

Realism, relativism and Evolutionary Psychology

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Introduction: social constructionism

Possibly the only certainty associated with the term 'social constructionism' is that it will cause a debate whenever it is mentioned. This journal for example devoted two special issues to the subject, the titles of which – 'Social constructionism and its critics' and 'Varieties of social constructionism' – indicate its fractious potential. ('Social constructionism', 2001; 'Varieties', 2002) A common reaction to the controversies surrounding social constructionism is to engage in boundary work involving a distinction between epistemology and ontology. For example, in his effort to upgrade the 'Science Wars' to a fruitful debate, Michael Lynch urged '(s)cientists and social constructionists alike' to take care to distinguish metaphysical questions regarding Science, Truth and such, from specific scientific studies and truth claims. According to Lynch, constructionism has a role in the empirical study of science and technology (Science and Technology Studies, or STS), but not in the practice of science.¹ Scientists study the world (ontology), while STS studies knowledge (epistemology). 'There is a profound difference between, for example, an epistemological puzzle about the difference between natural and constructed entities and a particular question about whether a feature seen in an electron microscope is a natural property of a cell or an artifact of the preparation.' (Lynch, 2001, p. 59) 'Epistemography' (Dear, 2001) must not be confused with doing science.

When the science concerned is Psychology², such a division of labour between doing science and studying it is problematic. Knowledge is an object of Psychological research. With regard to Psychology, epistemography overlaps with the work of the scientists it studies. It is no wonder then that there is a social constructionist movement in Psychology, that draws much of its inspiration from Science and Technology Studies, or from the same sources as STS.³ Consequently, the ontology-epistemology distinction appears again *within* Psychology, in attempts to steady the waters disturbed by social constructionist psychology. According to Nigel Edley for example, if ontology and epistemology are kept apart, much of the heat is taken out of the debate, and social

construction will become an uncontentious subject. (Edley, 2001) With that demarcation in place, one may claim that all knowledge is constructed without thereby implying that all psychological *phenomena* are social constructions, even though some are (those that somehow depend on knowledge).

The analytical distinction between ontology and epistemology undoubtedly has value in refining the debate about constructionism, and moving it beyond the question whether or not 'everything is constructed'. Edley is right that much controversy could be avoided if it were clear that 'construction' has been used in two different senses. Indeed, as I will show, distinguishing kinds of construction has become the basis of attempts to reconcile constructionism with mainstream Psychology. However, the distinction between epistemic and ontological construction is not an unproblematic resource. Firstly, instituting a separate category for constructed psychological phenomena (such as 'human kinds': Hacking, 1995), leaves the question what does and does not belong there. How many human kinds are there? Who decides, and how? All the important questions seem to remain. Secondly, the distinction between epistemology and ontology is less secure than it seems. Despite its a priori air, scholars in Science and Technology Studies have recently tried to do without it, while avoiding relativism. If it is possible to analyse Science without distinguishing knowing and being, perhaps it is superfluous in Psychology as well. The pacificatory boundary work around social constructionism avoids such interesting questions. I propose then that, ultimately, a better strategy for dealing with the constructionist issue in Psychology is to actively seek conflict.

In order to stir up such a conflict, I will confront a form of Psychology especially averse to social constructionism, Evolutionary Psychology, with a particularly immodest version of relativism, that contained in 'Death and Furniture' by Edwards, Ashmore and Potter (henceforth EAP) (1995). First, I show that Evolutionary Psychology employs the kind of 'bottom line arguments' that EAP identify as typical of realist rhetoric. Next, I describe how Evolutionary

Psychology modifies this realism to counter charges of determinism, and to accommodate social constructionist psychology: in as much as social construction really happens, and some psychological phenomena really are relative, such processes can only be explained on the basis of evolutionary principles. Evolved neural mechanisms make social construction possible. I then present a collection of arguments and empirical studies that speak against this compromise.

Death and furniture

Discussions about realism and relativism often follow a common pattern. The realist is willing to concede that some things may be socially constructed, culturally specific, subjective, or otherwise relative, but, surely, there is a bottom line, a foundation of objective reality, that cannot be relativised. EAP distinguish two broad categories of bottom line arguments: 'Death' and 'Furniture'. 'Death' is a shorthand for all those things that should not be denied because of their moral weight. If everything is relative, then so is the Holocaust, and since it is clearly wrong (morally as well as epistemologically) to relativize the deaths of 6 million people and the suffering of the survivors, a thoroughgoing relativism is untenable. Variations on this argument may involve other forms of pain, misery, oppression, and poverty. 'Furniture' covers everything that cannot be denied, because its reality is obvious, not mediated by language or thought. The exasperated realist thumps the table or kicks a rock, and exclaims that, surely, there is nothing relative about that. In the same vein, relativists are sometimes challenged to jump out of the window and confront the hard reality of the pavement. They don't, of course. They even board airplanes: 'Show me a cultural relativist at thirty thousand feet and I'll show you a hypocrite.' (Dawkins, quoted in Adriaens & De Block, 2006, p. 571) Social constructionism is just 'chic drivel'. (Dawkins again, quoted in Rose, 1996)

