You can't keep a bad idea down: Evolutionary biology and international relations

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Abstract | Evolutionary psychology is a growing field and followers are now attempting to colonize international relations. Many researchers use the approach to justify the *status quo* in the guise of science. They accept the present world – more accurately, their selective descriptions of it – as the ‘best’ of all worlds and reason backwards to find human traits and practices responsible for it. In doing so, they violate key premises of evolutionary theory in biology. They focus entirely on selection as the mechanism of change, ignoring adaptation. The latter is central to human beings and their societies.

International Politics Reviews (2013) **1**, 2–10. doi:10.1057/ipr.2013.2

Keywords: evolutionary biology; international relations theory; natural selection

Introduction

The nineteenth century witnessed many efforts to exploit science to justify conventional beliefs and prejudices. These include Cesare Lombroso's turn to phrenology to explain criminal activities by the lower classes, measurements of cranial capacity to prove the superiority of the White race and the use by some of Social Darwinism to legitimize colonialism, cutthroat capitalism and great power rivalry (Hofstadter, 1955; Bowler, 2003). In retrospect, these programs proved embarrassing to science and practitioners in these fields have long since distanced themselves from them.

Social Darwinism periodically resurfaces in a new guise. In part, this reflects the scientific standing of evolutionary theory in biology and the long-standing practice of applying successful frameworks in science to the social world whether or not they have much relevance (Bell, 2006). It is often, although not always, motivated by retrograde political and economic agendas. E.O. Wilson (1978),

the father of sociobiology, cited his research as evidence of the alleged social costs of allowing women to pursue careers in politics, law and the sciences.¹ Arthur Jensen (1998) regarded favorably sociobiologist Cyril Burt's claims that IQ is inherited. Thomas Bouchard, associated with the severely criticized Minnesota Twin Studies, cited them in support of Burt's claims about the power of nature over nurture.² Bouchard was for some years supported by the Pioneer Fund, which has been described as having close connection with the far right in American politics (MacIntyre, 1989; cited in Kramer, 2003; Dusek, 1999; Kühl, 2002). David P. Barash is a psychologist who dabbles in international relations. In a 1980s sociobiology textbook, he exclaimed ‘mother nature appears to be a sexist’. He claims, without providing evidence, that ‘Rape is common among the birds and bees’ and claims, on the basis of studies on male Mallard Ducks, that human males fantasize about gang rape (Barash, 1977, 1978, 1979; Kimmel, 2000). Sociobiology fellow traveler

Steven Pinker (1997, 2002) juxtaposes the 'science' of evolutionary psychology with the feminism and 'the treacle' of liberalism and Marxism.

Within the social sciences and philosophy, evolutionary ideas have sometimes been envisaged as vehicles for progressive transformations. Richard Dawkins, Peter Singer and Daniel Baron-Cohen all work in this tradition. The first books I review are cases in point. Bob Axelrod's research program is motivated by the desire to provide an evolutionary basis cooperation, and has given hope to some that cooperation will ultimately triumph over conflict. Axelrod has avoided making any claims of this kind, although he is interested in finding applications of his work in the social or political world. Jonathan Haidt's (2012) new book, *The Righteous Mind*, offers hope for ethical conduct more generally, although it claims to find support for conservative value systems. Bradley Thayer's, *Darwinism and International Relations*, uses evolutionary biology to justify the *status quo*. He finds John Mearsheimer's 'offensive realism' the most natural and effective response (Thayer, 2004). I criticize these works, not for their politics, but for what I believe is an inappropriate application of an evolutionary model to political and social life.

I begin my discussion with the writings of Kenneth Waltz and Robert Axelrod, both of which inspired important research programs in our field. Waltz bases his theory on microeconomics, not Darwin, but the theory of the firm, on which he draws heavily, relies on the mechanism of natural selection. Axelrod, Haidt and Thayer have explicitly evolutionary models, but only Haidt and Thayer try to use natural selection in an historical sense to explain the contemporary world.

