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# The Darwinian Cage

## Evolutionary Psychology as Moral Science

*Richard Hamilton*

We take it as a rule that any attempt to explain social life in psychological terms is manifestly in error. (Durkheim, *Rules of Sociological Method*)

The jargon of evolutionary psychology has recently migrated from a few minor American universities into the academic mainstream and thence into Sunday supplements and dinner party conversations. It has even formed the backdrop to at least one award-winning novel (McEwan, 1997). Evolutionary psychology and other similar 'biological' explanations of human conduct pervade the *Zeitgeist* and, as Kenan Malik has persuasively argued, they tap into a prevailing mood of cultural pessimism. Evolutionary psychology, it seems, speaks to our desire to see the worst in ourselves (Malik, 2002).

Evolutionary psychology's ubiquity is such that we need to distinguish carefully between its pop manifestations and its intellectual core. An interesting feature of this movement is that, alongside this massive upsurge in popular interest, there has also been a proliferation of all the trappings of 'normal' science (John Dupré, personal communication). This allows evolutionary psychology to distance itself from some of its cruder popularizations while simultaneously benefiting from that popular interest. This does not mean that evolutionary psychology is a serious scientific enterprise with a few over-enthusiastic adherents. On the contrary, evolutionary psychology is empirically unwarranted and conceptually incoherent to such an extent that it is a matter of professional sociological concern why it has come to achieve such a degree of popularity.<sup>1</sup>

However, given the level of interest, it surely behoves social theorists to subject its claims to serious analytic scrutiny. After all, no serious thinker questions the potential relevance of evolutionary insights to the understanding of beings with a complex natural history. The problem with evolutionary psychology is not that it attempts to investigate the relevance of

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evolutionary theory for current human society but that it does so in ways that assume that that relevance is in some sense straightforward and obvious. Perhaps, then, one purpose of a critique of evolutionary psychology may be to clear the way for more rigorous enquiries into the evolutionary bases of human social life.

### **Evolutionary Psychology's Relationships to Sociobiology**

Evolutionary psychology emerged from within the sociobiological paradigm. Human sociobiology sought to draw upon the study of other social animals to create accounts of human social conduct. It regarded current social science as hopelessly ill-informed about biology and in some of his less guarded pronouncements, E.O. Wilson in particular has appeared to entertain imperialistic ambitions towards social science (Wilson, 1975). Contemporary evolutionary psychology shares that hostility and some of those ambitions. For instance, it seeks to found social science on an account of evolved psychology that has little space for social facts as they have been traditionally conceived.

At the same time, it has distanced itself from sociobiology in several crucial respects. For instance, sociobiology was confronted by some fairly devastating political and ideological criticisms, and these played a large role in the enterprise's decline (Rose et al., 1980). Evolutionary psychologists, for the most part, have been keen to distance themselves from any stance which appears to endorse racism, sexism or social inequality. While some evolutionary psychologists lament the decline of 19th-century values (Wright, 1995), others see evolutionary psychology as fully compatible with postmodernity (Nicholson, 1998). Liberal and feminist evolutionary psychologists have been keen to stress its positive implications for feminism and anti-racism (Cronin, 1993; Malik 1996). It is simplistic, therefore, to dismiss evolutionary psychology as reactionary politics.

Evolutionary psychologists have distanced themselves from sociobiology on intellectual as well as political grounds. The most significant development in this respect has been the distinctive marriage between neo-Darwinianism and the computational theory of mind that has come to characterize recent work in the field (Barkow et al., 1992; Pinker, 1997.) Indeed, the peculiar confusions that arise when the evolutionary psychologists tackle social life stem less from their biological ambitions than from their view of human beings as disembodied information-processors. In the context of this Special Issue on Cognitivism, I will concentrate on this issue.

### **The Evolved Computer**

#### *Evolutionary Psychology vs Social Science*

Evolutionary psychology's fundamental tenet is that our minds are as much a product of our evolutionary heritage as our opposable thumbs. This claim derives from a highly persuasive argument: assuming a basic commitment to naturalistic explanation, if our brains and bodies are the product of our

evolutionary history, then the same must go for the mind. This argument has an important corollary: if minds have evolved, then the behaviour that minds produce is best viewed in the light of evolutionary assumptions. Since no one wishes to keep company with the creationists, the evolutionary psychological programme appears irresistible. Yet there is a world of difference between accepting the Darwinian theory of evolution and accepting evolutionary psychology.

To understand why, it is necessary to consider what evolutionary psychologists ask us to accept about the relationship between mind and action. They emphatically reject the idea that evolution only provides us with broad behavioural propensities and reserve their harshest criticism for such an equivocal endorsement of the neo-Darwinian gospel (Symons, 1992). They argue that natural selection would have eliminated broad mental plasticity and propose instead a mind composed of domain-specific modules that generate shallow behavioural output. These modules are heuristic devices that enabled our ancestors both to survive the challenges posed by the Pleistocene environment and to reproduce. These modules require minimal environmental stimuli to be triggered; indeed, our cognitive architecture even defines what counts as appropriate stimuli (Barkow et al., 1992: 82–3). This has become known as the Massive Modularity Hypothesis.

An immediate problem arises here. Much of the strength of evolutionary psychology's premises derives from assumptions about the brain and its evolution. Yet, evolutionary psychology offers scant neurological evidence for any of these assertions. They are advanced as hypotheses about mental function and what evolutionary psychologists really mean by modules are fixed patterns of behaviour or cognitive activity, rather than defined areas of the brain. Nevertheless, the implicit account of the brain that underlies the modular theory of mind is that mental function is fixed and this should, one supposes, pan out at the level of neurological structure. This presents evolutionary psychologists with a challenge: everything we know about the brain suggests that it is not structured in the way that would be required to substantiate the massively modular view of mind. Evidence from studies of brain-injured patients and investigations into the development of the normal brain over a lifetime suggest that the relationship between mental function and neurological structure is an extremely flexible one, with functions being assigned and re-assigned to different areas of the brain throughout one's lifespan.<sup>2</sup> Indeed, from an evolutionary perspective, it can be argued that such flexibility is itself the distinctively human adaptation.