Part of the rhetorical force of that last quip of Dawkins, is the association between relativism and empty verbiage. Both 'Death' and 'Furniture', EAP contend, are arguments that are intended to put an end to argument by showing the limits of mere talk. EAP point out the inevitably rhetorical

character of such apparent non-arguments, including non-verbal acts like table-thumping, and attempt to weaken their persuasive force by examining their particulars. The realists' attempts to escape from argument by presenting the naked truth are a form of magic that loses its appeal when we look closely and see 'how it's done' (and discover the extent to which truth's nudity is airbrushed and photoshopped). 'What relativism claims is that there is no reality-producing act, Furniture demonstrations included, that cannot be examined for how it is produced, that does not rely on Method, that cannot be deconstructed, that does not attend rhetorically to an otherwise possible truth.' (Edwards et al., 1995, pp. 38-39)

EAP's analysis of anti-relativist arguments is explicitly intended to undermine any compromise between realism and relativism. 'Death' and 'furniture', they note, 'serve as arguments against taking relativism *to extremes*' (Edwards et al., 1995, p. 26) The bottom line that they invoke fences off the domain of the socially constructed within acceptable limits. Noting that this often concedes quite a lot of ground to relativism, EAP nonetheless reject such a settlement based on limitation or self-restraint: the bottom line itself is always an argument, thus there is no end to rhetoric, and relativism goes all the way down. Not only is such a relativism philosophically conceivable, EAP insist it has moral and political virtues as well, notwithstanding the 'Death' arguments of realists. Reality is best served not by suppressing argument and elevating the Truth to a sacred level, but by subjecting all truth claims to rhetorical inquiry and finding out how they are supported. Relativism is not a metaphysical theory like realism, it is a form of critique. I will now apply this critique to Evolutionary Psychology.

Mere words

Relativism played an important role in the rhetoric of Evolutionary Psychologists when they first presented themselves in the early 1990's. It was a problem so widespread, according to Evolutionary Psychologists, that they dubbed it the Standard Social Science Model. The text that

functioned as Evolutionary Psychology's founding manifesto, 'The psychological foundations of culture' by John Tooby and Leda Cosmides (Tooby & Cosmides, 1992) is devoted entirely to naming, defining and refuting it. The SSSM, they write, dates back all the way to the inception of the social sciences in the work of people like Durkheim and Boas, and has been radicalized by contemporary authors such as Clifford Geertz. Its core belief is that the human mind is formed by its cultural environment. There is no human nature apart from some rudimentary capacities that can only develop in, and are shaped by, the social world the infant grows up in. Thus all mental content and most of its capabilities are of cultural origin, and different cultures therefore produce different minds. As an inescapable result of this reasoning, anthropology, the study of culture, imposes its emphasis on particularity and variability on the social sciences, and the search for general laws has largely been abandoned. Apart from a few basic mechanisms of learning, everything about mind and behaviour is socially constructed. Worse yet, in the hands of Geertz and other radical proponents of the SSSM, this psychological relativism has developed into a full-blown epistemological relativism, in which even the careful observation and description of matters of fact, however particular, has given way to impressionistic interpretation and literary expression. Such authors have de facto rejected the 'epistemological standards of science', and are therefore no longer in a position to make any claims regarding 'what is true of the world' (Tooby & Cosmides, 1992, p. 22).

Tooby and Cosmides' 'SSSM' has remained a central trope in the rhetoric of Evolutionary Psychology. It is still customary for introductory textbooks, historical chapters, and popular expositions of the field to present a contrasting, hegemonic Standard Social Science model. This rhetoric reached its culmination in Steven Pinker's *The blank slate* (Pinker, 2002) in which the SSSM belongs to a much larger complex of Western ideologies, including critical theory, Science and Technology Studies, cultural relativism, Marxism, radical feminism, and modern art. What Tooby & Cosmides identified as social scientific orthodoxy, was in fact part of the central dogma of

Western 20th century culture. A culture that drifted ever further from reality into a comfortable world of words and wishful thinking.

Look at the size of it

Among the arguments that Evolutionary Psychologists level against relativism, a number have the 'surely you can't deny *this*' quality that EAP describe as the main characteristic of bottom line arguments. They attempt to go beyond words by pointing to a reality that is obviously, unavoidably there. Evolution, in particular the evolutionary history of human beings, takes pride of place. Textbooks of Evolutionary Psychology often begin with a chapter on the evolution of Homo sapiens. It is obvious that our evolutionary past must be the most important influence on our behaviour: its significance is clear from its length. 'Our ancestors spent well over 99% of our species' evolutionary history living in hunter-gatherer societies.'⁴ Some 10 million years in fact, during which, 'generation after generation', 'natural selection slowly sculpted the human brain', 'like a stone being sculpted by wind-blown sand'. (Cosmides & Tooby, 1997) EAP note the prevalence of rocks in realist rhetoric, but here, paradoxically, their presence is enhanced because they're not absolutely solid. The winds of time have shaped a rock that isn't just there, like the one Samuel Johnson kicked in response to Bishop Berkeley, but has a very particular, richly textured nature. Our recent history as cultured beings has been so brief compared to our evolutionary past ('only an eyeblink of time'), that it cannot possibly have effaced the marks left by our natural past. Culture is dwarfed by evolution.⁵

Size matters also in another staple of Evolutionary Psychologists' rhetoric, Donald Brown's list of cultural universals. Tooby and Cosmides were well aware that the odd practices of far away peoples have great rhetorical value for relativism. Whenever someone asserts the universality of this custom or that behaviour, they complained, the anthropologist 'riffles through the ethnographic literature' (Tooby & Cosmides, 1992, p. 43) in search of an exception (there is this tribe in Papua