Natural Selection

Evolution has become an elaborate paradigm since the days of Darwin. Suffice it to say for our purposes that it rests on a foundation of genetic variation and competition among individuals and species for survival in diverse and changing ecological niches. Its principal mechanism is natural selection. Mutations give rise to morphological changes, some of which may confer advantages to individuals, making them more likely to survive and reproduce. Over time, advantageous characteristics of an inheritable nature spread to varying degrees. A recent example among human beings is the enzyme that allows us to digest and benefit from milk products in adulthood, instead of shutting down after weaning. Different mutations affecting the controlling mechanism of this process appear to have arisen among different peoples in diverse geographical locations (Ingram *et al.*, 2009). Natural selection works within species, but also across them. When the land bridge between the two Americas arose, mammals from North America were more successful in colonizing the South than vice versa. There were many more of them, which had compelled them to

become specialists in particular niches. The smaller number of species in South America had evolved to become generalists able to exploit diverse niches. Collectively, North American mammals could outperform their Southern counterparts in almost any niche.

Natural selection is universally accepted within the scientific community. Like so many theories, it has evolved in response to new concepts and discoveries. One contemporary controversy concerns its degree of reductionism; some biologists believe that natural selection offers a reasonably complete account of evolution, whereas others contend that it needs to be augmented by other mechanisms. These include non-Darwinian evolution arising from random mutations that do not produce observable traits and are therefore not selected; structural constraints that produce imperfect bodily adaptations; and geological and astronomical catastrophes that cause mass extinctions and special selection. Evolutionary biologists such as Richard Dawkins and E.O. Wilson downplay these mechanisms and emphasize the importance of selection.

Is natural selection an appropriate mechanism in politics? Kenneth Waltz thinks so and makes it central to his theory of international politics. He is clear that the international system selects for certain kinds of behavior: that which copes most effectively with anarchy and the threats to survival associated with it. Over time, units become more alike, and this allows him to ignore state-level variation and construct a theory entirely at the system level. Waltz does not draw directly on evolution, but on microeconomics, where the theory of the firm is explicitly Darwinian in conception.

Natural selection does not work in international relations. If a giraffe with a long neck can reach more leaves, it is more likely to survive and reproduce. Over multiple generations, the statistical average of giraffe neck lengths will increase – but not beyond the point where it is no longer functional. Unlike necks, political skill is not inherited. Skillful leaders do not produce more offspring than their unsuccessful counterparts, nor are they followed in office by equally qualified successors. Frederick the Great transformed Prussia from a backwater march into a great power. His descendants recklessly challenged Napoleonic France and in 1806 lost most of the territory he had gained. Hardenberg, Gneisenau and Scharnhorst reorganized the Prussian state and army, regaining their country's status as a great power. Bismarck built on this foundation, unified Germany and made it the dominant power in Europe. Wilhelm II and his advisors gambled recklessly and needlessly on victory in a European war, which led to Germany's defeat, partial dismemberment, costly reparations and restrictions on rearmament, and the size of its armed forces. Gustav Stresemann made gradual but notable progress in reintegrating Germany into the European political community. Hitler led Germany into an even more destructive

war that left the country smaller in size and divided into two ideologically opposed, quasi-independent, rump states. Over the course of the next half-century, the leaders of the German Federal Republic pursued cautious policies that gained independence, respect and trust for their country, and ultimately reunification. Germany's seesawing is more typical of international relations than the kind of development associated with evolution.

Natural selection is inappropriate to the study of international relations for a second important reason: it does not cull the herd of actors who are weak, old or otherwise unable to compete. The total number of states in the world shrank in the nineteenth century because of Napoleon's consolidation of the Holy Roman Empire, German and Italian unification, and colonial expansion. In the twentieth century, it has increased from 57 in 1900 to 193, not counting Taiwan.³ Even in Europe, it has grown from 32 in 1945 to 43 today. As some astute observers of the contemporary scene have noted, the international system is ordered in such a way to keep failed states alive, with consequences not always beneficial for their inhabitants (Rotberg, 2004).

There are liberal variants of the evolutionary argument. In *The Rise of the Western World*, North and Thomas contend that the territorial state was the inevitable product of economic development. They invoke natural selection as their mechanism.⁴ Political scientists reject their claim. John Ruggie, Hendrik Spruyt and Daniel Nexon all note that when centralized territorial states began to emerge, many would-be territorial states failed, whereas some city states, city leagues and dynastic regimes grew and prospered (Ruggie, 1993; Spruyt, 1994; Nexon, 2009). Like Herz before them, Ruggie, Spruyt and Nexon find political and legal developments more important (Tilly, 1975; Mann, 1986; Herz, 1957). Ruggie emphasizes the legitimacy that sovereignty conferred on territorial states. Spruyt (1994) directs our attention to the role of political coalitions and the superior ability of leaders of territorial states to form and maintain them, as well as their ability to standardize weights, measures, coinage and laws. Herz, Spruyt and Nexon consider the success of the territorial state to be highly contingent and non-linear (Spruyt, 1994; Nexon, 2009; Herz, 1957).