This does not represent a decisive objection to evolutionary psychology's view of the mind: some way may be found of reconciling the claim of relative mental rigidity with the known facts about neural plasticity. Nevertheless, without much more detailed work in this area it is hard to see how evolutionary psychologists can manage to negotiate between their commitments to massive modularity and their equally strong commitment to the unity of science in the face of fairly strong evidence against massive

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modularity from a hard scientific discipline. As we shall see below, there are equally strong conceptual grounds for rejecting massive modularity. Yet, without massive modularity there is little to distinguish evolutionary psychology from the view, shared by any serious social scientist, that our current conduct has some relation, however inchoate, to our evolutionary past.

Such issues might seem to be of little professional interest to social scientists. However, while evolutionary psychologists have rejected some aspects of E.O. Wilson's sociobiology, they have retained his imperialist ambitions. Evolutionary psychology sees itself as a grand unifying theory of the social science, which holds that:

... nothing the organism interacts with in the world is nonbiological to it, and so for humans cultural forces are biological, social forces are biological. ... The social and the cultural are not alternatives to the biological. They are aspects of evolved human biology and, hence, they are the kinds of things to which evolutionary analysis can be properly applied. (Tooby and Cosmides, 1992: 86)

With such assertions, evolutionary psychologists declare all-out war on social science, which they regard as dominated by an outdated 'social constructionist' paradigm which ignores the facts of our biology in favour of a social learning model of the mind. For evolutionary psychology, society is synonymous with culture, which is itself merely 'the manufactured product of evolved psychological mechanisms situated in individuals living in groups' (1992: 24). While there may be some degree of complexity introduced at population level, there are no true social facts. All social processes are psychological processes writ large; all psychological processes are in turn explicable in terms of biology.

On the basis of these assumptions, evolutionary psychologists aim to re-build the social sciences root and branch. In doing so, they seek to substitute their distinctive technique of evolutionary functional analysis for explanations based on learning and cultural transmission. This technique aims to isolate a given behaviour pattern, model the algorithm generating it, and then assess their hypothetical model against palaeographic and anthropological data. It is important to note that evolutionary functional analysis makes no assumptions about the current reproductive advantages of a given behaviour (Symons, 1992: 138). In biological terminology, while modules are adaptations, they need not necessarily be adaptive. In contrast to previous sociobiological approaches, it is sufficient that the module generates behaviour that would have increased the inclusive fitness of our Pleistocene ancestors. Thus it would not constitute a refutation of an evolutionary psychological hypothesis if a particular behaviour does not convey reproductive benefits under current circumstances. Indeed, a behaviour might be entirely counterproductive in current circumstances and still be explicable in terms of an evolved module. We would hardly expect a module

adapted to the Pleistocene savannah to map well onto the modern urban landscape.

### *The Atavistic Misfit Hypothesis*

This brings us to the major contribution evolutionary psychology seeks to make to the analysis of social problems. Evolutionary psychologists claim that our cognitive architecture is not entirely well suited to the present-day environment and that, left unchecked, it will generate unacceptable behaviour. This ‘misfit hypothesis’ provides them with a key to understanding ‘the miseries of “civilization”’: child abuse, sectarianism, sexism, racism, tsarism [sic], much mental illness and crime, pornography and substance abuse’ (Nicholson, 1998: 1056). The scare quotes around civilization are telling, for they highlight a crucial ambivalence in the evolutionary psychological account: it is never clear whether the miseries in question are those which confront civilization or those which are brought about by it. Steven Pinker is undecided on this question, claiming that:

... human vice is proof that biological adaptation is, speaking literally, a thing of the past. Our minds are adapted to the small foraging bands in which our family spent ninety-nine percent of its existence, not to the topsy-turvy contingencies we have created since the agricultural and industrial revolutions. (Pinker, 1998: 207)

This misfit hypothesis restates a Cartesian problematic in the neo-Darwinian idiom, namely, how to reconcile everyday moral categories with a mechanical view of persons. Evolutionary psychology is concerned with the very possibility of norms, values and obligations in a world that is apparently composed of self-interested biological individuals. As Pinker expresses this with his usual eloquence, ‘how did *ought* emerge from a universe of particles and planets, genes and bodies?’ (1998: 559).<sup>3</sup> This is often referred to as the ‘problem of altruism’.<sup>4</sup> The biological sciences, particularly ethology, can make an obvious contribution here. Nevertheless, ‘vice’ is hardly an unambiguously scientific category. We should therefore consider how evolutionary psychologists consider moral problems to fall within their explanatory remit.

### **Evolutionary Psychology’s Moral Theory**

My primary claim is this: its biological rhetoric notwithstanding, evolutionary psychology is a positivist social science in the grand tradition which seeks to mechanize morality in order to facilitate social engineering. It does so on the basis of the assumption that a causal chain exists between our evolved modules and certain undesirable behaviours. We must undermine this assumption if we are to challenge evolutionary psychology’s claims to social explanation. In what follows I will argue three things. First, that to replace our everyday moral vocabulary in the way that evolutionary psychology proposes is neither desirable nor possible. Second, that evolutionary

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psychology consequently operates with an impoverished view of actions. Finally, that evolutionary psychology's causal ambitions condemn it to either reductionism or vacuity.

*The Evolutionary Origins of Human Wickedness*

Evolutionary psychologists believe that their misfit hypothesis explains human vice. Among the vices offered up for explanation by evolutionary psychologists are rape (Thornhill and Palmer 2000; Thornhill and Thornhill 1983), murder and domestic violence (Daly and Wilson, 1988), sexual jealousy (Buss, 2000), sexual harassment (Studd and Gattiker, 1991) and occupational stress (Nicholson, 1998). All these candidate explanations take the same form: for any given social problem we can postulate the existence of a module (or modules) which contributed to the inclusive fitness of our Pleistocene ancestors but which is out of place in current society. If we succeed in isolating this module, we are better equipped to deal with its consequences. Evolutionary psychologists are pessimistic about non-instrumental ways of dealing with social problems; they prefer coercive measures for controlling our biology. For instance, in their book on rape, Thornhill and Palmer advocate the Talibanization of society, involving stricter penalties, compulsory anti-rape training for men (as a precondition for obtaining a driver's licence), and possibly the cloistering of nubile women (2000: 198–9).

Evolutionary psychology focuses, then, on instances of human irrationality. What characterizes all of the aforementioned problems is that they present a challenge to both normative and instrumental conceptions of rationality. Evolutionary psychologists operate with a vaguely Hegelian strategy; they aim to reveal the cunning of evolutionary reason behind these apparently irrational actions. The danger here is that in redefining the phenomena in this way we may lose sight of them altogether. One cannot simply abstract out the normative content of attributions of irrationality.