New Guinea that ...), and having found it, declares the custom or behaviour to be learned or cultural, not innate. In the work of the anthropologist Donald Brown they found the arguments to counter this reasoning, but it is Steven Pinker who has used Brown to greatest rhetorical effect. *The Blank Slate* contains an appendix with the list of cultural universals that Brown compiled in 1989. Whereas other Evolutionary Psychologists merely mention the list, Pinker reproduces it, since '(n)othing can substitute for seeing Brown's list in full' (Pinker, 2002, p. 55) It impresses by its sheer endless enumeration. To criticize the list for being a jumble of items from various categories (behavior, preferences, institutions, etcetera) would miss the point. The message is that these are hard, positive facts, unencumbered by theory. This is universality in raw form.⁶

Life and death

'Differential reproduction is the "bottom line" of the evolutionary process', writes David Buss (2008, p. 72). The world that humans evolved in posed a set of 'adaptive problems', 'selection pressures' that weeded out those individuals that could not deal with them. To survive and reproduce, humans must have been able to distinguish ripe from rotten fruit, kin from non-kin, and friend from foe. They had to recognize snakes, spiders and other dangerous animals before it was too late, and potential mates when the opportunity arose. In fact, at the most basic level they must have had the capacity to avoid bumping into things or falling off cliffs. (Pinker, 1997, chap. 1) Life itself has a bottom line: survival and reproduction.

Together, the set of adaptive problems that have shaped human beings through natural selection is known as the environment of evolutionary adaptedness (or EEA for short). 'Technically', it is not restricted to any particular period or location, being the statistical composite of the past selection pressures for an adaptation. It is commonly denoted however as 'life on the African savanah in the Pleistocene', or simply 'the Stone Age', and as such it serves as a fertile source of bottom line arguments. Crucial is the contrast between the Pleistocene and modern life. About

10,000 years ago humans started switching to agriculture and became sedentary, setting in motion a cultural history that changed our environment so quickly that our genome has not had time to evolve in response to it. As a result, 'our modern skulls house a stone age mind' (Cosmides & Tooby, 1997). To explain our behaviour, then, we need to refer to the environment of evolutionary adaptedness. Other factors, such as our conscious motivations or current environment can furnish 'proximate' explanations at best. We may think we enjoy chocolate because it tastes good, but it does so because a preference for sugar and fat had survival value in the ancestral environment. That is the 'ultimate' explanation. To really make sense of our behaviour, we need to push through the thin veneer of consciousness and contemporary culture and reach the explanatory bedrock of hunter-gatherer life on the savanna.

Evolutionary Psychologists insist that the travails of life do not allow a general solution: each problem has to have given rise to an adaptation. One tool for each task. The brain is like a Swiss army knife, a collection of tools engineered by natural selection. It has to be: specialization is 'a recurrent engineering outcome' (Tooby & Cosmides, 2005, p. 17) This is no less true of engineering by natural selection as it is of developing new software for your computer. In the case of the brain, the two are in fact essentially the same. 'To survive and reproduce reliably as a hunter-gatherer' one would have to solve many, various 'information-processing problems', and a 'program' that is good at solving one kind of problem, tends to be bad at solving others. (Tooby & Cosmides, 2005, p. 18) Hence natural selection would necessarily produce a modular brain that structurally mirrors the environment of evolutionary adaptedness, rather than the 'general problem solver' of early cognitive science, which would adapt equally badly to any environment.⁷

Thus, our mental architecture reflects the hard facts of life in the EEA, not the conditions of the culture we happen to be in, or the way our parents raised us. 'Our souls (...) were not bestowed from the heavens but instead arose from the dirt at our feet. (...) The uniqueness of human nature did not fall as dust from the wings of passing angels but bore up battle-hardened and bloodied from

the clay below.' (Rossano, 2003, p. 20) Underneath the thin layer of comfortable illusions we hold about ourselves, lies the nitty-gritty of biological reality: matters of life and death. At the basic level, where it matters, there is nothing relative about our minds. There couldn't be, because in nature, relativism kills.

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Anti-relativism is not just a theme in popularisations and introductory expositions of Evolutionary Psychology, in its manifestos and histories. These are perhaps the obvious places to look for rhetorical devices, because they are on the boundaries of the field, where Evolutionary Psychologists talk about their discipline to others and to themselves. (Cassidy, 2006) Anti-relativism is equally present in the research papers of Evolutionary Psychology. Consider for example Devendra Singh's influential study of 'female physical attractiveness'. (Singh, 1993) Singh takes as his starting point the secure foundation of sexual logic. It is the 'fundamental assumption of all evolution-based theories of human mate selection' (p. 293) that female physical attractiveness mainly reflects a woman's reproductive qualities. Men, whose reproductive success depends primarily on their mates' fertility (since they don't bear children themselves), have evolved to be receptive to the visual cues that signal this hidden quality, and therefore greatly value what they call 'good looks'. Indeed, men's fascination with female beauty appears to be 'a cross-cultural universal' (p.293).⁸ It is commonly thought that the actual standards of beauty are culturally and historically variable, but if evolutionary theory is valid, the real cues should be universal and constant, and they should be linked to health, fecundity and the chances of successfully carrying, giving birth to, and nursing a baby.

