

KATE DISTIN

*The*  
Selfish  
Meme

CAMBRIDGE

CAMBRIDGE

more information - [www.cambridge.org/9780521844529](http://www.cambridge.org/9780521844529)

This page intentionally left blank

## The Selfish Meme

### *A Critical Reassessment*

Culture is a unique and fascinating aspect of the human species. How did it emerge and how does it develop? Richard Dawkins has suggested that culture evolves and that memes are the cultural replicators, subject to variation and selection in just the same way as genes are in the biological world. In this sense human culture is the product of a mindless evolutionary algorithm. Does this imply, as some have argued, that we are mere meme machines and that the conscious self is an illusion?

Kate Distin's highly readable and accessible book extends and strengthens Dawkins's theory and presents for the first time a fully developed and workable concept of cultural DNA. She argues that culture's development can be seen both as the result of memetic evolution and as the product of human creativity. Memetic evolution is perfectly compatible with the view of humans as conscious and intelligent.

This book should find a wide readership amongst philosophers, psychologists and sociologists, and it will also interest many nonacademic readers.

Kate Distin is an independent scholar.



The Selfish Meme  
*A Critical Reassessment*

KATE DISTIN



**CAMBRIDGE**  
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press

The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/9780521844529](http://www.cambridge.org/9780521844529)

© Kate Distin 2005

This book is in copyright. Subject to statutory exception and to the provision of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published in print format

ISBN-13 978-0-521-08145-3 eBook (Adobe Reader)

ISBN-10 0-521-08145-6 eBook (Adobe Reader)

ISBN-13 978-0-521-84452-9 hardback

ISBN-10 0-521-84452-5 hardback

ISBN-13 978-0-521-60627-1 paperback

ISBN-10 0-521-60627-6 paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this book, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

# Contents

1	Introduction	<i>page</i> 1
2	The Meme Hypothesis	6
3	Cultural DNA	18
4	The Replication of Complex Culture	39
5	Variation	48
6	Selection	57
7	The Story So Far	68
8	The Human Mind: Meme Complex with a Virus?	72
9	The Meme's Eye View	92
10	Early Cultural Evolution	116
11	Memetic DNA	142
12	Memes and the Mind	168
13	Science, Religion and Society: What Can Memes Tell Us?	185
14	Conclusions	197
	<i>Acknowledgements</i>	209
	<i>Notes</i>	211
	<i>Bibliography</i>	217
	<i>Index</i>	225



## Introduction

Shortly after we were married, my husband made me a mandolin. The body is built from rosewood and the bridge hand carved from ebony. Wood can be bent if you heat it, but he had no bending iron – so he curved the sides by rocking them over some hair curling tongs, clamped to the kitchen table.

I had wanted a mandolin since I was a child – for almost as long as I had been playing the violin. The two instruments have the same intervals between their strings, and it seemed to me that it must be easier to rest something across your lap, plucking at notes whose positions were marked out for you by frets, than to contort the whole of your upper body into the violinist's masochistic stance, attempting simultaneously to create notes on a standard scale with your left hand and to tame two feet of bow with your right. I already understood what instructions the notes on a stave were trying to give my fingers, and had lately been charmed by the mandolin music of Vivaldi and Oysterband. (I was naïve, as it happens. The mandolin does have all these advantages, but it also – as the fingers of my left hand will testify – has strings like cheese wire.)

My husband found the design in a woodworking magazine, tucked in amongst the usual advertisements and feature articles. An engineer by training, he had inherited both skills and tools from his father and grandfather. When the plans let him down, he spent some time thinking about the physics of the processes involved, learnt a bit about concert pitch, and then calculated the appropriate fret spacings from first principles. We read up on the mandolin's origins: where was it first invented, what sorts of music had people played on it, and for how many years? We were drawn into a study of the history of music, and debated over late-night

bottles of wine whether its conventions were discovered or invented. By a pleasing coincidence, the hot novel of the year was *Captain Corelli's Mandolin*.

