3.7   Methodological Challenges Revisited

Now that we have a richer understanding of evolutionary psychology methodology and how it is used to generate novel predictions, let's revisit four of the methodological challenges we originally saw in the previous chapter and see how they now stand: the no stable problems

objection, the fine grain problem, the no constraints objection and the issue of whether evolutionary psychology really is heuristic in practice. Regarding the other methodological objection we looked at in the previous chapter, the thinness of evolutionary psychology explanation, we shall examine that in greater detail in the next chapter, where among other things we shall discuss the issue of whether it's possible to make adaptationist explanations deeper.

3.7.1   No Stable Problems Objection

Recall that Sterelny (1995) claims that there are, in fact, no stable problems to which natural selection can engineer specialised solutions in the manner proposed by evolutionary psychology. Recall that the thought is that evolutionary arm races destabilise adaptive problems and thereby destabilise evolutionary psychology.

> So there will be real troubles in store for a methodology of discovering the mechanisms of the mind that proceeds by first trying to discover the problems which it must solve, and then testing for the presence of the solutions. For that methodology does not reflect the interactive character of social evolution (*ibid*.: 372).

We can now see that Sterelny has made an incorrect inference. The consequence of evolutionary arm races is not that adaptations cannot evolve; rather, it means we should expect them to be richly calibrated, as well as to expect the coevolution of antagonistic adaptations. The more two evolutionary opponents, such as males and females, can second-guess each other, the more complex their relevant psychological adaptations become. Just as it seems inescapable that organisms are well adapted to particular environments, so too it seems inescapable that certain adaptations are reinforced and made more complex by repeated bouts of competition with antagonistic coevolving rival mechanisms.

Furthermore, Sterelny is wrong to claim that evolutionary psychology cannot reflect this interactive character of evolution. It can and does. As before, what Sterelny sees as a problem for the programme is actually a heuristic strength. For example, human females have concealed ovulation. Thanks to evolutionary psychology, we now suspect, and have some evidence, that men can unconsciously detect ovulation cycles. During fertile periods, women unconsciously increase mate search activities; and men unconsciously counter-act by increasing mate guarding activities. It's a dialectical dance, a Darwinian dance, one performed daily below the thresholds of consciousness.

Duntley and Shackelford (2012) propose that an antagonistic, coevolutionary arms race has produced adaptations to strategically exploit others and defences to avoid the costs of victimisation. They hypothesise that adaptations to damage status co-evolved with victim defences against status damage; adaptations for theft and cheating co-evolved with victim defences against theft and cheating; and adaptations for violence co-evolved with victim defences against violence.

Indeed, one can postulate feedback within dyadic antagonistic coevolution. For example, Duntley and Shackelford (2008) hypothesise that adaptations that produce criminal behaviour create selection pressure for the evolution of counter-adaptations in victims, which, in turn, create novel selection pressures for the evolution of counter–counter adaptations in criminals. Similarly, Trivers (2011) hypothesises that because selection has led to deception detection, there has been selection for self-deception so as to better limit and hide deception cues from others. In other words, because people have adaptations to detect deception, we self-deceive ourselves in order to better deceive others.

Furthermore, we can propose not just dyadic antagonistic coevolution but also triadic antagonistic coevolution. Duntley and Shackelford (2008) note that when three individuals have conflicting interests in the same adaptive problem domain, a refinement in one individual's adaptation can simultaneously create new selection pressures on the other two individuals. The counter-adaptations that evolve in each of the other two individuals as a result can then create further selection pressures.

3.7.2 The Fine Grain Problem

Evolutionary psychologists hypothesise domain- or problem-specific adaptations. So there will always be a question of granularity. Recall the fine grain objection: How do we individuate adaptive problems? How do we characterise them? How fine or coarse is the grain of a domain? How specific is the adaptive problem?

The first response is born out of considerations articulated in this chapter: namely, to stress that these possibilities can be tested. Is predator threat a single adaptive problem, or one of a series of adaptive problems, with different predator threats creating different adaptive problems? Well, we can put these different possibilities to the test. These different options should lead to different design features. For example, a psychological adaptation dealing with predator threats in general should have different design features to a psychological adaptation just dealing with a subset of predator threats.