Contemporary liberals who describe laissez-faire liberal democracies as the most efficient response to the modern world rely on a mix of selection and adaptation. Some emphasize selection, arguing that domestic demands for wealth or external pressures – or both – undermine states that are authoritarian, inward looking, kleptocratic and based on import substitution. The so-called Arab spring provoked arguments of this kind. Other liberals stress adaptation, which involves reflection by actors who adjust their behavior, or even the nature of their political systems, to better achieve their goals (Solingen, 1999). Selection and adaptation are different mechanisms and, depending on the circumstances, can be reinforcing or at odds. In

biology, human intervention can interfere with natural selection and produce plants and animals that would have little chance of surviving in the wild. Modern medicine has the same effect; vaccinations, surgery and other forms of intervention allow many people to survive and reproduce who would not have in former times.

Selection requires an unforgiving environment and adaptation one characterized by learning and fluidity in structures. Scholars must distinguish between the two mechanisms and be explicit about which, if either they invoke. I contend that selection in international relations applies only to *longue durée* developments, and only to some of them. Adaptation is almost always more appropriate to shorter-term developments.

Tit For Tat (TFT)

The most prominent and well-received attempt to apply evolutionary principles to human affairs is TFT. In 1981, Axelrod and Hamilton used a computer tournament to detect strategies that would encourage cooperation among individuals engaged in an iterative game of prisoner's dilemma (Axelrod and Hamilton, 1981; Axelrod, 1984). In a first round, 14 more or less sophisticated strategies and one totally random strategy competed for the highest average scores in a tournament of 200 moves. A very simple strategy emerged as the victor: cooperate on the first move and then copy your opponent's last move for all subsequent moves. TFT won again in a second competition involving 62 contestants and in which all competitors knew the results of the first round. TFT has three characteristics that account for its impressive performance: it is nice (cooperates on the first move), retaliatory (punishes defection in the prior move with defection) and forgiving (immediate return to cooperation after one cooperative move by an adversary). Like other rationalist explanations for cooperation, TFT starts from the premise that actors are autonomous and egoistic. Its wrinkle, that gained it so much attention, is its seeming proof that cooperation can emerge over time at the system level from entirely self-interested behavior at the agent level. It is a high-tech version of Hegel's 'cunning of reason'.

In the computer tournaments won by TFT, 'tits' (punishment) and 'tats' (defections) were defined unambiguously, as were their consequences (assigned numerical values), and both were evaluated independently by the computer that kept score. None of these conditions can be replicated in the real world, where 'tits' are readily interpreted as 'tats', cooperation as defection and either dismissed as noise (Lebow, 1998). The pattern of interaction between two actors, each of whom believes they are punishing the other for prior defection, is likely to diverge radically from a starting point jointly perceived as mutual cooperation, or of defection and punishment. The Cuban missile crisis was the result of such an escalating spiral of mutually

reinforcing defections, with each superpower convinced that its 'tat' was a 'tit' made in response to its adversary's 'tat' (Lebow and Stein, 1994).

In subsequent tournaments, Axelrod allowed for faulty attribution. He introduced a degree of randomization in outcomes. Thus, when players chose to cooperate or defect, it would occasionally appear to their opponent that they had done the opposite. Players would be informed afterwards if their choice had not been implemented correctly, but they would never be told if opponents' choices were intended or not. Nor did they know how many moves the game would last. Axelrod explored two ways of coping with these uncertainties: making the response to defection somewhat less than the provocation (generosity), and encouraging the player who had defected by accident to recognize that the opponent's defection in response did not necessarily call for another defection in return. Both strategies coped well with the noise introduced by randomization, but too much forgiveness invited exploitation (Axelrod and Dion, 1988; Nowak and Sigmund, 1993; Kraines and Kraines, 1995; Wu and Axelrod, 1995).

In the original and subsequent tournaments, the outcomes of cooperation and defection were unambiguous, the payoffs of all possible combinations of cooperation and defection were known in advance, and all contests consisted of reciprocal moves. In the real world, none of these conditions hold. Outcomes and their payoffs can only be estimated imperfectly as policies not infrequently bring about outcomes the reverse of those intended. Actors in the same political unit or faction, let alone in different ones, frequently make radically divergent estimates of likely policy outcomes. Perception is everything, and it may also determine whether the other sides perceives your behavior as cooperation or defection – or anything in between, as these binaries do not capture the more complex categories actors use to assess the motives and behavior of others. The real world is characterized by opacity with regard to actor motives as well as outcomes. The latter are often the result of complex interactions among multiple actors.