My mandolin is thus the end product of a trail of culture that stretches back across centuries and continents. Its creation was dependent on woodworking techniques and tools, on the development of stringed instruments and musical conventions, on the physics and mathematics of sound, and on the modern world of magazine articles and advertisements. As it grew, we were pointed in the directions of its historical and geographical origins, and our attention was drawn to philosophical and scientific theories about its music. It has links to a vast range of cultural areas, all of which are more like icebergs than mountains, their manifest modern complexities resting on unseen millennia of previous human thought and activity.

Richard Dawkins has said that “most of what is unusual about man can be summed up in one word: ‘culture’.”<sup>1</sup> Culture is not humans’ only distinguishing feature, but it is one unique and fascinating aspect of our species. In this context, “culture” is not intended to be either a description of a narrow range of purely artistic pursuits or a synonym for society. “A *society* refers to an actual group of people and how they order their social relations. A *culture* . . . refers to a body of socially transmitted information”<sup>2</sup> – the full spectrum of ideas, concepts and skills that is available to us in society. It includes science and mathematics, carpentry and engineering designs, literature and viticulture, systems of musical notation, advertisements and philosophical theories – in short, the collective product of human activities and thought.

How did this body of knowledge and methods emerge? How does it now continue to develop? This book defends the theory that culture *evolves*, and that *memes* provide the mechanism for that evolution.

“Evolution” is usually taken to apply only in the biological world, referring to the theory developed by Charles Darwin and others in the nineteenth century to account for the origin of species. In the twentieth century, Richard Dawkins and others pointed out that the core of Darwinian theory is actually rather sparse. Its essential elements are simply replication, variation and selection. If these requirements are met then evolution seems bound to happen. If organisms reproduce, passing their characteristics almost (but not always quite) accurately on to the next generation, and if their environment does not supply them with unlimited resources for their survival, then they will evolve: there will be a struggle for survival, and those organisms will be preserved whose traits

are best fitted to the given environment. It is the business of science to investigate the actual pattern of development in our natural world, but at a more theoretical level Darwin's theory outlines a process that is inevitable once all of its elements are in place. Dawkins has suggested that this not only is true in biology but would also be the case in any other environment where all of those key elements were to be found – including culture.

The suggestion that evolution is not restricted to biology but may also take place in culture is appealing if hardly original. A metaphorical picture is often painted of ideas and theories “evolving” through time, but can it ever with justification be taken literally? That is, does Darwinism illustrate a process that can also be observed in culture? There are various versions of cultural evolutionary theory on the market, and this book explores what I see as the most compelling: the hypothesis that the units of cultural selection are elements, which Dawkins calls “memes”, that share the important properties of genes.

The biggest danger for this hypothesis is the risk of its collapsing into the trivial assertion that some ideas survive whilst others disappear. Obviously cultures change, ideas spread and technology develops, but what do we gain by claiming that this is all due to memetic evolution? What does the meme hypothesis contribute to our understanding which other theories of cultural change do not?

One way of responding to this challenge is to take a very practical approach, and seek out areas of culture to which meme theory can fruitfully be applied. Most other books on memes have tended to follow this line, and have developed memetic explanations of phenomena such as religion, language and the size of the human brain. The best way of defending the meme hypothesis, from this perspective, is to show that it can provide useful accounts of developments in such key cultural areas. This is an approach in the best traditions of scientific experiment, using observation to confirm or falsify novel theories. Given a hypothesis about how culture develops, practical observations about what actually happens in human culture will surely provide a good method of testing its validity.

On the other hand, it is notoriously difficult to ensure that we take an objective view of the evidence when we are seeking to confirm a favoured hypothesis. Indeed, it is sometimes possible to present very different explanations of the same observations, each of which makes perfect sense from the perspective of a given hypothesis, but only one of which can be true. The history of science is littered with theories that once convinced the brightest of contemporary intellects, and our adversarial justice

system also bears testimony to the potential for weaving different stories from the same body of evidence.