Hence, instead of being seen as an embarrassment, the issue of individuation, which often arises when refining a successful hypothesis, can be seen, and I believe should be seen, as a heuristic strength. For example, a recurrent adaptive problem is the possibility of female partner infidelity. The fitness costs for failing to solve this problem are cataclysmic; solving this problem will deliver significant fitness gains. Upon closer design analysis it becomes apparent that the adaptive problem of female infidelity is composed of a number of subproblems including: (1) preventing female infidelity; (2) correcting female infidelity; and (3) anticipating female infidelity (Shackelford, 2003). Each of these possibilities opens up new lines of research. Now notice this isn't an outrageous unconstrained speculation. This isn't going into labyrinths of possibilities and frustrating the usefulness of the heuristics: it's a simple and effective breaking down the problem into several subproblems more suitable for hypothesising and designing experiments over.

So the fact that an adaptive problem can often be decomposed into several subproblems and further refined can only be a good thing if we're on a quest of exploration and discovery.

The second response is to highlight that this problem is ubiquitous to functional hypotheses, not unique to evolutionary functional hypotheses. As Machery (forthcoming in *Oxford Handbook of Philosophy of Psychology*) notes, psychologists, who are in the business of investigating psychological traits, often characterise these traits functionally, and hence their efforts are equally subject to the problem of individuation. So really there is nothing new here.

3.7.3   No Constraints Objection

Even with good heuristics it's possible to produce more than one hypothesis for a given target and hence it is only to be expected that it's sometimes possible to hypothesise alternative adaptive solutions for a given adaptive problem. In the case of an evolutionary science this, especially, shouldn't be seen as surprising: there is a degree of contingency present in the evolution of traits and alternative evolutionary trajectories are possible. This also shouldn't be seen as problematic. If alternative adaptationist hypotheses for a given target are possible this should be articulated to the point of generating rival, mutually exclusive predictions across one or more sets of observable measurements. Laying out rival predictions, specifying what would count as evidence for or against these rival hypotheses, finding the data and then evaluating the hypotheses—that's what a hypothesis-driven empirical science should do.

Evolutionary psychologists themselves are not blind to this. For example, Alcock and Crawford (2008: 37) claim that evolutionary psychologists recognise that sometimes several adaptive solutions can be hypothesised for a given trait and that they test them accordingly:

> These articles often have considered several different tentative hypotheses on the phenomenon, a reflection of the fact that adaptationist researchers can often think of multiple explanations for this or that trait. When there is more than one hypothesis to consider, the need for testing in order to reject incorrect ideas is obvious.

This is especially likely to be the case when an adaptive problem is being investigated for the first time. Buss and Shackelford (1997) is an illustration of this. They examined a range of mate retention tactics in marriage from an evolutionary perspective. They begin their paper by noting there has been little research on the adaptive problem of mate retention. One of several novel research questions they consider is mate retention behaviour in marriages where there is uneven mate value. One subquestion is whether men who marry women perceived to have higher mate value will dedicate more effort to mate retention than men married to women with equal or lower mate value than themselves. Adaptationist considerations strongly suggest they would. The other subquestion is whether women who marry men with higher mate value will tend to heighten or to relax retention efforts. Here adaptationist considerations can generate opposite hypotheses, as Buss and Shackelford freely and happily acknowledge.

One evolutionary psychology hypothesis that can be formulated is that women in marriages where the man is perceived to have the higher mate value will dedicate more effort to mate retention than women in marriages where the man is perceived to be as equal or have less mate value than the woman. This hypothesis focuses on the dramatic costs of losing the higher mate value partner to a competitor entirely and the gains to be made by successfully retaining the partner exclusively. The alternative evolutionary psychology hypothesis that can be formulated is that women in marriages where the man is perceived to have the higher mate value will dedicate less effort to mate retention than women in marriages where the man is perceived to be as equal or have less mate value than the woman. Here, an additional set of considerations is being factored in: higher value men tend to be capable of fathering children in different relationships simultaneously; higher value men might feel an entitlement to additional relationships; if a

woman engages in significant mate retention behaviour with a highly prized male who desires to be in more than one relationship then there is a risk of losing that highly prized man entirely; it might be better to secure the partial attention and resources of a highly valued male than secure the full attention and resources of a less valued man.