TFT may be the most extreme example of a theory of cooperation based entirely on external stimuli. As we have seen, it requires actors to replicate the previous move of their adversaries. If they cooperate, you cooperate, and if they defect, you defect. The strategy tells us nothing about the original choice of any actor, and it is easy to see that the nature of the world that emerges in any game is critically dependent on the opening moves of the players. They presumably reflect a prior disposition toward cooperation or defection. In this connection, it is interesting to observe that when Axelrod (1997) ran TFT with real American and Soviet defense analysts as players, they subsequently explained their initial and subsequent choices – mostly defection – in terms of their prior expectations about each other's motives.

Leaving the abstract, transparent domain of games for the world of international relations, it is difficult to find an interstate rivalry that moved from acute conflict to cooperation by means of TFT. The Cold War ended because Gorbachev *refused* to play TFT. He made a series of conciliatory moves, undeterred by Reagan's repeated unwillingness to reciprocate. Repeated efforts at conciliation in the face of no response or defection convinced many Europeans and Americans of Gorbachev's sincerity, and generated allied and domestic pressure on the Reagan administration to extend the olive branch. Ironically, the first major move the administration made toward cooperation – their 'zero option' arms control proposal – was never intended to be taken seriously by the Soviets. Its purpose was to put the onus of the expected failure of arms control on Moscow and make the administration look better in the eyes of its critics. Gorbachev's positive response compelled the administration to follow through on its own offer, and led to an important arms control agreement (Evangelista, 2004).

At best, TFT describes tactics that may facilitate cooperation in the long run when the outcomes of individual encounters are not critical. If you get eaten or conquered after one or two moves of cooperation by agents who defect, TFT is not a winning strategy. Moreover, it tells us nothing about why leaders seek cooperation. To understand why Gorbachev, Sadat and other leaders were moved to extend the olive branch, and willing to assume great risks in the process, we need to examine their internal as well as external incentives – that is, their domestic goals and political needs – and the ways in which both kinds of incentives were refracted through important processes of learning (Gorbachev, 1995; Brown, 1996; Herrmann and Lebow, 2004; Chernayev, 2000).

A world of autonomous, egoistic individuals – even the fiction of such a world – when used as a starting point of analysis, fosters the belief that cooperation and commitments should serve purely selfish ends. Working from such an assumption, which rules out social and emotional attachments, commitments and the communities they sustain, it is easy to see why social scientists in the rational choice tradition must resort to the most extreme forms of intellectual prestidigitation to explain how anything beyond the most short-lived and instrumental kind of collaboration ever occurs. Having coaxed the rabbit of individualism out of their analytical hat, social scientists are now unsuccessfully casting about for tricks to put it back inside.

There are two further points to consider. In Axelrod's tournament, TFT only emerged as victor in the course of many rounds of the cooperation–defection game against all other programs. TFT had the luxury to lose many games in the process. This is another way the tournament differs from the real world. Loss for a state could be final, and if not, sufficiently debilitating to seriously impede its security

or standing. Failing that, it might still be perceived as likely to have that effect by relevant actors. Historically, such perceptions have been a strong motive for caution when it comes to concessions and self-restraint and overreactions to what are perceived as challenges from adversaries. Fear of loss and high levels of conflict produce emotional arousal, which is another significant way in which the real world differs from a computer game.

TFT is a thought-provoking concept that has inspired interesting work in evolutionary biology. However, it tells us nothing about politics, and is not a practical strategy for reducing or overcoming international conflicts. Its appeal was nevertheless understandable. Axelrod published his findings at a time when the Cold War had heated up again and many people were searching for a route to peace. TFT was read by some – most of them outside the university – as ‘scientific’ support for their belief that cooperation was more effective than confrontation.