Some of the problems facing an evolutionary psychological explanation of a complex phenomenon can be clearly seen when we examine the question of substance abuse, which some evolutionary psychologists have suggested has an evolutionary basis (Nicholson, 1997). It is morally and intellectually problematic; at the same time, one can see the plausibility of a biological explanation. For certain types of addictive behaviour, as expressed among certain individuals, there are strong indications of biochemical mediation, perhaps in the form of irregularities in the various receptors in the brain. So, on the surface it might seem an ideal contender for a problem to which one might seek a contribution from evolutionary psychology. Any biological explanation rests upon assumptions about evolution, so in that sense it would have to be an evolutionary explanation. For instance, it is quite possible that the ability to tolerate alcohol and alkaloids may have been adaptive in our evolutionary past. Clearly, evolutionary psychology seeks to provide more than a plausible historical narrative about the origins of substance abuse.

The first problem here is that any such account would be an explanation of both substance abuse and moderate substance use. The fact that our ancestors could tolerate environmental alcohol explains both the guests at a suburban dinner party sipping Chardonnay and the hopeless bum on the railway tracks guzzling sherry. Moreover, for an evolutionary psychological explanation to do any work here one would need a clearly defined phenomenon which could be mapped onto our mental architecture and ultimately derived from known facts about our evolutionary history. One need only reflect on the sheer diversity of abusive and addictive behaviours to realize the problems confronting evolutionary psychologists. While we might accept that some forms of alcoholism, smoking and heroin addiction have strong biological underpinnings, the same cannot be said for addictions to love, shopping, gambling or Internet pornography.

The facts about addiction, then, are not exhausted by the facts of biology. As Anthony Giddens points out, the concept of addiction only makes sense in a certain type of society, one which values work and self-development, and which has a conception of the appropriate use of time (1992: 74). How would one, for instance, go about identifying an addict in a society such as the Yanomamo, where drug abuse is a ubiquitous phenomenon? Even in cases where there is the marked involvement of biochemical factors, distinguishing between an addiction and a habit, a use and an abuse, is a conceptual and not an empirical task.

Furthermore, the plausibility of biochemical explanations in certain cases should not lead us to endorse evolutionary psychology. For, despite its association in the popular mind with molecular biology, evolutionary psychology does not offer biochemical or genetic explanations.<sup>5</sup> Instead, an evolutionary psychological account of substance abuse would posit the existence of a substance abuse module (or set of modules) which, when triggered by a given set of environmental stimuli, would produce substance abuse. The module would have served some function in the Pleistocene but is now as moribund as the human appendix.

Careful attention would show us that the same problems attend on computational reductionism as they do on its biochemical counterpart. The computational model requires the existence of discrete addiction behaviours as the output of a computational process. Since no such discrete behaviours exist, this leaves the evolutionary psychologists confronting a dilemma: either their proposed module accounts for an exceptionally wide class of behaviours, including addictions; or they are forced into a reductionism which treats the normative context as nugatory. Neither of these options works: in what follows I will attempt to explain why.

#### *Evolutionary Psychology's Attack on Broad Mental Plasticity*

To understand why the first move fails we should recall that the distinctive feature of evolutionary psychology is its opposition to broad mental plasticity. Central to the evolutionary psychologists' attack on social science is their assertion that evolution would work against mental plasticity (Barkow



et al., 1992: 39). Narrow modules generate discrete behavioural events.<sup>6</sup> The heritability of the module depends upon whether these behavioural events allowed an organism to meet its evolutionary challenges in an extremely short time span (1992: 100–8). Evolution does not select for Hamlets: a hominid that sat around weighing up possible courses of action would have been quickly eliminated in favour of his more decisive cousin. Over evolutionary time, those modules which allowed the possessor to solve problems quickly and effectively would have been selected for; those that worked slowly or ineffectively would have been eliminated. Given this, an evolutionary psychological explanation of substance abuse would need either to postulate a specific addiction module, or it would propose that the abuse results from some other module or combination of modules acting in concert. An adaptive module for abuse is a contradiction in terms, since it violates the neo-Darwinian assumption that any inherited module would have conveyed positive reproductive benefits.<sup>7</sup> At best, substance abuse would be a by-product.

The admission that substance abuse might be a by-product would remove anything distinctive about the evolutionary psychological explanation. A module (or combination of modules) capable of generating a range of behaviours broad enough to encompass the full range of addictions is to all explanatory purposes identical to old-fashioned broad plasticity.<sup>8</sup> If we adopt this route, it is hard to see how the modular account explains the addiction. For instance, we might conceivably construct a modular account of drug use in terms of its evolutionary benefits. One could formulate some interesting evolutionarily informed hypothesis to explain why certain people take risks or seek pleasure. Nevertheless, an explanation of drug use is not an explanation of drug abuse and it is the abuse that requires explanation. As common sense and experiences like those of the returning Vietnam servicemen clearly show, only a tiny sub-class of substance users become abusers and even fewer become addicts; addiction is cyclical and closely related to the life-cycle (Peele, 1998). An explanation that cannot distinguish between users and addicts is not an explanation of addiction at all. We are therefore better off doing what social science typically does and investigating addiction at the proximate level of motivation rather than its evolutionary bases.

One option for the evolutionary psychologist would be to respond that no theory could be expected to explain everything; evolutionary psychology can only explain the underlying mechanisms. This leads to the following problem: the only genuine evidential support for a modular hypothesis can come from behaviour. Even if we could successfully isolate a part of the brain associated with a hypothetical module, we would still need behavioural data to ascertain whether it was the correct region. The problem remains of how to isolate the behaviour falling within the explanatory remit of evolutionary psychology without committing *petitio principii*.

In attempting to isolate discrete behaviours, evolutionary psychologists tend to specify the phenomena under investigation in such a way as

to virtually guarantee confirming instances. To turn from our hypothetical discussion of a module for substance abuse to a real case, recent (notorious) studies of rape provide an example of this strategy in action. The authors define rape as the coerced vaginal penetration of women of reproductive age and downplay the relevance of male rape, rape on women outside the reproductive age range, murderous rape and non-vaginal forms of rape. This conceptual gerrymandering results, unsurprisingly, in the confirmation of their hypothesis that rape is an evolved reproductive strategy and not a crime of violence (Thornhill and Palmer, 2000; Thornhill and Thornhill, 1983).<sup>9</sup>

This strategy is understandable, for, by evolutionary psychology's own criteria, a module which specifically generated the rape of octogenarians and children, or non-vaginal rape, would have been eliminated from the gene pool. Even one which enabled, rather than compelled, a hominid to do these things would have been eliminated, since it would have been out-reproduced by the hominid who raped only women of reproductive age.<sup>10</sup> Thus, understanding rape in evolutionary psychological terms calls upon us either to egregiously disregard the evidence or else to make the more modest claim that some humans have a broad disposition for sexual violence, which may or may not be instantiated in a module.<sup>11</sup> The idea of such a broad disposition is anathema to the whole spirit of evolutionary psychology, since it is virtually identical to the derided standard social science model.