Behind that evidence, however, lies the truth, and there must surely be a more direct approach to its discovery. Rather than testing the practical implications of a novel theory, an alternative is to focus first on its underlying structure: to examine whether it *could* be true, is internally coherent and forms a solid basis for any empirical applications. Inevitably such investigations will have to take into account some observations of the phenomena that the theory purports to explain, but the focus will be on testing its structural foundations *before* trying to use it as a tool for scientific enquiry. It is this approach which I favour.

In the case of culture, for example, the question is not so much whether development in its various areas *can* be characterized as memetic as whether the meme hypothesis is *true*. According to Dawkins, culture evolves in the same way as biology – but in which ways, exactly, are the two processes “the same”? What would replication, variation or selection *be* in relation to culture? Is culture really made up of discrete units? To what extent can other concepts from genetics be transferred to memetics – concepts like *vehicle* and *phenotype*, *virus* and *allele*? Where are memes to be found, and what is the memetic equivalent of DNA?

Satisfactory answers to such questions will inevitably contribute to our understanding of cultural development. For example, if culture is a unique feature of humans, then meme theory should be able to explain what has enabled us to develop such a feature when nonhuman animals have not. Indeed, since other animals surely *do* pass on information and skills to each other, it should include an account of what is special about the “memes” that purportedly make up human culture. Supported by such theoretical investigations, it should of course be possible for meme theory to provide an account of how ideas change and develop in particular cultural areas like science and religion. Even more fundamentally, it should enable us to explore the relationship between memes and the human mind: do they create us, do we create them – or is there, as some would claim, no real difference between “us” and “them”?

This last question is obviously of huge significance for how we humans see ourselves. Some of the best-known names in the field – in particular Daniel Dennett and Susan Blackmore – believe that meme theory will completely overturn our traditional notions of responsibility, creativity and intentionality, just as many have taken the Darwinian revolution in biology to have overturned traditional notions of a creator God. On their view what we call our minds, with all their apparent

powers of thought, decision making and invention, are actually parasitic meme complexes, our sense of control over which is illusory. If our mental and cultural lives are the results of a mindless evolutionary algorithm, they argue, then how can we claim an autonomous identity as independent “selves”, with freedom and control over what goes on in those lives?

Despite the apparent power of this argument and the persuasiveness of its authors, my own conclusion – freely reached after many hours of genuinely creative thought and non-illusory choices – is that memetic evolution is quite consistent with a world of intentional, conscious and responsible free agents. And if it weren't, then common sense dictates that I should exercise my free will and reject meme theory in preference to dispensing with mind, conscience and autonomy. Fortunately, however, neither option is necessary, as this book will show.

## The Meme Hypothesis

Richard Dawkins first proposed his version of cultural evolutionary theory in his 1976 book, *The Selfish Gene*. The main thrust of that book was a defence of the gene as the unit of biological selection and the organism as a “survival machine” for its genes. Towards the end, however, he added his view that culture also evolves and that “memes” are the units of *cultural* selection.

The key to Dawkins’s idea is that Darwinian evolution is a particular instance of a process that we might also expect to find in other areas. It will be helpful, therefore, to begin with a swift review of Charles Darwin’s theory of descent, before explaining how the meme hypothesis emerges from it. Having characterized Dawkins’s own view of what has come to be termed “memetics”, I then briefly defend its adoption against the alternative research programme of sociobiology. There is also in this chapter an important clarification of the relation between genes and memes. These introductory discussions provide history and context for the more detailed investigations of subsequent chapters.

### Genetic Evolution

#### *Natural Selection*

In the early nineteenth century, the problem of the origin of species was so far from being solved that Darwin referred to it as the “mystery of mysteries”. He worked on his own solution for more than two decades, until in 1859 *The Origin of Species* brought together a vast mass of previously isolated facts, all of which fitted into place when seen in the light of his theory of descent.