Singh then proceeds to argue that body fat and its distribution meets this criterion: fat distribution, expressed in the ratio of waist circumference to hip circumference, is an accurate indicator of health and reproductive function. Studies indicate that a waist-to-hip-ratio (WHR) of

around .7 is best. The question is, therefore, whether men universally pick up on this cue and judge a ratio of .7 to be the most attractive. Singh confronts head-on earlier research that had come to the relativistic conclusion that ideal body shape (judging from Playboy centerfolds and Miss America contestants) has seen significant changes in the 20th century. He calculates the waist-to-hip-ratios of the centerfolds and contestants and shows that on this measure, female attractiveness has stayed nearly identical, at around .7. Having beaten the relativists on their own turf, Singh presents a second study, designed to show that men actually find a low waist-to-hip-ratio 'a critically important feature' (p.297) in women. When asked to judge the attractiveness of female figures represented as line drawings, men tend to favour those with a waist-to-hip-ratio of .7, regardless of their weight. Moreover, they think the figures with a waist-to-hip-ratio of .7 are healthiest and best capable of having children. Clearly then, 'men have a mechanism to detect this signal' of the 'concealed reproductive value of the female' (p.303).⁹

Finally, Singh broadens the scope of the paper again and places the waist-to-hip-ratio in the wider context of 'mate selection'. Obviously, men look at more than figure, so the question arises how this cue relates to others such as facial beauty. Singh hypothesizes that the waist-to-hip-ratio is 'a wide first-pass filter', designed to automatically exclude those females not worth any further trouble. The waist-to-hip-ratio is the most basic filter, selecting for the basic function of any mate: reproduction. Upon this universal, unchanging foundation rest higher levels of contextually relative selection. A second filter may be responsive to weight (advantageous in case of recurrent food shortages), or cultural group markers such as jewellery or tattoos. Finally, a third and most culturally responsive filter would be sensitive to personality factors such as sense of humor and religious affiliation. Such secondary and tertiary criteria however can only exist because ancestral men have been able to select those mates who are capable of bearing offspring at all.

Female physical attractiveness, according to Singh's influential¹⁰ work, is a hierarchical affair in which the variable, the relative, the local are both secondary to and dependent on a

universal, unchanging foundation of raw reproductive power, expressed in a single number. An apparently bewildering range of cultural variation – bound feet, embossed skin, high foreheads, lip disks, tattoos, Rubens and Twiggy – rests on a solid, physiological base: body fat and its distribution. In the world of sex, the WHR has all the qualities of a bottom line argument: it is immediately obvious (it is, for example, 'orientation independent', remaining constant 'whether viewed from front, behind or side' (Singh, 1993, p. 304)), is prior to talk (in fact a man need not even be aware he attends to it), and it is very persuasive. To men, at least, it is what is real about women.

Death

'Death' is EAP's label for those arguments that assert the immorality of relativism or warn of the consequences of 'denying reality'. It is a category of tropes that deal with the relation between fact and value, science and politics, is and ought. EAP analyse 'Death' as a set of tools in the realist's rhetorical repertoire. There, the 'value' side of the dichotomy is put to work for the 'facts': relativizing such horrors as The Holocaust is clearly evil, therefore relativism is wrong; or: relativizing facts (however insignificant) will lead us down a slippery slope to serious moral problems. However, in their critique of this category, EAP note that relativists could employ 'Death' arguments as well. Realism can be used for equally immoral purposes, as an excuse for inaction: 'you can't change reality, human nature (...) life *isn't* fair' (Edwards et al., 1995, p. 34) Indeed, Evolutionary Psychologists are often confronted with precisely this kind of argument. Their theories of human nature, it is said, are an excuse for sexism and other kinds of oppression, conservative politics dressed up as science. What the Holocaust is for realists, Eugenics is for critics of sociobiology and Evolutionary Psychology.

Evolutionary Psychologists have met these challenges with a repertoire of counter-arguments. They delve into history, philosophy and logic to re-align fact and value in a way that is

most advantageous for their enterprise. A first line of defense employs Hume to deny that a connection between conservatism and Evolutionary Psychology is logically possible. What Evolutionary Psychologists are charged with, drawing conservative conclusions from scientific research, simply cannot be done. After all, as Hume argued, to derive 'ought from is' is an error of logic: the naturalistic fallacy. '(O)ne cannot logically deduce moral tenets from the natural state of the world' (Rossano, 2003, p. 49) Alas, this point, 'well known and understood in scientific circles' (ibidem), is often lost on the general public, including critics of Evolutionary Psychology.

A second type of counter-argument returns the charge: a look at human history, say Evolutionary Psychologists, shows that the Utopianism that results from relativizing human nature has often led to unspeakable horrors. 'How many millions have died because a Stalin or Mao or Pol Pot thought it would be easy to mold human nature to their will?' (Cosmides, 2001) This argument invokes the moral and epistemological undeniability of pain, suffering and death in support of psychological realism.¹¹ Relativizing human nature is not an innocent academic exercise. It may look virtuous, a case of commendable idealism, but it is a potential killer. 'Indeed, we may all have been complicit in the perpetuation of vast tides of human suffering -- suffering that might have been prevented if the scientific community had not chosen to postpone or forgo a more veridical social and behavioral science.' (Tooby & Cosmides, 2005, p. 7) By making our ideals primary, we commit the 'moralistic fallacy', defined as deriving is from ought. A logical error at least as grave as the reverse, such political correctness appeals by its apparent moral superiority. To really do good, however, we must look reality in the eye, because only armed with a thorough knowledge of human nature can we improve our lives, say Evolutionary Psychologists.