Moreover, such dispositional accounts are notoriously prone to vacuity. Since all dispositions of the human animal have, *sensu lato*, an evolutionary history, the claim that a rapist has an evolved propensity for sexual violence is about as informative as saying that W.S. Gilbert had an evolved propensity to write musical comedies or that politicians have an evolved propensity to dissemble. What we require is a rigorous stipulation of the conditions under which a propensity might manifest itself. Evolutionary psychology is ill equipped to provide us with such information. When evolutionary psychologists attempt to do so, they run into insurmountable problems.

### **The Challenge of Reductionism**

It is a commonplace of the philosophy of social science that the social scientific investigator never encounters genuinely raw data. Her phenomena come to her imbued with meanings. Alfred Schutz's observations on the differences between natural and social science remain pertinent:

The world of nature as explored by the natural scientist, does not 'mean' anything to the molecules, atoms and electrons therein. The observational field of the social scientist, however, namely the social reality, has a specific meaning and relevance structure for the human beings living, acting and thinking therein. (1954: 266–7)<sup>12</sup>

The human world is characterized by meaningful actions and interactions, not simply by a series of events. Consequently, the 'constructs of the social

sciences are, so to speak, constructs of the second degree, namely constructs of the constructs made by the actors of the social scene' (1954: 267). The social scientist investigates actions and interactions that are meaningful to the participants and in ways that draw upon her understanding of those meanings. Her very ability to identify the phenomenon she aims to study rests upon her success in recognizing the point that it has for the participants.

How, then, do evolutionary psychologists attempt to account for meaningful interactions? A good place to explore this question is sexual behaviour. Perhaps no other human interaction is more meaningful. And given the centrality of reproduction to the neo-Darwinian position, evolutionary psychologists have unsurprisingly focused heavily on human sexual behaviour. Since human sexual behaviour lies at the cusp of culture and biology, it would seem like an obvious place where evolutionary psychology can make a contribution to our understanding.

The immediately striking thing about evolutionary psychological accounts is their almost perverse narrowness of focus. Evolutionary psychologists seem obsessed with monogamy and its transgressions. Despite recent reluctant acknowledgements that women can also be sexually active, evolutionary psychology remains stuck within the framework of 'coy' females and 'predatory' males. Women, it is argued, are naturally faithful, while men are naturally promiscuous (e.g. Buss, 1994; Symons, 1979).<sup>13</sup> Left to their own devices, men would propagate their genetic material as widely as possible. It is only the restraining influence of society, combined with the risks to paternity such philandering poses, that prevent them from doing this. Infidelity occurs when those social restraints are loosened or when the perceived benefits outweigh the risks.<sup>14</sup>

Evolutionary psychologists support their assertions with a combination of animal studies, anthropological investigations and sociological evidence. Social scientists might question these data on various grounds. Their use of anthropological studies presupposes that hunter-gatherer tribes in the age of anthropological research behave in analogous ways to our Pleistocene ancestors. Appeals to animal studies disregard context and assume that species as diverse as chaffinches and bonobo chimps resemble each other, and us, far more than they differ. When dealing with contemporary phenomena, evolutionary psychologists work with data obtained by straightforward quantitative methods. Evolutionary psychologists are so reliant on variable analysis that they discount all the problems raised by qualitative sociologists and treat categories such as 'infidelity' as easily quantifiable. Indeed their whole search for phenotypic behaviours relies upon inferring psychological uniformities from statistical regularities.<sup>15</sup>

Since 'infidelity' is an indexical concept, we can only treat infidelity as a discrete behavioural category by overlooking crucial differences. Evolutionary psychologists tend to treat Western-style monogamy as the norm.<sup>16</sup> Even in a Western context, we might ask what unites the bridegroom who sleeps with a bridesmaid, a couple who decide to stay together for their

children's sake, turning a blind eye to each other's indiscretions, and a pair of middle-aged 'swingers'. Evolutionary psychology would answer that they are all executing an evolved strategy that enabled our ancestors to spread their genes. However, to assume uniformity in this way means, *inter alia*, that we treat as nugatory the different reasons people might give for their actions. Indeed, Robin Baker, an extreme reductionist among neo-Darwinians, makes scepticism towards reasons a programmatic feature of evolutionary accounts of human conduct, which, he announces, should be:

... concerned with subconscious, physiological decisions by the body rather than with conscious behavioural decisions. Of course, we are well aware that these decisions take place against a backdrop of conscious rhetoric. Often, conscious and subconscious strategies will concur but often they will not. When they do not, we concern ourselves with what the body does, not with what the person might think it is doing. As in many aspects of behaviour, it seems likely that physiological programming has a more powerful influence than any conscious rationalization. (Baker and Bellis, 1995: 185)

For Baker, the reasons people give for their actions are post hoc rationalizations for what their bodies did under the influence of their evolutionary programme. On one point at least he is correct: evolutionary theory can have nothing interesting to say about reasons, nor can reasons play any role in its explanations. It is precisely this anti-teleological bent of Darwin's theory of evolution that accounts for its superiority. Darwin's theories stand in a worthy tradition of ridding biology of anthropomorphism. However, it is one thing to cease talking about impersonal phenomena in personal terms; to extend this injunction to persons is an entirely different matter.<sup>17</sup> For to do so means that we lose sight of the very phenomena we purport to explain.