Darwin was famously inspired by Malthus to see that all organisms are engaged in a perpetual struggle for existence, due to the pressure of population on the available resources. Beginning with the facts that organisms in a species vary and that those variations are passed on to their offspring, he saw in addition that human beings have used this to their advantage by artificially selecting animals and plants with the most useful variations. He argued that, since organic variations useful to man have occurred, it seems likely that in thousands of generations some variations useful to each organism would also have occurred. If so, then because of the ongoing struggle for existence, any individual with such an advantage would have had the best chance of survival and procreation, and any injurious variation would lead to the destruction of its owner – with the result that those organisms are naturally selected which have the optimum fit to conditions of existence. Later, in *The Descent of Man* (1871), Darwin added that humans are subject to this evolutionary process just like any other animals. His view was that our unique mental features would one day be explicable by natural selection, which could also account for human social and ethical behaviour.

### *Genetics*

Today, gene theory tells us that natural selection consists in the differential survival of *replicators* – things that make copies of themselves. In the struggle for existence, replicators with “longevity, fecundity, and copying fidelity”<sup>1</sup> will have a better chance of survival than others, and it is now widely accepted that in biology those replicators are genes. A preliminary sketch of gene theory, based largely on Richard Dawkins’s account, will thus provide a useful backdrop to his meme hypothesis.

As a starting point, familiarity with a little vocabulary from the language of genetics would be helpful: jargon in its best sense is useful both as shorthand and as a conceptual tool. Although this is not the point to digress into the technical details of genetic replication – this book is after all written by a philosopher rather than a cellular biologist – gene theory does provide the background to memetics, and it will often prove fruitful to explore the analogy between the two. Thus: a *gene* “stores” the information that it replicates in deoxyribonucleic acid (*DNA*) – that is to say that the gene occupies a particular locus (place) on a *chromosome* (a structure within a cell nucleus), and the chromosome is composed of DNA; the gene may also have *alleles*, which are alternative forms of it in the population, occupying the same locus on that chromosome and controlling the same sorts of things as it does (e.g., eye colour) – its *phenotypic effects*.

The story goes that in the “primeval soup” the competition for resources and space meant that the ancestors of genes fared best if they had some means of protection. Over time, the protective mechanisms that they developed evolved into more complex “survival machines” – in our case, the human body. Although genes are the units of reproduction, their existence within these “survival machines”, or vehicles, means that they are selected indirectly: their differential survival rates depend on their phenotypic effects. So long as they replicate accurately, their effects will also be passed on to the next generation, but when genes do not make exact copies their effects will vary too, and individuals will survive or be eliminated as a result of such (un)favourable variations. Continuous, gradual changes of this sort will result, through successive generations, in new species and types.

Another significant feature of evolution, as Dawkins sees it, is the *nature* of the replicators. Famously, he refers to genes as “selfish”. By this he means that each behaves in such a way as to increase its own welfare at the expense of other genes in the gene pool. Successful adaptations will result in its longer life, say, or increased fecundity. He certainly does not mean to imply that genes are *consciously* seeking their own replication, but simply that they cannot survive if they are inefficient at self-replication.

### Why Accept Gene Theory?

At the time that *The Origin* was published, Darwin’s ideas were highly controversial in a way that they are not, amongst scientists, today. Nonetheless, even then emergent theses in palaeontology, biology and geology were all contributing to an intellectual climate which was more receptive to the novel idea that species might change over time, and Darwin capitalized on this by collecting a mass of evidence in support of his theory. When Mendel’s gene hypothesis came to light, it seemed to be Darwin’s final vindication, for it provided a mechanism for evolution.