Mediation

So far I have argued that, from a rhetorical perspective, Evolutionary Psychology is an argument against psychological relativism. It accuses social constructionism (lumped together with

postmodernism, deconstructionism, and a number of other schools of thought) of denying the reality of human nature. To affirm that reality, Evolutionary Psychologists employ, among others, the two categories of arguments that EAP have labelled 'Death' and 'Furniture'. Such arguments attempt to convey a reality that is overwhelming, so obvious that it cannot be argued with. However, as helpful as such rhetorical tropes may be to their cause, for Evolutionary Psychologists they come with a price and their use is limited. Evolutionary Psychologists must not invoke a human nature that is too powerful, lest they be accused of determinism.

The charge of determinism was at the heart of much of the criticism levelled at Sociobiology. Sociobiologists, it was said, wrongly assume that genes determine behavior, and their dubious politics were the inevitable result. (Lewontin, Rose, & Kamin, 1984) If you think that people can only follow the dictates of their genes, then obviously there is little scope for social action. Evolutionary Psychology, so close to Sociobiology that friend and foe sometimes confuse the two, wants to make sure that this accusation does not stick. Determinism is almost universally rejected, it is a scientifically and morally bankrupt idea. On the other hand, in denying determinism Evolutionary Psychologists do not want to yield too much to their opponents. This is clear for instance in the discussion around the concept of the 'naturalistic fallacy'. Although some Evolutionary Psychologists make enthusiastic use of it to deny the charge of determinism, others (for example Barrett, Dunbar, & Lycett, 2002, p. 183; Holcomb, 2004) are more circumspect. After all, if there were no relation between facts and values, Evolutionary Psychology would become entirely academic. Its relevance would be boosted if its theories had practical consequences. We should not pull is and ought too far apart and conclude that 'factual knowledge and scientific findings' must not play any role in policy (Crawford, 2004, p. 6) Thus, the specter of determinism puts Evolutionary Psychology before a rhetorical dilemma: on the one hand it is committed to combatting relativism, on the other hand it must avoid positing a reality that is too hard. To avoid the accusation of determinism, it cannot simply rely on the primal realism that is conjured up by

'Death' and 'Furniture' arguments. Evolutionary Psychologists solve this problem with a second rhetorical repertoire, one of mediation.

Among the many influential arguments and rhetorical devices in Tooby & Cosmides' manifesto was their resolute rejection of the zero-sum conception of human nature and human culture. Instead of seeing the two as mutually exclusive, so that the more 'natural' a behavior is, the less 'cultural' it can be and vice versa, Tooby & Cosmides insisted that 'more nature' meant 'more culture'. In an often quoted formula: 'Evolved structure does not constrain; it creates or enables.' (Tooby & Cosmides, 1992, p. 39) Humans have been able to develop such complex cultures not because they have fewer instincts than other primates, but because they have more. Having more information processing mechanisms allows us to process information from more sources and thus to respond to our environment in a more complex way. Moreover, the much-vaunted flexibility and variability of our behavior depends on the architectural complexity of our evolved information processing mechanisms, that enables them to be responsive to environmental contingency. The richness of human culture is proof of an intricately structured mind. The relativists are hoist with their own petard: the more they emphasize culture and its diversity, the more they furnish evidence of the power of human nature.

Thus, Evolutionary Psychologists claim to 'dissolve' the misconceived opposition of nature and nurture. (Buss, 2008, p. 58) Our evolved mental architecture mediates between the environment and the perennial demands of survival and reproduction. Many adaptive problems have the same form the world over, and our responses to them are cultural universals. In other cases, when environmental variation is relevant, the complexity of our mental mechanisms allows us to respond differently depending on situational contingency, giving rise to cultural variability ('evoked culture'). Our mind is like a juke box: its architecture is universal, but its output may vary depending on the input. Mental mechanisms are mediators, not deterministic producers of behavior.¹² Our evolved psychological adaptations 'translate variable environments into behavioral

outcomes, thus creating variation within and between cultures' (Gangestad, Haselton, & Buss, 2006, p. 76). Finally, what variation cannot be explained this way, is the result of 'cultural epidemiology', the differential transmission of cultural content. (Tooby & Cosmides, 1992, pp. 116-117) But the transmission of culture too requires 'evolved psychological mechanisms'. (Gangestad et al., 2006, p. 91)

With mediation as the essence of human nature, Evolutionary Psychologists can return the charge of determinism: 'Too often, commentators in the social sciences and humanities confuse a biological understanding (...) with the claim that such behavior is 'natural', inevitable and cannot be changed.' (Barrett et al., 2002, p. 267) If anything, a thorough knowledge of our brain's modular architecture will increase the possibilities for changing our lives. In the future, we may become capable of 'ontogenetic engineering' (Daly, Wilson, & Weghorst, 1982, p. 24), directly steering the developmental process at the molecular level. Until then, knowing the conditional logic implemented in our mental machinery (if...then) enables us to choose the optimal inputs for the output we desire.