Evolutionary Biology

Sociobiology, an updated version of Social Darwinism, made a dramatic public appearance with the publication of E.O. Wilson’s 1975 book *Sociobiology: A New Synthesis* followed up by his Pulitzer Prize winning 1978 book, *On Human Nature* (Wilson, 1978; Dusek, 1999). It provoked critical reviews by Steven Jay Gould and Richard Lewontin in the *New York Review of Books* (Sober and Lewontin, 1982; Gould, 1997). Richard Dawkins’ (1976) *The Selfish Gene*, which popularized the work of William Hamilton, triggered renewed interest in the application of evolution to human behavior. Dawkins said little directly about human evolution, but his metaphor of the selfish gene led many others to apply his approach to our species. Dawkins also emphasized the social selection of ideas and fads, which he called ‘memes’ in an intended analogy to genes. Memes and memetics became popular in books and magazines.

With the advent of Dawkins, evolutionary psychology was coined as a replacement term for sociobiology in the hope of finessing the negative connotations critics had succeeded in pinning on it. Until recently, evolutionary biology has been more moderate in tone and limited in its claims (Dusek, 1999). Perhaps its most extreme claim, made by Haidt and Thayer among others, is their insistence that genes, not organisms, are selected. This claim is rejected by almost every philosopher of biology and thoughtful philosophical biologist (Symons, 1987; Damuth and Heisler, 1998; Buller, 2006). Advocates of the evolutionary biology paradigm move between individuals and groups to account for selfishness and altruism. Theories that explain everything explain nothing, and usually do so by relying on an arsenal of contradictory mechanisms that can be invoked after the fact, but never beforehand, to

account for almost any behavior. The sociobiologists whose work is under review here fall into this trap.

The latest entry in the field is Jonathan Haidt’s *The Righteous Mind*. It is written for a general, not academic audience, and develops elaborate arguments to demonstrate the superiority of conservative moral systems. It has a favorable puff from E.O. Wilson and a tasteless cover design of a hand giving the finger, presumably to liberals.

Haidt maintains moral dispositions are inherited and that group selection is a powerful evolutionary mechanism that is responsible for moral dispositions. In effect, social and biological evolution is self-reinforcing. All societies, he insists, are held together by moral codes based on emotions. Haidt identifies six kinds of moral responses, which he compares with taste receptors. Like different cuisines, different moralities make use of combinations of them. Each response is framed as a positive and negative binary. They are care/harm, liberty/oppression, fairness/cheating, loyalty/betrayal, authority/subversion and sanctity/degradation. In their positive valence – the first term of every pair – they shape self-interest in a way to enhance cooperation among people not closely related by blood. Reason plays only a minor role: it provides rationalizations for behavior dictated by emotions. Indeed, the moral foundations of society were organized ‘in advance of experience’ (Haidt, 2012, p.131).

Haidt uses this elaborate superstructure to critique liberal conceptions of morality. They build on a limited range of emotional values and rely too heavily on reason. Conservatives’ moralities are superior because they incorporate all six emotional values and relegate reason to a minor role. Science can thus explain why conservative political and religious groups have been so successful in recent decades – itself a questionable statement. These groups and movements emphasize loyalty, authority and sanctity, values particularly effective in constructing cohesion and preventing anomie, but largely anathema to liberals because they restrict autonomy and individuality. Conservatives also allegedly benefit from their emphasis on fairness, in contrast to the liberal concern for equality. The former, but not the latter, builds on basic moral instincts.

Haidt’s social observations are presented as if they are the objective result of his research. This research consists of surveys and interviews he and others have carried out, and references to work in anthropology, animal behavior and neuroscience when it can be interpreted to support his claims. Mostly, he offers stories and vignettes as evidence. A case in point is the interviews of combat veterans by historian William McNeil to ascertain why they fought. From them Haidt (2012, p.123) infers that human beings are ‘conditional hive creatures’, and when triggered appropriately act altruistically. Additional evidence is allegedly provided by the desire of so many Americans to help survivors of the terrorist attacks of 9/11. He

attributes altruism of this sort to group-related evolutionary adaptation.

Haidt, and some of the authors he is fond of citing, draw unwarranted inferences from their research. Take his claim that people make moral judgments ‘immediately and emotionally’, and that as Hume supposes, ‘Reasoning is merely the servant of the passions’ (Haidt, 2012, p.40). Part of the evidence for these claims comes from a study Haidt conducted that elicited moral judgments from participants about diverse behaviors. The so-called evidence appears to be an artifact of the experiment that prejudged the results by requiring people to make rapid responses. His denigration of reason goes far beyond his finding that people offer rationalizations for emotional responses to moral issues, let alone his claim that moral responses are intuitive. An alternative explanation would be that participant responses reflect socialization. Elsewhere, Haidt offers evidence to this effect, citing surveys of Americans and Indians and differences in what they find morally acceptable and objectionable. This diversity should raise doubts about the biological and intuitive nature of moral feelings. As ethical practices show enormous cultural variation, this suggests that any number of ethical codes are functional. If so, natural selection would not function to eliminate some and spread others.