Today the explanatory success of neo-Darwinism is undeniable. Seeing things from the genes’ point of view allows us to explain all sorts of superficially puzzling phenomena. A well-known example is biological altruism, when members of a species behave in ways that benefit other individuals at their own expense: the individual’s behaviour may be detrimental to his *own* survival, but it promotes the survival of close members of his species – members who (because they are relatives, or just very much like

him) share many of his genes. Thus his behaviour is “altruistic” at the individual, but “selfish” at the genetic, level.\*

This is a specific instance of explanatory success. In general, the point is that the survival of a species depends upon the preservation of its members’ strengths. The existence of genes – units of transmission, to future generations, of the beneficial characteristics of the present generation – makes this possible. In particular, Mendel’s theory of divisible and recombinable pairs of alleles provides the variation upon which selection can act. Not only via the recombination of genetic information, but also by its mutation (since genes’ copying fidelity is not always exact), the gene pool varies, and selection ensures that advantageous variations are preserved. Hence, over enormous time spans, nature’s immense variety can be explained. Such explanatory power justifies our acceptance of gene theory. Long before the identification of their physical basis in DNA there were very good reasons to believe in genes’ existence, for they provide the basic material of selection.

### The Meme Hypothesis

This, then, is the background to the meme hypothesis, which extrapolates from the Darwinian theory of biological evolution to apply the concept of selection more generally. As Dawkins puts it, “Darwinism is too big a theory to be confined to the narrow context of the gene”:<sup>2</sup> its essential feature is the differential survival of replicators – *any* replicators. Whatever the type of replicator involved, Dawkins conjectures, its variation under conditions of restricted resources would lead to a form of evolution. There is a process at work here, whose function should in theory be unaffected by the medium upon which it is based. Just as the same sum can be performed by hand, on a calculator or on one of any number of computer spreadsheet programs, so Dawkins wonders whether the same evolutionary algorithm might be able to operate on a range of different units of selection.

His suggestion is attractive because it seems to strike a happy balance between the extremists who would bring everything under a pattern of development that mimics biological evolution, and those who prefer to restrict the concept purely to biology. Dawkins rejects such a

\* I am talking here about biological altruism, rather than altruism as we might understand it in everyday speech: the genetic impartiality of religious doctrines such as “love thy neighbour” is arguably inexplicable at this level.

restriction as artificial, but nor does he tie himself to a particular pattern of development; rather, he extracts the significant features of evolutionary theory, and extends their domain of influence.

In particular he turns his attention to culture, which he sees as the distinctive feature of the human species. Cultural transmission does occur in species other than man, but not to the same vast extent. In humans alone, Dawkins hypothesizes another example of the process that Darwinism illustrates, in this case involving cultural replicators. These replicators he calls “memes”, and he postulates a new form of selection such that “once the genes have provided their survival machines with brains that are capable of rapid imitation, the memes will automatically take over.”<sup>3</sup> Dawkins defines a meme as “a unit of cultural inheritance, hypothesized as analogous to the particulate gene, and as naturally selected in virtue of its phenotypic consequences on its own survival and replication in the cultural environment”.<sup>4</sup>

As examples of memes, he suggests ideas, catch-phrases, tunes (or snatches of tunes), fashions and skills.<sup>†</sup> As with genes, the constituents of success will be long life, fecundity and accuracy of replication; for individual copies, fecundity is the most important factor. The element of competition necessary for any selection to take place is introduced by the brain’s limited attention: in order to dominate, a meme must distract the brain’s attention from other memes. Success in this matter will depend upon the structure of the brain, as well as on the stability of the meme and its “penetrance in the cultural environment”.<sup>5</sup> The latter will depend on psychological appeal, and according to Dawkins this means (as for genes) that coadapted complexes – that is, evolutionarily stable sets of memes – will occur. Selection will favour those memes capable of exploiting the current cultural environment, which obviously includes other memes also trying to be selected. As sets of memes cooperate, new ones will find it more difficult to penetrate the environment later: the complex provides protection against invasion. The compatibility rule will apply particularly in areas such as theories of science. For other types of memes different criteria will apply – “catchiness” for tunes, for example.