The mediation concept even allows Evolutionary Psychologists to incorporate social constructionism. Several authors have recently argued that a suitably moderate version of social constructionism is compatible with Evolutionary Psychology. (Mallon & Stich, 2000; Cosmides, 2001; Plotkin, 2002; Wilson, 2005) Adriaens & de Block (2006) argue for example that male homosexuality may be a social construction with an evolved, biological foundation. Underlying homosexuality as a sexual identity, a relatively recent phenomenon, is the evolved trait of 'same-sex sexuality', an adaptive strategy that is triggered in some circumstances and can be found in many animals. Sociohistorical conditions around 1700 were such that some men began to commit themselves exclusively to this behaviour, and the modern homosexual appeared. The details of such proposals for an 'evolutionary social constructivism' vary; Wilson (2005), who came up with the term, believes it requires including non-genetic evolutionary processes, a move that not all

Evolutionary Psychologists would agree with. In each case however, evolution provides the foundation upon which social construction can occur; only if it accepts this fact, and learns to work with evolutionism rather than against it, can social constructionism become theoretically and practically relevant. 'The only way forward for social constructivism in a practical sense is to master and advance our knowledge of evolution'. (Wilson, 2005, p. 36) Putative radical, anti-realist, anything-goes versions of constructionism are explicitly excluded from the settlement. (Mallon, 2007; Wilson, 2005)

Pressing the point

I have identified in the rhetoric of Evolutionary Psychology several examples of bottom line arguments for realism. Together they point to human nature as the universal foundation of human behavior, and fence in the domain of variability, relativity and construction. Like the realists that EAP criticize, Evolutionary Psychologists set limits to what constructionism can reasonably claim. A critique of this rhetoric from the relativist perspective of EAP is fairly straightforward. First, I have identified it as consisting of arguments that serve to produce a particular effect. It conjures up a world before talk, a hard reality that one cannot argue with but at the price of death. Second, I have pointed to some of the rhetorical context of these arguments, such as the debates over determinism and Sociobiology, and I've briefly indicated some critiques of such putatively incontestable facts. In sum, realism, including that of Evolutionary Psychologists, is always mediated by argument and rhetoric. Relativism goes all the way down.

However, as I made clear in the preceding section, it would be a misrepresentation of the Evolutionary Psychologists' version of realism to leave it at a description of their Death and Furniture arguments. Behind those lies another register: the obvious, inevitably mediated nature of cultural variability. Evolutionary Psychologists aim not just to limit constructionism and divide the terrain of human behaviour. Variability is an expression of an evolved brain with universal

architecture working in different circumstances. Relativity is always mediated by material mechanisms. Realism goes all the way up.

We could now settle matters by saying that EAP are concerned with epistemology, with knowledge claims, whereas Evolutionary Psychologists deal with ontology, a particular part of the world (brain and behaviour). We could agree that scientific theories are social constructions, and thus in some sense 'relative', and even that to some extent the human mind itself is a construction, while still assuming there is a real, unchanging core to it, that we call 'human nature'. There are good reasons however to postpone such a settlement, press the point, and pursue the relativist strategy of EAP yet further. EAP urge us to consider the rhetorical embeddedness of every 'reality-producing act'. In this case, the realism of 'human nature' (it's undeniable, 'we'll just have to face it' character) is an effect of a particular view of mediation, and of the distinction between ontology and epistemology. I shall put both in their rhetorical context of alternative conceptions.

Specification and emergence

The mediational mechanisms that Evolutionary Psychology posits are, at heart, if-then statements: they specify relations between input and output. Such specifications can be complex and contextually sensitive, but they are nevertheless precise. Given a certain input, a certain output must follow: 'Evolved neural architectures are specifications of richly contingent systems for generating responses to informational inputs.' (Tooby & Cosmides, 2005, p. 13) The specifications of the modules are, in essence, clear-cut statements of conditional logic. Some time in the future, Evolutionary Psychologists will be able to produce a full description of human nature, with the clarity and precision that logic allows. Evolutionary Psychologists, keen to distance themselves from genetic determinism, do stress that we are not born with our modules fully formed. Mental mechanisms, with their specifications, develop from an interplay between various factors, including aspects of the environment. Again, however, there is a bottom line to this interactive process of

emergence: it is 'pre-specified' at the start of the causal chain, in the genes that contain the instructions for the developmental program and specify how genes and environment will interact.

Mediation, according to Evolutionary Psychology, is thus a matter of precisely specifiable inferential rules, the result of a developmental process that itself is pre-specified in the genes. Both of these aspects of mediation are debatable. Biologists and psychologists who work in the developmental systems paradigm have attacked the notion of 'pre-specification'. They reject the idea that 'the bodily forms, physiological processes, and behavioral dispositions of organisms can be specified in advance of the individual organism's development'. (Lickliter & Honeycutt, 2003a, p. 820) 'Pre-specification' is based on a fundamental mistake, that of assuming that phylogeny (the evolution of the species) is a process separate from ontogeny (the development of individual organisms). Only if we keep phylogeny and ontogeny analytically apart does it make sense to say that genes contain information (specifications) that feeds into the interaction with an environment.¹³ The interactionism that Evolutionary Psychologists pride themselves on, misses the point: development is primary. Phylogeny is the evolution of 'developmental systems', that include genes but many other factors as well. Natural selection does not 'design' organisms, as Evolutionary Psychologists like to say, rather it is a 'filter for unsuccessful phenotypes generated by developmental processes' (Lickliter & Honeycutt, 2003a, p. 826) The role of genes in the process of development cannot be specified independently from that of other factors. As Lickliter & Honeycutt show with many examples, what a gene 'will do' depends on the other elements of the developmental system. 'The influence of genes, neuronal architecture, the physical surround, or any other factor in development can be understood only in relation to the developmental system of which they are part.' (Lickliter & Honeycutt, 2003b, p. 868) The specifications of the various parts of the system are emergent properties. '(M)echanisms only become domain specific (...) as a function of actually working in that particular domain' (Karmiloff-Smith, 2000, p. 145).