Haidt insists that moral codes reflect biological and social conditioning. But he insists that behavior can have biological consequences. As an example, he cites the spread of the gene that made people able to digest milk products in the years after being weaned. Lactose tolerance undoubtedly conferred a survival advantage, but there is no evidence that human behavior had anything to do with the emergence, as opposed to the spread, of the gene. His broader argument rests on the mechanism of group selection. When groups compete, ‘the cohesive, cooperative group usually wins’ (Haidt, 2012, p.193). Natural selection rewards such groups, as they are more likely survive and reproduce than their less cohesive competitors.

To do this, natural selection must work at the genetic level to spread the genes that made individuals more cooperative within successful groups. It also requires, as Haidt acknowledges, a genetic basis for such feelings of sanctity and loyalty – the values that are supposed to enhance group effectiveness. Moreover, individuals who lack these qualities within successful groups must be less likely to survive and reproduce than those who possess them. These are very dubious biological and social assumptions.

There is no easy way to test for the selection of complex skills, as we cannot control for the effects of socialization. Ashkenazi Jews, for example, are greatly overrepresented among the world’s most successful and prominent violinists, cellists and pianists. Does this reflect a genetic advantage, or have Jewish families and culture encouraged

an interest in music and nurtured whatever talent appeared? There is never a one-to-one relationship between a gene and a behavior. Most traits are not the result of single genes, but combinations of them and complex patterns of their activation. This is even more likely to be true of any social orientations that are found to be hereditary. If so, beneficial social traits may require environmental triggers, or may appear, at least statistically, as part of a suite of traits, only some of which may be beneficial. The evolutionary picture far more complex and less linear than Haidt acknowledges. It may be – and my reading of history and sociology suggests it is the case – that groups and societies benefit from a diverse set of skills and orientations, not the narrow palette that Haidt, or anyone else, emphasizes.

Haidt insists that whatever traits make a group more efficient at procuring food make it more fit and likely to survive. As noted, he attributes this advantage to a single social variable: group cohesion. It is conventional wisdom that sedentary agriculturalists triumphed over nomads because they had access to more calories. I am at a loss to attribute this development to group cohesion, which was presumably an equally valuable asset in both kinds of societies. History is more complex than Haidt acknowledges.

Haidt’s invocation of natural selection within societies is as questionable as his application of it across them. He maintains that in the ancient world the brave and loyal were more likely to make it home from war than loners, cowards and those who avoided military service. He further insists that women were more likely to choose the former for mates. No evidence is offered for these assertions, and it is easy to construct counter narratives. Haidt’s approach to social selection is embarrassingly simplistic in conception, at odds with current understandings of genetics and historically and sociologically uninformed. Most importantly, it rests on a set of arbitrary, self-serving assumptions that he uses to pass off snake oil as science.

Bradley Thayer’s *Darwin and International Relations* applies evolutionary biology directly to international relations and comparative politics.⁵ He too has a clear agenda. He applauds Pinker’s attack on liberalism, and describes his book as scientific proof that social science not informed by evolution is fundamentally flawed. By following Pinker and others who have turned to evolutionary biology, he claims to provide a firmer, scientific foundation than the *animus dominiandi* or anarchy for the realism of Hans Morgenthau, Ken Waltz and John Mearsheimer. He is especially attracted to the latter’s offensive realism, which he sees as an appropriate response to a world in which human beings have been hardwired as aggressive and egoistic as a result of fierce competition for survival during the ice ages. He also claims that his understanding of evolutionary biology offers a better underpinning to rational choice and explains ethnic conflict and the rise of the state system.

For Thayer, war is the central mechanism of human evolution. It enlarged the human brain, by generating pressures for innovation in weapons, tactics and communication. War is 'the only' kind of activity that makes unlimited demands on the intellect, and 'so leads to intelligence' (Thayer, 2004, pp.154–155). His evidence for this striking claim is citations to like-minded believers in evolutionary biology who make similar claims, all of them pure speculation. None of them consider that other human activities, like the pursuit of food in the African savannah in the face of fierce predators, or shift from hunting and gathering to settled agriculture and the later development of urban civilizations, might have been just as cognitively demanding. Most troubling, is the assertion, which mirrors Haidt's, that a social need for some physiological attribute can bring it about through evolution. This is a misrepresentation, even reversal, of traditional evolutionary theory. Thayer does not tell us how this mechanism might work in practice or offer any evidence in its support.

