~~3 Adaptive in the conditions in which the adaptation originally evolved~~ ~~Obviously, human beings did not evolve originally in a modern, urban environment, and with the benefit of the things you would find there, such as technology, modern communications, plentiful food and sophisticated health-care. This means that our adaptations may have to be seen in an earlier evolved context, rather than in that of a modern society.~~

~~A good example might be our liking for sweet, salty or fatty foods. Such foods were scarce in our primal environment, and so natural selection arranged our preferences for them so that we would consume as much of them as we could when we got the opportunity. Dietary fibre, on the other hand, was impossible to avoid in primal conditions, and so no particular liking for it was necessary. Today the situation is quite different, and excessive and prolonged consumption of sweet, salty or fatty foods and insufficient consumption of dietary fibre can be severely maladaptive (Strassmann and Dunbar 1999). But that is simply because our tastes are adapted for the past, not for the present.~~

The EEA

This third point about adaptations is particularly pertinent to evolutionary psychology because some writers see it as distinctive of the field. They take the view that evolutionary psychology represents an advance over earlier evolutionary thinking as applied to human beings because it makes a central issue of the fact that we are not necessarily adapted to a modern, industrial way of life, but to an earlier, more traditional one. Some call this the *environment of evolutionary adaptedness*, or EEA for short (see box 1.2, 'The human environment of evolutionary adaptedness').

According to evolutionary psychologists, human beings have lived in small hunter-gatherer groups for over 99 per cent of the million-odd years our species has existed. Some think that 'This hunting and gathering way of life is the only stable, persistent adaptation humans have ever achieved,' and go on to claim that 'insufficient time has elapsed since the invention of agriculture 10,000 years ago for significant change to have occurred in human gene pools' (Symons 1979: 35). Other evolutionary psychologists castigate those who take current benefits of an adaptation into account when explaining it for not being 'adaptationists in the strict Darwinian sense' because only past conditions can explain present adaptations (Tooby and Cosmides 1997: 293).

Box 1.2

The human environment of evolutionary adaptedness

The term 'environment of evolutionary adaptedness', or EEA for short, was first introduced by the psychoanalyst, **John Bowlby** (1907–1990), and today has become a central tenet of evolutionary psychology.

Bowlby points out that no organism is so flexible that it is adapted to any and all environments. On the contrary, organisms are adapted to particular conditions that constitute their EEA. He adds that although it is usually safe to assume that the habitat occupied by a species today is the same, or very similar to, its EEA, this is not so in the case of human beings because today humans live in many more, very different, and often more quickly changing environments than they did in the past. This leads to the conclusion that the human EEA is represented, not by the present environments of human beings, but by the period of approximately 2 million years preceding the emergence of the diversified habitats seen today. He concludes that *'the only criterion by which to consider the natural adaptedness of any particular part of present-day man's behavioural equipment is the degree to which and the way in which it might contribute to population survival in man's primeval environment.'* (Bowlby 1982: 59, emphasis in the original).

Although there is understandable controversy about the details of the human EEA, most students of the subject would accept the following general characteristics as broadly likely:

- hunter-gatherer and/or scavenging subsistence;
- nomadic or semi-nomadic pattern of movement;
- low population density;
- relatively small, kin-based groups;
- stone-age technology at best;
- relatively high infant mortality and low life expectancy by modern standards;
- generally much greater vulnerability to the natural environment;
- fewer lifestyle options than in later societies.

In many respects the most sensible way to characterize the human EEA for the purposes of evolutionary psychology might be in negative terms: in other words, to realize that humans are not necessarily adapted for life in modern industrial societies, with high population densities, fixed places of residence, complex social groupings, bureaucracy, transportation, mass media, medicine, technology, plentiful food and minimal exposure to natural selection (at least as it would have operated in the EEA). This also meets the objection that there may never have been one EEA, or one continuous EEA, but rather multiple ones. Here the point would be that most modern human environments are simply not the same as the primal conditions in which our species first evolved.

However, as the evolutionary anthropologist William Irons has argued in a recent paper, the current reproductive consequences of an adaptation sometimes are a guide to what occurred in the past. Indeed, he points out that 'Saying that human beings were . . . hunter-gatherers for one or two million years creates a false picture of stasis during this period.' In his view, 'the statement that 10,000 years is not enough time for evolutionary change is hard to defend.' Irons adds that in the generational equivalent of just a tenth of that (30 generations, rather than 300–400), laboratory mice have been bred 'to obtain non-overlapping distributions of behavioral traits'. He also notes that there is strong evidence that certain human physiological adaptations, such as sickle-cell anaemia, have evolved in much more recent times (Irons 1998).

According to other critics of evolutionary psychology, you might just as well argue that Stone Age hunter-gatherers were maladapted to their way of life because for millions of years prior to that their ancestors were vegetarians. They add that a growing body of evidence suggests that evolved reproductive striving continues to translate into reproductive success in traditional, kin-based societies that have not undergone the demographic transition to smaller family sizes of the past century (Strassmann and Dunbar 1999). Indeed, if reproductive success is taken as the ultimate proof of successful adaptation, modern human populations have far outperformed our hunter-gatherer predecessors, despite being allegedly 'maladapted' for modern ways of life: 'Today we number approximately six billion. That would seem to be proof enough of our being adapted to current conditions' (Lopreato and Crippen 1999: 131).

Adaptations need not be relevant only to the EEA

Clearly, the present consequences for reproductive success of an adaptation do not necessarily tell us anything about how and why it originally evolved – but neither should it be assumed that they tell us nothing. Many psychological adaptations may still work in circumstances very similar to those in which they originally evolved simply because the major environmental factor shaping their evolution was the presence of other people who had evolved in a similar way. Despite dramatic changes in subsistence and population density, there may still remain much in the human, psychological environment that is essentially the same as it ever was. If so, modern conditions may be relevant to adaptive evolution, and present-day adaptive pay-offs could sometimes be a good guide to the origins of the adaptation concerned.