In Lickliter & Honeycutt's analysis, the 'premise of prespecification' (Lickliter & Honeycutt,

2003a, p. 826) is an indispensable support for the theory of mental modularity, and they don't pursue their critique of this theory beyond showing that mental architecture is not prespecified in the genes, since nothing is. But the specificity of mental modules (once they have developed) is doubtful in itself as well. Simon Hampton has pointed out that the antecedent clauses that plug into the counterfactual mechanisms – the 'ancestral cues' that constitute the 'if' of the 'if-then' algorithms – are statistical composites: they are sorts of situation, classes of problem. It is not a particular snake we've evolved to be afraid of, but 'snakeness' in general. As such, they cannot be specified algorithmically. Moreover, if it is true that human evolution was driven to a large extent by the demands of sociality, that it was a 'psychological arms race' in which 'the key adaptive problem(s) were other minds', than it is all the more unlikely that the cues that our mental modules react to are specific: the problems of social life can take 'potentially endless forms'. (Hampton, 2004, p. 49) Whether, for example, some goings-on constitute a social exchange (which should turn on the cheater detection module discovered by Leda Cosmides) cannot simply be detected, in the way our visual cortex detects horizontal straight lines. It requires interpretation, thinking, or, in the language of Evolutionary Psychology, domain-general cognition. (Buller, 2005; Fodor, 2000, pp. 75-77) The input of the cheater detection module (assuming there is one) is not specified in advance: it becomes specific only in practice. Again, specifications are emergent properties.¹⁴

This view of specifications resonates with developments in Science and Technology Studies. Karin Knorr Cetina for example has formulated her version of constructivism in terms of specification: 'While the existence of the world as a material, physical entity independent of us may be granted on principle, the existence of specific objects identified in terms of their character cannot be so granted. Specific ontologies flow from cultural practices and hence must be seen as secondary, not primary. (...) Thus specific scientific entities like sub-atomic particles begin to 'pre-exist' precisely when science has made up its mind about them and succeeds in bringing them forth in the laboratory.' (Knorr Cetina, 1993, p. 558) Bruno Latour has described this process as

mediation or articulation (e.g. 'The historicity of things', in Latour, 1999, pp. 145-173) Scientific laboratories are places where mute 'stuff' becomes articulated into well-defined objects with predictable behaviour. Things have historicity, 'the contours of material agency' are 'temporally emergent' (Pickering, 1993, p. 564). Construction, then, is not limited to discourse and representations. Indeed, it erases the very distinction between the epistemic and the ontological, or, as Jensen puts it, 'epistemology collapses into ontology' (Jensen, 2004, p. 248). Not only is knowledge a part of the world (James, 1907), but reality is not the unitary, unchanging foundation that bottom line arguments make it out to be. It has acquired the multiplicity and disputability that was formerly restricted to representations. Science and Technology only succeed in unifying parts of this world, turning them into fully specified objects, at great effort and no guarantee of success. (Latour, 2005)

In this perspective, there is no fundamental difference between the work of scientists and engineers, and the development of individuals: it is in all cases a process of specification. In consequence, Science and Technology Studies is relevant to Psychology. An example is the use of engineering metaphors in Evolutionary Psychology. Our brain, Evolutionary Psychologists tell us, is a collection of tools, a 'Swiss army knife' (Cosmides & Tooby, 1997) of 'hundreds or thousands'¹⁵ of specialized mechanisms. Their action, as we have seen, is thought to be predetermined: a genetically pre-specified developmental process yields modules that are in principle entirely specifiable in terms of if-then statements. Each little machine (or its underlying developmental program) has been crafted by natural selection to solve an adaptive problem, so that the properties of the machine come to fit the properties of the problem 'like a key in a lock' (Tooby & Cosmides, 1992, p. 69). Empirical studies of technology¹⁶ give little support to this view of engineering. Non-metaphorical machines are not the solution to an independently existing, objectively specifiable problem. The problem, the solution, and its users tend to emerge hand in hand. Whereas Evolutionary Psychologists see mental machinery as the connection of input and output, both

objectively specifiable, via the rigid rods of logic, in real engineering input and output, problem and solution, product and user, tend to become specified in the process. Evolutionary Psychologists may counter that in humans this process of engineering is, to all intents and purposes, finished: ever since cultural evolution overtook biological evolution as the driving force of human history, our 'Stone Age minds' have remained essentially the same. Whatever has emerged from the engineering process of natural selection can now be fully specified. But this assumes that the mind's machines are fully defined by their immediate input and output: the rest of the world has no bearing on what they are, on their specifications. Again, empirical studies of technology tell a different story.