War is said to have promoted other evolutionary developments, most notably changes in the nervous system that make war emotionally and sexually stimulating and warriors sexually attractive to women. It brought about the cognitive need to categorize people in 'us' and 'other' binaries. As evidence, we are given autobiographical and other accounts of combat that speak of its arousal effects and how men late in life look back on it as their most exciting and meaningful experience. There are no interviews with women or other evidence about their responses to men in uniform.

War is allegedly also responsible for dominance hierarchies, which are evident among most mammals, that, Thayer asserts, also make war. In what is arguably his greatest leap of inference – and there is much competition here – Thayer (2004, p.20) writes: 'Just as alpha males living in ... "dominance hierarchies" bring stability and other important social benefits to the pack, herd, or pride, so too does the hegemon bring stability and benefits of other collective goods to international relations'. Dominance hierarchies exist for two reasons, according to Thayer. They reflect the egoism that war has bred into us, but also the desire to accept such hierarchies, which is another product of evolution. The ubiquity of war, and allegedly of dominance hierarchies, indicates their contribution to human fitness. By 'scientific' means, Thayer has justified the *status quo* – or at least his distorted characterization of it – and implicitly trashed any efforts to transcend it as they are certain to fail.

Thayer's thesis is flawed at every stage of its construction. It rests on the assumption that offensive realism is an accurate depiction of international relations rather than an ideology without much empirical support. The same might be said for hegemonic stability theory, a justification for the American imperial project that is empirically problematic.

Thayer insists that these approaches to international relations are successful because they build on correct assumptions about human nature. There is no discussion whatsoever of efforts to reduce war and ethnic conflict through conflict resolution, institution building, development and humanitarian intervention. They are presumably in conflict with our nature and doomed to failure. Thayer's arbitrary choice of what is human and what is not is offered without any evidence, as is his claim that war as the most important of all human activities affecting evolution. We are given no mechanisms that would account for the increase in brain capacity warfare that is said to stimulate. Successful warriors are assumed to breed more successfully, another claim unsupported by evidence. We must assume that group advantages, conferred by individual characteristics such as aggression, bravery and loyalty, are somehow passed on through warrior genes and that natural selection does this rest. At the outset, Thayer claims that his approach is both scientific and readily falsifiable. I think we must accept the latter claim.

A final word about warfare. Thayer barrages us with evidence about its near universality, but offers no nuanced discussion of its diverse causes or roles it serves for societies. He assumes a single materialist motive: the protection of resources or the acquisition of additional ones. There is no recognition of the role of honor, standing, revenge, or war as a route of upward mobility, source of group cohesion or simply an adventure. Thayer weds a crude model of biology to a crude realist one of war and international relations.

Conclusions

Axelrod aside, these several studies engage in what Pinker refers quite positively to as 'reverse engineering'. Evolutionary biologists assume that the present world – whose structure is described rather selectively and arbitrarily by them – is the best of all worlds in the sense of species fitness. They reject out of hand the idea that it is complex, contradictory, difficult to account for on the basis of a few simple assumptions and rules, and brought about by multiple causes, agency and chance, all interacting in non-linear ways. They ask what physiological features favor existing arrangements and what evolutionary processes could have brought them about. As critics have noted, their procedure hides important normative assumptions and verges on the tautological. It is motivated by opposition to political and social change, certainly evident in the writings of Wilson, Pinker, Barash, Haidt and Thayer.

Are there any possible applications of evolution to history and politics? Yes, but in a metaphorical sense only. Certain kinds of human organization have proved more successful than their competitors. First and foremost is the rise of agricultural societies. In almost every region of

the world, they supplanted hunter-gatherers and pushed surviving bands to the peripheries and territory not so well suited to agriculture. Settled agricultural communities were more efficient, and their food sources generally more reliable, than slash-and-burn agriculture or hunting and gathering. They sustained larger populations and yielded surpluses that allowed a division of labor. Once they made an appearance, it was almost inevitable that they would become dominant, although nomad bands posed a serious threat to urban, agricultural civilizations as late as the thirteenth century of the Common Era.