Dawkins emphasizes that their success will *not* depend on the (dis)advantages they produce for the genotypes that produced the brains

<sup>†</sup> In this section I provide an overview of meme theory as Dawkins himself has outlined it. Obviously there are areas here which other memeticists would find controversial, but as a preliminary sketch of the hypothesis I think it most appropriate to stick with its originator’s views.

they inhabit. Memes, like genes, are selfish: their success depends on the advantages they confer on *themselves*. In the struggle for brains' attention they must in some way be "better" than their rivals, but this need have nothing to do with the effects they have on the genetic success of their possessors. Although the needs of genes and memes may often coincide (a meme will not last long if it causes its possessor to die before she can transmit it, for example), they may sometimes be in complete opposition: Dawkins uses the example of a meme for celibacy to illustrate this possibility.

He says that a meme will, like a gene, be successful "by proxy": via its phenotypic effects. The meme itself is a "unit of information residing in a brain",<sup>6</sup> and its phenotypic effects are the external consequences of that piece of information. Words, skills and music are "the outward and visible (audible, etc.) manifestations of the memes within the brain",<sup>7</sup> which are transmitted between individuals via their sense organs, leaving on the recipient's brain a (not necessarily exact) copy that it is free to transmit again. Dawkins notices that a gene's phenotypic effects take two forms: the use it makes of the cellular apparatus to make copies of itself; and the effects it has on the external world, which influence its survival chances. He says that memes also have two types of effect. The first is the use of their possessors' communication and imitation skills in order to replicate. The second, as for genes, consists in the effects they have on the world, which influence their survival chances. The success of this second type of effect will (for both kinds of replicator) depend on the current environment, a crucial part of which will be the existing pool of replicators.

### The Gene-Meme Analogy

Notice that, although "memetic" evolution may for convenience be referred to as "analogous to" genetic evolution, this should not be taken to imply that memetics is theoretically dependent on genetics. Whilst it is true that in the chronological order of theoretical development memetic evolution has been inspired by the theory of genetic evolution, this is not the order of explanatory dependence. Rather, both are examples of a more abstract, generally applicable theory of the evolution of replicators under conditions of competition.

In fact the use of the term "analogy", in this context, deserves some closer attention. Usually this term implies that at least one side of the comparison is fairly well developed – we talk about electric "current", for

instance, because water flow is familiar to us – and an analogy would not be of any use if this were not the case.

A different sort of scientific comparison can be made between subjects like gravity and electrostatic force: here a new student can easily see the similarity between the two laws below without being familiar with either field:

*Newton's law of universal gravitation:*

“The force between two masses is directly proportional to the product of their masses and inversely proportional to the square of their separation.”

*Coulomb's law:*

“The force between two point charges is directly proportional to the product of their charges and inversely proportional to the square of their separation.”

The relationship between memetics and genetics is best understood as a combination of these alternatives. A meme is not, strictly speaking, an analogue of a gene: rather, since both are replicators, a meme is a different *token* of the same *type* of entity as a gene. (The type-token distinction is a handy conceptual tool, of which I make fairly frequent use. A *token* is any “particular specimen of any general class. All these specimens may be described as the several tokens of that single *type*.”)<sup>8</sup> Similarly, cultural evolution is a different example of the same type of process as neo-Darwinism, rather than a simple analogue of it. This means that the two processes have the same description at a sufficiently functional, abstract level.

Nonetheless, because we are already familiar with genetics, we can use it to illuminate memetics. In other words, although the particular details of biological evolution may not carry over into cultural evolution, it seems reasonable to exploit our knowledge of neo-Darwinism as a guide to what the essential elements of cultural evolution might be. This sort of comparison between two phenomena is far from unique in science, where it is quite common to find different tokens of the same type of process realized within different media (e.g., wave properties such as diffraction, interference and refraction may all be observed in water waves as well as in electromagnetic and sound waves). “Comparison of two examples is a good way to locate what is most important”; it helps in “pruning away content and leaving essentials”.<sup>9</sup>

### Why Accept the Meme Hypothesis?

Returning now to Dawkins's original hypothesis, the question arises what are the *prima facie* grounds for accepting it. This section explains why

the memetic research programme looks promising, and for consistency it follows Charles Darwin's method of defence for his own evolutionary theory.