Again, if one were approaching this from an explanatory angle, especially with a naive falsification temperament, one would be deeply suspicious of all this: it would look like evolutionary psychology is trying to explain both *X* and *not X*. It looks like evolutionary psychology is simply accommodating phenomena no matter what it turns out to be. However, when one correctly approaches this from the heuristics angle, what is happening becomes clear: this together with a battery of other research questions is a first shot at understanding what psychological solutions might have evolved to solve the adaptive problem of mate retention. The first shot will give us some leg up, something to work with, something we can work with further. There should be nothing scandalous or even remotely suspicious about that.

Nevertheless a reasonable concern might now arise. Evolutionary psychology is fertile. The trouble, one might venture, is that it's too fertile. Perhaps its strategies and methods can generate a large number and range of hypotheses for any given adaptive problem. There needs to be a reasonable limit on the number of hypothesised adaptive solutions for a given adaptive problem. If this is not so, if the permutations are too great, then focusing on adaptive problems and solutions will not successfully reduce and constrain research space. Evolutionary psychology's heuristic value will be wholly compromised.

Recall from the previous chapter that in the sceptical literature, this concern is often cashed out into a very strong position: evolutionary psychology hypotheses are judged to be unacceptably unconstrained. The concern, as we saw, is entirely understandable but the position that sceptics reach is untenable. In practice, evolutionary psychology's heuristics allow, at most, only a limited range of adaptive solutions to be generated for a given adaptive problem—certainly a range suitable for experimentation. Think of the adaptive problem of infidelity. According to evolutionary psychology's heuristics, a well-designed solution to this problem is jealousy. Perhaps a clever individual could use the heuristics to generate one or two alternative proposals, but certainly not a runaway list of possibilities. Indeed, if the heuristics allowed for an unconstrained multitude of proposals to be generated for a given adaptive problem, we would see this in the evolutionary psychology research literature. Likewise, regarding the finer details of how any proposed

psychological adaptation is calibrated, several design possibilities might present themselves, but again the range is well within the acceptable parameters of experimentation.

Indeed, crucially, as function and form should be well-matched, adopting an engineering perspective allows one to identify quickly and discount a large number of possibilities. For example, Symons (2008) asks us to consider a situation where someone proposes that the human female orgasm is an adaptation designed to promote conception by enhancing sperm retention, and that the human female organism is designed to achieve this goal only when the organism occurs close to the time of the male partner's ejaculation. Adopting an engineering perspective on this purported adaptation, a psychological adaptationist might ask

> why a series of coordinated muscle contractions in a female body that mimic the muscle contractions of ejaculation in a male body would miraculously turn out to be well designed to achieve an entirely different goal. That is, shouldn't we expect the design of a female device whose function is to promote conception by retaining sperm to differ in important ways from the design of a male device whose function is to propel semen from the body, for the same reasons that we expect a device designed to pump blood to differ from one designed to digest food? (*ibid.:* 9).

Furthermore, adds Symons, selection would favour males who observe the following behavioural rule: 'thrust until your partner orgasms, then immediately ejaculate'. As the form and the function are not well matched, and, indeed, the prediction doesn't obtain, the heuristics rule out this proposal as a serious contender.

Sceptics freely talk about 'unconstrained speculation' but fail to cite any specific areas where evolutionary psychology hypothesis generation is running amok, nor do they make the rather obvious and deeply subversive move of using its heuristics to generate a runaway list of hypothesised adaptive solutions for some given adaptive problem. Imagine if they did that. Imagine if a paper was published that used the heuristics to generate hundreds of hypothesised adaptive solutions for some given adaptive problem, all of which were consistent with adaptationist concepts and methodology. Wouldn't that be a decisive blow against evolutionary psychology as a heuristic? It surely would be. So why hasn't it been done? That such a move is not forthcoming anywhere in the literature is, I believe, most telling.

Although there will be some bets that fail to pay off, and some dead ends, this is unavoidable. Heuristics reduce the size of the research space, but researchers nevertheless still need to rely on a measure of trial and error within the constrained space. The initial practice of evolutionary psychology spreads far and wide, accommodating as much psychological phenomena as possible. Some of the initial outreaches will be fruitless, others more promising. The initially promising outreaches provide us with some fixed points that can anchor adaptationist hypotheses. Further research questions can be raised and answered, testable questions about calibration, contextual sensitivities and the level of the grain, leading to an unrelenting examination of the design details that constitute psychological adaptations.