Natural selection in the biological sense has nothing to do with this development, beyond perhaps facilitating the spread of the gene that confers lactose tolerance. Selection was entirely social, and at the group level. Adaptation was also probably important in promoting agricultural settlement as hunter-gather groups observed the advantages of their more sedentary peers.

We can continue this narrative. Surpluses and the division of labor allowed some societies to produce a warrior class or caste. These men spent their time training and provided better fighters than the hastily mobilized and poorly armed farmers they went up against. A large, full-time army conferred a significant military advantage over neighbors. Warriors require war to justify their existence, and thus these societies had strong incentives to expand through wars of conquest. The most surplus food was produced by societies straddling great river valleys, and it is no accident that the first great empires were in Egypt, Mesopotamia, India and China. Here too, the processes of selection and adaptation are at work. However, this quasi-evolutionary story tells us nothing about the relative strength of these empires, the ways in which one succeeded another or details of their varying cultures. These are all products of local conditions and agency.

Could we account for the industrial revolution and democracy and capitalism in the same way? These are interesting and probably unanswerable questions. If industrialization had occurred at roughly the same time in societies at similar levels of economic and scientific development, we might begin to make the parallel to agriculture. But it developed in one place, Britain, and spread, first, to Western Europe and the United States, and then more widely, but still not universally. This suggests that there are as many unique as general conditions associated with its emergence. Moreover, there is much evidence to support the claim that the diffusion of capitalism and industrialization were more the result of adaptation than selection. Reflexivity is a fundamental human trait, making adaptation a powerful mechanism in the social world. At least as often as not, it works against selection.

Stepping back from our era, we could argue that there has been a progression in the course of human history from lesser to greater complexity. The industrial revolution is

part and parcel of this development. However, complexity does not tell us anything about the timing of industrialization, where it first appeared or the forms it has taken. The so-called information revolution is now underway, and with it, some argue, a move away from large, complex organizations to smaller, more informal and fluid ones. Nor is it evident that laissez-faire capitalist democracy is the most efficient response to industrialization. It can be argued that its triumph was highly contingent and dependent on the victory of the Western democracies in World War I. A German victory could have produced a world in which authoritarian corporatism – as practiced in Germany and Japan – would probably have competed quite successfully.

The general point is that successful application of the evolutionary mechanism depends on genetic change and natural selection of individuals. Neither characterizes international relations, which is about societies and states. Bad ideas are hard to kill. They keep popping up in new guises, and people seem to forget all the reasons they were found to be ill advised and unworkable the last time around. Evolutionary biology is increasingly mainstream in international relations theory (Bell, 2012). The reason in this instance, I suspect, is the widespread envy of science among social scientists and their recognition that any proposition or theory that can be packaged as science is more likely to receive a positive reception. Evolutionary foundations generate parsimonious theories. And perhaps most importantly, they are rooted in the belief that nature trumps nurture. For scholars and journalists who know little history or anthropology, who speak only English and have spent all of their lives living and working in the United States, this is a very comforting, if not self-justifying, assumption.

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Notes

- 1 On the retrograde political agenda of sociobiology and evolutionary biology, see Dusek (1999).
- 2 For an overview of the Bouchard controversy, see *Human Intelligence*, 'The Cyril Burt Affair', www.indiana.edu/~intell/burtaffair.shtml.

3 Between 1860 and 1895, some 80 countries were erased from the map. The Risorgimento in Italy abolished 4 dukedoms and 1 small kingdom; German unification, 37 small- to medium-sized kingdoms and principalities; and European colonial expansion that did away with, or converted into 'protectorates', 3 central Asian khanates, some 25 African states, 4 Pacific Island kingdoms, 6 Southeast Asian monarchies and numerous smaller tribal associations. By the mid-1890s, the total number

of independent countries had dropped to 24 in Europe, 5 in Asia, and only 2 in Africa. At the time of Queen Victoria's Diamond Jubilee ceremony in 1897, just after the curtain went down on the monarchies of Hawaii, Tonga, Madagascar, Aceh and Sulu, there were 56 independent countries. This was an all-time low in the modern era.

4 North and Thomas (1973) for a strong economic claim.
5 For a thoughtful review, see Bell (2006).

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Acknowledgements

I would like to thank Duncan Bell, Felix Berenskoetter, Val Dusek, Peter XX, David Lebow and Eli Lebow for their thoughtful critiques and suggestions.