#### *Reductionism, Actions and Bodily Movements*

The ignoble fate of behaviourism should warn us that the cost of abandoning talk of reasons is to lose our ability to identify actions. What we have instead are physical events in different contexts and an insoluble problem about the relationship between event and context. Reductionist evolutionary psychology suggests that modules generate identical physical happenings, which we imbue with cultural meanings. This cannot explain even the simplest actions, as an example will demonstrate. Let us imagine that there is a module which, when triggered by the appropriate environmental stimuli, causes the index finger of the right hand to slowly raise and then lower by approximately 4 cm. Perhaps this module evolved because our hunter-gatherer forebears needed to signal the presence of prey or danger. In order to do so, it was necessary for our Pleistocene ancestors to make just this move, in just the right situation. A hominid who gestured in this way at the wrong time, such as when no prey were present, would have been rapidly eliminated, as would one who raised the wrong finger or was unable to raise his finger at all.<sup>18</sup>

This particular action is one which the American writer Bill Bryson (1995/1999) describes in his account of living in a Yorkshire village. He claims that the moment of his acceptance by the community came when approaching drivers began to raise their right index finger from above the steering wheel and lower it in just this way. It signalled if not warmth, then at least a suspension of hostility. One could construct a plausible evolutionary history of the bodily movements underpinning this gesture. The question is whether we could have an evolutionary psychological explanation.

The distinction between an evolutionary history and an evolutionary psychological explanation lies in the fact that evolutionary psychology would hope to explain the gesture in terms of its history without committing the genetic fallacy. This is obviously a different kind of claim from that of saying that both the cave dweller and the Yorkshiremen must possess certain physiological structures that enable them to make the given gesture. The evolutionary psychological explanation makes the Yorkshiremen's actions seem rather like a Balinese shadow theatre: behind the apparent gesture is the cave dweller's signalling.

If we reflect upon the example the mechanistic explanation is not even plausible for our supposedly primitive ancestors. A successful gesture must be understood and an unsuccessful gesture is not a gesture at all. To be understood it must occupy some place within a set of practices. Otherwise, there could be no difference between the caveman's signal and any other random movement he might have made. The idea of two cavemen signalling to one another already presupposes a fairly sophisticated system of communication. Thus the idea of their actions being the basic underpinnings of our modern ones becomes untenable. The putative Pleistocene becomes simply one of the many complex cultural environments that human beings have inhabited over the course of our development.

Our ability as agents or analysts to characterize an action relies on being able to answer the question of what a particular bodily movement means. The distinction between different gestures, and between a gesture and a twitch, is a normative one. Depending upon the situation, the act of raising one's right index finger could be: a greeting; an insult; a command; a dismissive gesture; a signal of non-committal; an attempt to squash a fly; a press of a button; a cricket umpire's decision or nothing at all.<sup>19</sup> Furthermore, these performatives could be affected by a large number of other physical movements. This opens up the possibility of mistakes and misunderstandings, and a gesture is only a gesture to the extent that it is understood. The only guarantors of that understanding are publicly available criteria against which the gesture may be judged and justified.

Since these criteria are not psychological, evolutionary psychology's invocation of an adaptive module underpinning a gesture would explain nothing that is not already explained by the idea that gestures require a psycho-physiological underpinning. But if evolutionary psychology cannot effectively explain an action as simple as raising a finger, how much more insurmountable are the problems facing its attempt to explain drug abuse,

rape, infidelity, murder and suicide. All of the intellectually puzzling and morally problematic aspects of these phenomena (indeed anything that actually requires explanation) are part of the weave of social life. For such phenomena, normativity is not the icing on the cake: it is the cake.

### *Pinker's Hedonistic Pluralism*

Normativity represents a challenge for any simple mapping of current behaviour onto our evolutionary history. For instance, the obvious facts of contemporary sexual behaviour seem to leave us with two possibilities: either we are not really motivated by the desire to spread our genes or we somehow delude ourselves about our true motivation. However, while people may occasionally regret having sex, we rarely have sex inadvertently. It is hard therefore to see what it would mean to be deluded about a reproductive motive. If someone had unprotected sex on a regular basis in full knowledge of the consequences, we might say their belief that they did not want to get pregnant or make someone else pregnant was deluded. In other cases, where they used contraception or performed a sexual act not involving vaginal penetration, it makes no sense to impute a reproductive motive to a non-reproductive act. Unless they bizarrely misidentified the act they were performing, whatever their intention actually was, it was not to make babies.

More sophisticated evolutionary psychologists recognize this problem. They realize that to discuss actions *qua* actions requires that we at least take reasons into account. Pinker proposes a solution that goes something like this: except for those cases where we are actually trying for children, or where we at least would not mind having them, talk about a reproductive motivation is unintelligible. We can, however, have sex for all the reasons people typically have sex and still be executing an adaptive mechanism. As with many of Pinker's positions, it is difficult to see how far he can move in this particular direction and still offer a distinctively evolutionary psychological explanation. Put more bluntly, it is far from clear how this position explains anything. If he is merely stating that our Pleistocene ancestors had sex for their reasons and we for ours, this is both uncontroversial and empty. In order for the Pleistocene world to explain our world in the way Pinker believes it does, there needs to be some connection between the two. Pinker attempts to provide this connection, without falling prey to the kind of reductionism we find in Baker, by means of a hedonistic theory of motivation.

Sexual desire is *not* people's strategy to spread their genes. It's people's strategy to attain the pleasures of sex, and the pleasures of sex are the genes' strategy to propagate themselves. If the genes don't get propagated it is because we are smarter than they are. (Pinker, 1997: 44; see also pp. 524–5)

We have sex for pleasure. Our Pleistocene forbears had sex for pleasure and evolution programmed them to find whatever enhanced their reproductive fitness pleasurable. We share their psycho-physiological programming and

thus men are inclined to sleep with as many nubile women as possible. It is for this reason also that the use of contraception and other such non-reproductive behaviours do not refute evolutionary psychological hypotheses. Irrespective of whether the act results in reproduction, it is done for pleasure and that pleasure is explicable as an evolved psychological adaptation. In similar vein, Donald Symons (1979: 299–300) argues that male homosexuality confirms rather than refutes the evolutionary psychological hypothesis; promiscuous male homosexuals are only doing what male heterosexuals would do if females let them.