The starting point for Darwin's line of thought was that variations occur within the traits of a species, and that they are passed on to the offspring of the organisms that so vary. Variation seems to be a good starting place for a theory of cultural evolution, too. There are often marked differences amongst the knowledge and practices of those who would claim to have the same concept, skill or idea, and it is possible to trace the extent of such variation to the point where two people at either extreme of it would deny that they have the same idea at all.

As an example, take the ability to play the piano: some people are talented sight readers, others play from music but are hopeless sight readers, others struggle to read music but improvise well, and others play only by ear. Along this spectrum of players there will be people whose abilities are almost the same – those who can all read music but some of whom are better sight readers than others, for instance. If, though, we compare those at opposite ends of the spectrum, all of whom would describe themselves as pianists, then we can see that their abilities are so different that they might more accurately be classified into separate categories, such as concert pianists and jazz improvisers.

Are such variations passed on to offspring? Clearly, "offspring" does not here refer to biological but to cultural descendants – and it seems obvious that the variations *are* transmitted. If my piano teacher is a concert pianist then he will teach me to read music, with an emphasis on the repetitive practice of pieces that I have first sight-read; if he is a jazz pianist then he will teach me the techniques of improvisation and how to play by ear. Just as the variations that you inherit from your biological parents may develop differently in you, depending on the nature of your environment, so the variations that you acquire from your cultural predecessors (who might be your teachers, people whose books you have read, musicians whose style you have imitated, etc.) may develop differently in the context of your mind and environment. What matters from the point of view of evolution, however, is that those variations *are* replicated in you.

In culture as in biology, then, variations exist and are passed on to the next "generation". The next strand in Darwin's argument came from Malthus's theory of a population which increases much faster than its limited resources. From this, Darwin extracted the idea of the struggle for existence, which is another important structural feature of evolutionary

theory. Does the cultural “population” also increase at a swifter rate than its resources?

The answer to this must depend on the definitions of a cultural population, and of the nature of its resources. The contenders for membership of the cultural population are controversial amongst memeticists, but I think that it can be stated without raising too many hackles that they are almost innumerable: ideas, concepts, skills, concertos, fashions, ways of building houses, farming methods, . . . These are all aspects of the cultural world that might potentially be passed on from one possessor of them to another. Therefore their resources must be human beings’ attention. It seems obvious that culture and ideas develop and change at a much faster rate than that of biological evolution, and that the attention of each human brain is limited. In order to maintain some sort of grip on day-to-day reality we have to choose between the skills, theories and so on to which we might direct our efforts and which we might keep available in memory. It is just not possible for us to keep up with every available area of knowledge and skill. Thus it appears that the cultural population does increase faster than its resources.

From the transmission of variations and the struggle for existence, Darwin derived the idea of natural selection: in the struggle for the resources of a limited environment, those organisms with slightly advantageous variations will have a better chance of survival and replication, whereas those whose variations are at all deleterious will find their survival threatened. There is no great difficulty for cultural evolution with this stage of Darwin’s argument, for it consists merely in deducing the consequences of the previous stages (though, as noted above, those consequences will be played out a far greater pace than is the case in biology). A form of selection must occur in minds and culture, and we should expect to see the preservation of those ideas and skills with the best fit to their environment, and the extinction of those without. At first glance, therefore, the meme hypothesis does hold some promise.

### Sociobiology

This initial survey has raised the hope that a theory of cultural evolution can be developed along the same lines as the theory of biological evolution – but perhaps we should not forget that Darwin himself would have disagreed with such a project, since he believed that human behaviour can be attributed to just the same laws of descent as that of

other species. Accordingly, some would argue that sociobiology is more appropriate than memetics as a means of studying human society. The aim of this discipline is, according to Edward Wilson – one of its founding fathers – “to show how social groups adapt to the environment by evolution”.<sup>10</sup> That human society *is* greatly influenced by its genetic heritage Wilson does not doubt. The “accumulated evidence” for this, he describes as “decisive”.