Machines are players in networks of other mediators, and what a particular machine can do or will do depends on their connections with users and with other tools. It is impossible to specify what a machine really is, what it really can do, without taking its context into consideration. Andy Clark, among others, has done much to advance the argument that the same is true of mental machinery: cognition is not restricted to the confines of the skull, but involves a growing network of cultural tools, from pencils to search engines. (Clark, 2003) With each new tool, the specifications of the whole system change.

Conclusion

I have defended EAP's contention that there is no a priori limit to relativism, no point beyond which it becomes unreasonable 'in principle', by contesting recent attempts at accommodation between Evolutionary Psychology and social constructionism. The notion that there is a fully specifiable core human nature, put forward as the basis of such a combination, has been challenged by psychologists and biologists who see specifications as emergent from developmental processes. Moreover, the ontological-epistemological distinction that is often called in to support such reasonable compromises, is problematic given that knowing is such a central subject in psychology. Especially where psychology is concerned, we should adopt the heuristic that there is no difference

between epistemology and ontology, that the study of science is directly relevant for the study of mind and behavior and vice versa. Science and Technology Studies invites us to examine the production of facts, rather than accept them as given; we should approach human nature with the same attitude. This also suggests a different perspective on the relation between Psychology and its 'object'. If cognition is not the operation of a collection of machines with particular specifications, but instead the action of a dynamic, heterogeneous system of tools, inside and outside the skull, then Psychologists must share their epistemic authority with others. Determining the specifications of human nature is not the business of Psychologists alone, it is the everyday work of everyone. In the process of doing cognition, ordinary people constantly build, rebuild, test and repair their psychotechnical networks. (Derksen, 2007) Science, including Evolutionary Psychology, feeds into this process¹⁷, but cannot determine its character on its own. Critical approaches such as constructionism in Psychology and STS contain the invitation to resist any foreclosure of the issue on the authority of Science. Of course, that the properties of the brain are historically and developmentally emergent does not entail that our brains are capable of anything and everything. It means that there can be no final list of specifications, because they depend on an evolving context. Not 'anything goes', but what goes is never definitively settled. We should focus on specification as a process, rather than on 'specifications'. The bottom line is the temporary result of that process.

- 1 Science and Technology Studies is a loose collection of empirical approaches to subjects that were traditionally the exclusive domain of philosophy: the nature of science, truth, realism, the relation between theory and application, and so on. Constructionism is a common perspective, although the term that is usually preferred is constructivism. The recent *Handbook of Science and Technology Studies* (Hackett, Amsterdamska, Lynch, & Wajcman, 2008) presents the state of the art.
- 2 Following Graham Richards (2002) I will distinguish the discipline of Psychology from its subject by capitalising the former.
- 3 The classic formulation of social constructionist Psychology and its relation to STS is Gergen (1985).
- 4 Bridgeman uses a different figure: 'The past. 95% of our history.' (Title of chapter 2, Bridgman, 2003)
- 5 Research showing 'recent positive selection in the human genome' (Voight, Kudravalli, Wen, & Pritchard, 2006) casts doubt on this bottom line. Steven Pinker has changed his opinion on this matter, although he still believes our pre-cultural history, being vastly longer, must have made the largest imprint on our genome. (Pinker, 2008)
- 6 Neil Levy (Levy, 2004) argues against the inference of innateness from universality.
- 7 Evolutionary Psychology's 'massive modularity' thesis is criticized in Fodor (2000) and Buller (2005).
- 8 It is not mentioned in Brown's list of cultural universals, however.
- 9 Freese & Meland (2002) present evidence that counters Singh's conclusions.
- 10 Singh's paper has become the Kuhnian paradigm for a slew of similar studies: empirical demonstrations of the real determinants of sexual attraction that lie behind our conscious preferences, or of the adaptiveness of such tastes. Two examples: 'Facial attractiveness in men provides clues to semen quality' (Soler et al., 2003), and 'Masculine somatotype and hirsuteness as determinants of sexual attractiveness to women' (Dixson, Halliwell, East, Wignarajah, &

Anderson, 2003), the latter one of many studies that demonstrate the importance of the waist-to-shoulder ratio as the basis of male attractiveness.

11 A more understated version: 'Human endeavours to socially engineer without regard for human nature have been spectacularly unsuccessful, as in various attempts to sustain ideologically inspired social systems.' (Nicholson, 2005, p. 402)

12 See (Ridley, 2003) for a similar view of genes as mediators.

13 Lickliter and Honeycutt call this the 'phylogeny fallacy'. (Lickliter & Honeycutt, 2003a, p. 822)
Dressing up arguments as 'Logic' is a common rhetorical ploy, not restricted to Death and Furniture.

14 The same applies to 'output': what we are capable of can only be specified in practice. In the words of John Dupré: 'the relation between intrinsic capacities and actual capacities is mediated by social conditions' (Dupré, 2002, p. 167). Some people are unable to voluntarily move their legs, but what this means for their mobility depends on a context including city planning, financial support and social expectations.

15 Ever since Tooby and Cosmides used it (Tooby & Cosmides, 1992, p. 40), Evolutionary Psychologists have continued to use this phrase to indicate that there are lots and lots of modules, but they don't know how many.

16 A classic compilation is *Shaping Technology/Building Society* (Bijker & Law, 1992)

17 As argued from a developmental systems perspective by Susan Oyama (1993), but the point has been made many times.

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