Not all evolutionary theorists share Pinker's hedonistic theory of motivation. Baker questions the notion that we have sex for pleasure:

The explanation usually trotted out is that we (and presumably other animals) have sex because we enjoy it, because it brings us pleasure. But is that really true? (1996: 9)

Baker unwittingly highlights an important problem for the hedonistic theory of motivation. Pleasure is not an explanatory category, since explanations based on pleasure are either vacuous or false. If when we say that people have sex for pleasure all we mean is that any voluntary action is done for pleasure, then this is undeniable. If however, we mean that we have sex primarily to experience a tingling in the medial forebrain bundle, then this is surely false. As Ryle pointed out, pleasure is immanent rather than external to action. To say that I enjoy reading Tolstoy is to explain my reading habits and not my neurochemistry (Ryle, 1954: 55). It is to tell someone why I prefer dead Russians to live Englishmen. People have sex for many other reasons than to achieve orgasm and part of what makes the sexual act pleasurable are those reasons. Were this not the case, any activity that created a physically pleasurable sensation would be an adequate substitute for a sexual act.<sup>20</sup>

#### *The Pluralist Option and the Belief-Desire Theory of Motivation*

Furthermore, if Pinker regards pleasure as a cause of behaviour, then this is vulnerable to another objection. Since the pleasure is consequent to (or at least coterminous with) the act, the pleasure is not a true antecedent and therefore cannot be the cause of the act. We can never be certain that an act will bring us pleasure. It is not pleasure but a combination of a desire (to experience pleasure) and a belief (that a given act will bring pleasure) that causes the act. Thus Pinker's hedonistic theory shades into a belief-desire theory of motivation.

For those who hold such a theory, there is an ongoing difficulty of how propositional attitudes (such as believing that an act will bring pleasure) can play a causal role in behaviour.<sup>21</sup> To resolve this, Pinker draws upon a version of the causal theory of reference devised by Jerry Fodor and Hilary Putnam.<sup>22</sup> On Pinker's (admittedly crude) reading of this theory, propositional attitudes cause behaviour by virtue of the fact that they:



... symbolize things in the world because they are triggered by those things via our sense organs, and because of what they do when they are triggered. If the bits of matter that constitute a symbol are arranged to bump into the bits of matter constituting another symbol in just the right way, the symbols corresponding to one belief can give rise to new symbols corresponding to another belief logically related to it, which can give rise to symbols corresponding to other beliefs and so on. Eventually the bits of matter constituting a symbol bump into bits of matter connected to the muscles, and behaviour happens. (Pinker, 1998: 25)

It must surely be the case that impacting bits of matter cause bodily movements.<sup>23</sup> I have, however, outlined above some problems with the idea that behaviour can be reduced to bodily movements. For Pinker's account to succeed it would therefore need to avoid reductionism, while remaining an evolutionary psychological position. Although his thesis is certainly an ingenious attempt to solve the problem, it is ultimately unsuccessful. Pinker's account does not even answer the question it is intended to answer, since how beliefs *qua* beliefs cause behaviour remains utterly opaque. His thesis becomes either a reductionist one, in which beliefs are merely epiphenomena or else he must break with certain key commitments of evolutionary psychology.

The reasons for this are as follows. The relationship between a belief and a causally efficacious bit of matter must be either necessary or contingent. A given bit of matter *M* corresponds to the belief *B*. That it does so must either result from some properties of *M* and/or *B*, or else their correspondence occurs simply through happenstance. Similarly, either *M* must possess certain unique properties, or else different bits of matter may also fulfil *M*'s causal function. If *M* is causally efficacious because of some unique set of properties, then either this ties in with the fact that *M* stands in a certain relation to *B*, or it is coincidental. If this relationship is coincidental, then the fact that *M* is connected to a certain propositional attitude concerns us less than the fact that the given causal relationship obtains between various bits of matter. It is not the propositional attitude that causes the bodily movements, since any propositional attitude associated with *M* would do equally as well. When unpacked in this way, the apparently pluralist position becomes indistinguishable from reductionism.

If, on the other hand, a necessary relationship obtains between *M* and its accompanying belief, then a different set of problems emerges. Beliefs are either sentences or else they are represented by sentences. If Pinker holds that a necessary relationship exists between sentences and things in the world, then this is a similar semantics to that considered by Wittgenstein in the *Tractatus* and later subjected to a devastating auto-critique. On this account, the propositional attitude sentence *A* becomes meaningful, not only because it represents a causally efficacious bit of matter *M*, but also because it corresponds to a belief *B*. This can mean one of two things: either propositional attitude sentence *A* is the belief *B simpliciter*, or sentence *A* represents that belief.



*Are Beliefs Symbols?*

If a propositional attitude sentence plays its unique role by virtue of what it represents, then what it represents is either a further proposition (in which case we confront the danger of infinite regress) or the propositional attitude sentence represents something pre-linguistic, such as a neurological state. Even if we could solve the concomitant problems of translation, we would still need to resolve a further problem. If a belief is a neurological state represented by a propositional attitude sentence, then belief *B* only becomes causally efficacious to the extent that it stands for neurological state *C*. We therefore return to the question of the relationship between belief *B* and something else, namely, neurological state *C*.

If that relationship is coincidental, then what matters is the causal function of *C* and belief *B* becomes epiphenomenal. If the relationship is necessary, then we are asserting that a propositional attitude sentence stands in a necessary relationship to: a brain state; a chain of events leading to a given behaviour; and 'things in the world'. Even this would not solve the problem Pinker sets out to solve, since the belief itself plays no true causal role and again we collapse into reductionism.

If, conversely, a belief is primarily a set of symbols, then new problems arise. John Heil (1981) has summarized the implications for cognitive science of Wittgenstein's self-criticism, namely, that cognitive science requires a notion of internal representation but representation requires the public use of symbols in rule-governed ways. Both the later Wittgenstein and Saussure have pointed out that there can be no necessary connection between a proposition and that which it represents, since that relationship could, in principle, be fulfilled by various other sets of symbols. The only guarantor of that relationship is the regularity with which people use the symbols in question (see Harris, 1988).

If Pinker is asserting that a belief's role in mental causation is a result of its symbolic function rather than the state of affairs it represents, then this requires either that the internal role has an essential reference to its public function (something evolutionary psychology's individualist methodology cannot countenance) or else that these symbols have a meaning for the internal mental states themselves. This, however, calls upon us either to accord mental states with powers of interpretation only legitimately attributed to competent human language users, or else to regard interpretation as a mechanical response. On this view, propositional attitude *A* means what it does simply by causing response *R*. But such a view skirts perilously close to the reductionism Pinker's solution was designed to avoid, for any sentence that causes the response will do.

*The Logical Grammar of Belief*

If Pinker wishes to retain the insight that a propositional attitude sentence is a particular *belief, desire, hope, etc.*, then a different set of considerations comes into play. The logical grammar of the concept of 'belief' encompasses

far more than can be captured in mechanical terms. Beliefs are, *inter alia*, true or false, well or ill founded, consistent or inconsistent, etc. Pinker's explanation of the causal role of beliefs allows no scope for these distinctions, unless truth becomes identical to the propensity to cause a given behaviour.