Now, there is nothing very interesting about the claim that broad, general aspects of social behaviour will, if advantageous, be selected: the point of society is to protect its members’ genes and encourage their propagation, so behaviour or attitudes that tend to preserve social structures will (amongst social organisms) be favoured. The interesting question is what *level* of social detail our genes control – and I would argue that there is so much variation amongst cultures that it is highly implausible that many of the specific details should be genetically controlled.

The truth is, rather, that natural selection generally *obliterates* the heritable variation of the traits that it favours: as a result of being favoured, they become fixed throughout the population, and thereafter any variation amongst the relevant phenotypic effects must be explained environmentally.<sup>11</sup> Moreover, there is no reason to believe that the human brain of one or even two thousand years ago was dissimilar to ours; yet there is an enormous disparity between modern *culture* and that of previous millennia. This pace of change is much too rapid to be picked up at the level of genes, so if evolutionary theory is to be applied to such changes, then it will be more appropriate to bring it to bear on behaviour and the mind than on neural architecture and its genetic code.

Sociobiology asserts that the organic origin of the human capacity for culture ensures that “however it may work in detail, culture will usually enhance genetic fitness”<sup>12</sup> – and it is certainly true that our general capacity for culture could not have evolved had it not initially been adaptively advantageous: the early development of the mind and of culture must have provided us with a mechanism to ensure that more of the successful cultural traits were beneficial than were harmful to us, because we still exist. It seems likely, in any case, that an advanced capacity for learning *would* have increased fitness. On the other hand, this does not imply that each particular cultural trait will increase fitness, and must also be distinguished from the claim that there will still, today, be a general correlation between cultural habits’ popularity and their helpfulness to us. Today the rate of cultural development is so great that

most such developments will be *neutral* with respect to our biological survival.

Furthermore, a distinction should be drawn between the true fact that all human behaviour will fall within the potential range permitted by our genetic code, and the extrapolation from this to the invalid deduction that where there is adaptive behaviour there is always a genetic basis for it. Such a suggestion is undermined by the quite striking difference between the rates at which the physical and the cultural worlds change. Think, for example, of the development of the computer: its adaptive advantage is immeasurable, but it would be ridiculous to assert that the human genetic code has changed to accommodate it.

Clearly, the memetic project would be damaged if it turned out that the human mind *is* wholly innate. Conversely, sociobiology would be seriously undermined by the confirmation of the tabula rasa hypothesis that the mind is, at birth, a blank surface upon which experience writes. Since neither of these extremes is likely to be wholly true, the important question is, as mentioned, *where* we should draw the line between genetic and environmental (i.e., cultural) control over behaviour. The closer this line is to the “innate” extreme, the more significant will be some of the claims of sociobiology; the closer it is to the “cultural” extreme, the less plausible they will be. The discussion in this section implies that the development of the human mind is not so heavily genetically determined that the role left for culture is trivial, and therefore that cultural evolutionary theory will provide a complement, rather than a rival, to much of the account that sociobiology provides of human thinking and behaviour.

### Towards an Adequate Theory of Cultural Evolution

This chapter has provided the beginnings of an argument to suggest that the evolutionary processes – replication, selection and variation – are present in culture, but an adequate theory of cultural evolution depends also on our ability to isolate the *aspects* of each process which are most significant in that realm. Memeticists claim that there are elements of culture which vary, are copied and selected, but this claim is – even when supported by observation and argument – much too vague to satisfy. We need to look deeper than this, investigating the *ways* in which cultural information is preserved; the *mechanisms* that enable such complex information to be replicated; the *causes* and *limits* of the variations that arise; the *factors* that influence selection amongst these variations.