10) treat it as a textbook case, writing that kamikazes are one of several "dramatic examples that people are often motivated by non-selfish principles."

[3] An informal sense in which ideas replicate has infected ordinary language (e.g. videos "going viral" on YouTube) although orthodox evolutionary theory would dismiss this as merely colorful metaphor. A meme is supposed to be a cultural unit of selection, though the concept is notoriously fuzzy—memes encompass such diverse things as songs, words, theories, fads, jokes, and technologies. Meme theory is seriously under developed. What exactly is replicating? What does it mean to say that a meme is fit? The meme-meme itself hints at an answer: it is French for "same," connotes *memory*, and has assonance with "gene," and so invokes the idea of replication in multiple ways (De Sousa, 2004). While pithy, to say a meme is fit because it is catchy, or because it is easily associated is a non-explanation. Whether these difficulties are fatal is a matter of debate. Biological evolution also needed time to mature, and was worthy of scientific investigation even before it was known what served as replicators, or how transmission mechanisms worked (Mesoudi, Whiten, & Laland, 2004).

[4] Sober conceives of a trait's cultural heritability (e.g. the belief that one should be a kamikaze) in terms of *learning* (e.g. by imitation, indoctrination, or whatever).