Such an option overlooks the fact that a false belief may cause the same behaviour as a true one. My belief that coal contains valuable nutrients and my belief that eating coal relieves heartburn may both be involved in my decision to eat coal but only one of them is a true belief.<sup>24</sup> The truth or falsity of the proposition embedded in the propositional attitude sentence is independent of my decision to eat coal. Therefore an account of the truth or falsity of a belief cannot be based upon whether it leads to a particular course of action. This would relativize truth, making it synonymous with a belief's propensity to cause actions in individuals or groups, a position Pinker would surely wish to avoid, since the truth of his theory would itself be determined solely by pragmatic considerations.

Moreover, the belief-desire theory assumes that it is the belief-that- $p$  that motivates an action and not simply  $p$ . Any belief, whether true or false, can give rise to other beliefs and actions. My belief that coal contains nutrients may give rise to the belief that charcoal does too and lead me to chew charcoal. From Pinker's insistence on the importance of beliefs symbolizing things in the world, we might infer that only true propositions can play a causal role. But then this would be to abandon the belief-desire model since it would be a state of affairs, and not the belief, which caused the action. The belief would be, at most, the psychological intermediary between states of affairs and actions. If, however, he sought to abandon the notion of truth he would also have to abandon the concept of information central to his theory of mind, since only true propositions are informative. Misinformation is no information at all.<sup>25</sup>

### Conclusion

To summarize these arguments, while Pinker's pluralistic solution to the problem of normativity seems an attractive compromise, it is ultimately untenable. Under pressure it collapses into the reductionist picture in which beliefs, values and reasons are merely epiphenomena. Where he seeks to maintain some scope for our reasons, he is forced to abandon central commitments of the evolutionary psychological stance and make concessions to externalism. Evolutionary psychology, in its current form, requires a commitment to psychological causation and methodological individualism. While Pinker may be the acceptable face of evolutionary psychology, Baker is its more consistent representative.

Both reductionist and pluralist evolutionary psychology founder on issues of normativity. As a contribution to social science, evolutionary psychology inadvertently concedes that the really interesting things about human beings, namely our ability to be moral or immoral; to form friendships and to cheat on our partners; to create cultures and to vandalize them;

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to wage war and to make peace treaties; and to form governments and engage in corruption, can only be accounted for in normative terms.

Indeed the various solutions evolutionary psychologists offer for social problems all insist on the need to overcome our biology. On occasion, Pinker even goes so far as to deny any role to biology in the moral sphere, claiming that:

... happiness and virtue have nothing to do with what natural selection designed us to do in the ancestral environment. They are for us to determine. (1998: 52)

It would be rather difficult to find a social scientist these days who accorded such a limited scope for biological factors. This then is the quandary facing evolutionary psychology in its imperial pretensions towards the social sciences. It is only explanatory when it ceases to be evolutionary psychology; as long as it remains evolutionary psychology, it explains nothing. The causal account it hopes to substitute for our normative ones fails at every level. The modular theory proposed by evolutionary psychology can only be rendered useful to the social sciences by a series of Procrustean manoeuvres. Such is the effort involved, and so meagre are the rewards, that we would be ill advised to attempt them.

*Notes*

1. David J. Buller (2005) has recently subjected all of evolutionary psychology's central empirical hypotheses to a detailed and ultimately devastating methodological and empirical critique and found all of them wanting. I will refer to his work at various points throughout this article.
2. For a review of the relevant literature see Buller (2005: 136–8).
3. The simple answer to Pinker's question is that it didn't. The world in which 'ought' emerged was not composed of such things other than in a trivial sense. It was a world of people with needs and obligations, duties and desires.
4. Which, as John Dupré (1998) notes, assumes that altruism is a problem in ways that selfishness is not.
5. I mean by this that evolutionary psychology is extremely vague on the neurological, physiological and chemical details of its explanations. Steven Rose (1998) brings his experience as a molecular chemist to bear in attacking evolutionary psychology's talk about genes.
6. Evolutionary psychologists tend to equivocate on this point, arguing that one may still have behavioural flexibility and narrow modules. At the end of the day their dilemma remains: either they are reductionist or they are vacuous. Unless one can isolate modules then the whole evolutionary psychological project collapses; the only realistic way of isolating modules comes from isolating phenotypical behaviours. The way in which they isolate 'phenotypical' behaviours is usually from statistical generalizations, of which more below.
7. Though there have been some wilder speculations that taking drugs may help attract mates by demonstrating a man's fearlessness and/or immunity to poisons. Even if this story turned out to be true it would only explain drug use, not drug

addiction. After all, while there is a certain plausibility to the idea that the risk-taking associated with drug use might be attractive to some, surely no female would be attracted to an addict. Also, like much of evolutionary psychology, this story only applies to men.

8. The same goes for the idea of a module for each addiction, including as yet unrecognized ones.

9. For a fuller response to evolutionary psychology's lamentable account of rape see Hamilton (2002/3).

10. This is precisely the rationale used to explain mate preferences. The idea is that men have evolved a preference only for women of reproductive age and that hominids who mated indiscriminately would have been wiped out.

11. Even the identification between rape and violence is problematic since it excludes rapes which involve fraud or intoxication.

12. Recent philosophy of science has tended to stress that this may also be an issue confronting the natural scientist, albeit to a lesser extent

13. Robin Baker has put a slightly more Machiavellian spin on this. Women, he argues, are better served by appearing to be faithful and thus obtaining financial support for their offspring, while at the same time seeking dalliances on the side. See Baker (1996) and Baker and Bellis (1995).

14. This reveals an assumption running through evolutionary psychology that bad things are to be explained in biological terms, while good things come within the auspices of society. Even if this were true, it is hard to see how infidelity can be a value-free category susceptible to scientific investigation. To understand why, we need only consider how we would identify an instance of infidelity without the prior assumption that fidelity is a good thing.

15. See the various commentators on Buss's article in *Behavioral and Brain Sciences* (Buss, 1989).

16. See for instance the much vaunted study by David M. Buss (1989). Despite its self-proclaimed rigour, of the 37 cultures studied the overwhelming majority are Western or postcolonial.

17. There is a long-standing and rather tedious debate within philosophy about whether reasons can be causes. I do not intend intervening in this debate other than to mention that one of the consequences of blurring the distinction between reasons and causes is that one ends up treating causes in the physical world as types of reasons, in precisely the way evolutionary psychologists do.

18. If this sounds ludicrously mechanistic it is precisely such a mechanistic denial of intelligent action that underlies an evolutionary psychology account of intelligent behaviour.

19. The same thing goes of course for the Pleistocene gesture.

20. Among other things, the hedonistic theory of motivation ignores the important distinction between justified and vicarious pleasure.

21. 'Propositional attitude' is a piece of analytic philosophical terminology meant to characterize those mental states such as beliefs, desires, hopes, fears, etc., which embed a proposition. So the belief in Father Christmas is the propositional attitude: 'He believes that [Father Christmas exists].'

22. Despite the fact that Pinker pays them fulsome praise, it is unlikely that the theory's developers would reciprocate. Hilary Putnam has advanced a set of devas-

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tating critiques against his own earlier beliefs in both the computational theory of mind and the causal theory of reference in the form advanced by Pinker (Putnam, 1992). Even Fodor is decidedly lukewarm about the use to which Pinker puts the theory (Fodor, 1998).

23. The true story, one suspects, is a little more complex than Pinker implies. It is not irrelevant, for instance, that some of the 'bits of matter' in question are neuropeptides, others enzymes and others electrical signals.

24. British coal-miners used to suck coal to relieve heartburn.

25. There is, of course, a fundamental ambiguity at work here between a mathematical and an everyday conception of information. On this issue see Coulter (1995).

### References

- Baker, R.R. (1996) *Sperm Wars: Infidelity Sexual Conflict and Other Bedroom Battles*. London: Fourth Estate.
- Baker, R. and M.A. Bellis (1995) *Human Sperm Competition: Copulation, Masturbation and Infidelity*. London: Chapman Hall.
- Barkow, J., L. Cosmides and J. Tooby (eds) (1992) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York: Oxford University Press.
- Bryson, B. (1995/1999) *Notes from a Small Island*. London: Doubleday.
- Buller, D.J. (2005) *Adapting Minds: Evolutionary Psychology and the Endless Quest for Human Nature*. Cambridge, MA: MIT Press.
- Buss, D.M. (1989) 'Sex Differences in Human Mate Preferences: Evolutionary Hypotheses Tested in 37 Cultures', *Behavioural and Brain Sciences* 12(1): 1–49.
- Buss, D.M. (1994) *The Evolution of Desire: Strategies of Human Mating*. New York: Perseus/Basic Books.
- Buss, D.M. (2000) *The Dangerous Passion: Why Jealousy Is as Necessary as Love or Sex*. London: Bloomsbury.
- Coulter, J. (1995) 'The Informed Neuron: Issues in the Use of Information Theory in the Behavioral Sciences', *Minds and Machines* 5(4): 583–96.
- Cronin, H. (1993) *The Ant and the Peacock: Altruism and Sexual Selection from Darwin to Today*. Cambridge: Cambridge University Press.
- Daly, M. and M. Wilson (1988) *Homicide*. Hawthorne, NY: Aldine de Gruyter.
- Dupré, J. (1998) 'Against Reductionist Explanations of Human Behaviour I', *Proceedings of the Aristotelian Society*, Suppl. 72: 153–71.
- Fodor, J. (1998) *In Critical Condition: Essays on Cognitive Sciences and the Philosophy of Mind*. Cambridge, MA: MIT Press.
- Giddens, A. (1992) *The Transformation of Intimacy: Love, Sex and Eroticism in Modern Societies*. Cambridge: Polity Press.
- Hamilton, R.P. (2002/3) 'How to Get Real about Rape: Evolutionary Psychology, Coercion and Consent', *Contemporary Issues in Law* 6(1): 79–91.
- Harris, R. (1988) *Language, Saussure and Wittgenstein: How to Play Games with Words*. London: Routledge.
- Heil, J. (1981) 'Does Cognitive Psychology Rest on a Mistake?', *Mind* 90: 321–42.
- McEwan, I. (1997) *Enduring Love*. London: Jonathan Cape.

- Malik, K. (1996) 'The Beagle Sails Back into Fashion', *New Statesman* 125(6 Dec.): 35–6.
- Malik, K. (2002) *Man, Beast and Zombie: What Science Can and Cannot Tell Us about Human Nature*. Piscataway, NJ: Rutgers University Press.
- Nicholson, N. (1998) 'Evolutionary Psychology: Toward a New View of Human Nature and Organisational Society', *Human Relations* 50(9): 1053–78.
- Peele, S. (1998) *The Meaning of Addiction: An Unconventional View*. San Francisco: Jossey-Bass.
- Pinker, S. (1997) *How the Mind Works*. London: Allen Lane/Penguin.
- Putnam, H. (1992) *Renewing Philosophy*. Cambridge, MA: Harvard University Press.
- Rose, S. (1998) *Lifelines: Biology, Freedom and Determinism*. London: Penguin.
- Rose, S., L.J. Kamin and R. Lewontin (1980) *Not in our Genes: Biology Ideology and Human Nature*. Harmondsworth: Penguin.
- Ryle, G. (1954) *Dilemmas*. Cambridge: Cambridge University Press.
- Schutz, A. (1954) 'Theory and Concept Formation in the Social Sciences', *Journal of Philosophy* 51(9): 266–7.
- Studd, M.V. and U.E. Gattiker (1991) 'The Evolutionary Psychology of Sexual Harassment in Organizations', *Ethology & Sociobiology* 12(4): 249–90.
- Symons, D. (1979) *The Evolution of Human Sexuality*. New York: Oxford University Press.
- Symons, D. (1992) 'On the Use and Misuse of Darwinism in the Study of Human Behaviour', pp. 137–59 in J. Barkow, L. Cosmides and J. Tooby (eds) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York: Oxford University Press.
- Thornhill, R. and C.T. Palmer (2000) *A Natural History of Rape: Biological Bases of Sexual Coercion*. Cambridge, MA: MIT Press.
- Thornhill, R. and N. Thornhill (1983) 'Human Rape: An Evolutionary Analysis', *Ethology and Sociobiology* 4(3): 137–73.
- Wilson, E.O. (1975) *Sociobiology: The New Synthesis*. Cambridge, MA: Belknap Press of Harvard University Press.
- Wright, R. (1995) *The Moral Animal: Evolutionary Psychology and Everyday Life*. New York: Pantheon Books.

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