# CULTURAL SOFTWARE

## A THEORY OF IDEOLOGY

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# 4 THE SPREAD OF CULTURAL SOFTWARE

Because memes can be commensal or even parasitic, we no longer have to explain the development of culture in terms of what is functional for human beings or even for society as a whole. We can shift our focus from what kinds of memes would help human beings or cultures survive to what kinds of memes are most likely to survive and propagate in human beings and their information-processing technology. In many cases, memes are successful replicators because they are true beliefs or because they provide skills useful to human beings. But they need not point toward truth or possess great utility in order to survive and propagate in human minds. They may just as easily spread by playing upon our worst instincts, by pandering to our coarsest or basest desires, by permitting us to avoid recognizing our moral responsibilities, or by encouraging sloth, avarice, and a hundred other vices. Finally, they may proliferate without bringing either significant good or evil into the world. They may multiply simply because they are entertaining or diverting.

## Why Memes Survive and Spread

What makes some memes more successful in their environment than others? We can identify three basic kinds of factors. The first are substantive factors involving content. Second are psychological factors—the cognitive structure of human minds and their comparative susceptibilities. A third set of factors is ecological—they concern the nature of social institutions, methods of storing information, and technologies of communication. These different features are linked in practice. For example, the kinds of substantive content that make memes more attractive or more often discussed may depend on

structural features of the human mind and existing religious or educational institutions.

*Substantive Factors*

Memes tend to spread if they are salient, relevant to existing activities, attractive, or entertaining, or if they generate strong emotions. Sometimes it is not difficult to see why some memes spread more than others. Jokes and skills like juggling or playing a musical instrument are widely distributed because they are entertaining. Other memes spread because they are relevant to many different people's lives and interests. Consider as an example the number of songs about the various aspects of love and courtship.

Memes improve their reproductive success if they have behavioral effects that promulgate their own spread. A catchy melody, for example, may cause people to hum or sing it repeatedly, thus increasing the number of times that it is heard by other people. A good joke spreads rapidly because people enjoy telling it to others. Memes may be more successful if they encourage proselytization, appear to be beneficial (thus encouraging sharing with friends and relations), promote cooperation with others, and hide any maladaptive features for as long as necessary to spread widely.[1]

Another strategy for survival is to disable or preempt potential competitors in the environment.[2] Standard examples are memes for faith, which discourage skeptical beliefs and the sort of critical inquiry that would tend to dislodge faith.[3] Ideas of tolerance or free expression tend to assist their own propagation, but they also assist many other competing ideas as well, including ideas of intolerance and censorship. Complexes of memes working together may create joint defense mechanisms. Examples are warnings in chain letters that if recipients break the chain something bad will happen to them, and rumors of powerful conspiracies that explain objections on the grounds that all objectors are either part of or have been hoodwinked by the conspiracy.[4] To this one might add theories of ideology that make use of concepts of false consciousness to dismiss critics.

Still another method for memes to improve their chances of reproductive success is to attach themselves to other successful memes. Religions, for example, usually include many accretions over time. These accretions benefit from the general acceptance of religious belief and powerful memes for faith. Believers follow the tenets and practices of a general religious tradition together rather than investigating each one separately. Of course, the meme that lives by linkage can also die by linkage. If a meme is too closely linked to others that lose favor, it may be filtered out precisely because of these associations—a memetic baby thrown out with the bathwater.[5]

One might think that the most important factor in increasing a meme's reproductive success would be its truth or falsity. But many memes cannot be said to be true or false. Examples are bodily skills like dancing, and practical skills like those involved in being polite. Informational and cognitive filters, which shape thought, are among the major concerns of the theory of ideology; they are neither true nor false, though they can produce true and false beliefs. Finally, many philosophers hold (incorrectly, in my view) that statements of political, moral, and aesthetic value cannot be true or false. For these noncognitivists, truth or falsity is irrelevant to the success of a large number of memes.

Even with respect to memes which correspond to beliefs that can be true or false, there are several reasons why truth does not necessarily increase reproductive success and falsity does not necessarily diminish it. First, when a belief is obviously true, no one may pay much attention to it or think about it. As a result, it may be much less likely to be communicated to others. Memes so obvious that they are rarely discussed tend to lie dormant in minds; they are, quite literally, things that go without saying. Regular and prolific replication often matters more to reproductive success than durable presence in a particular human mind, because a particular carrier might die or forget. Hence memes may be more successful if they are controversial, taking that word in its literal sense as that which produces conversation.

Second, not all of the true things we believe are actually recorded in our minds at any point. For example, most people probably believe that there are no indigenous palm trees in Antarctica, but it is likely that they have never thought about it before the fact was brought to their attention. Many things we "believe" in the ordinary sense of that word are inferable from other beliefs that are stored mentally.[6] Because many if not most of our true beliefs are of this form, it may be quite important for true beliefs to be generated, used, and thought about if they are ever to be spread to others. Even true beliefs that many people could generate independently will not be generated and spread unless occasions arise to generate and spread them.

Third, true beliefs are much more likely to be communicated in response to false beliefs or only partially true beliefs (approximations of the truth, for example). This suggests that some false and true beliefs are coadapted: the presence of one spurs the communication and spread of the other. There is an analogous problem for religious beliefs. Religious faith can weaken over time if it is not occasionally faced with challenges. Hence heresies and external opposition to faith may sometimes increase religious fervor, proselytization, and the propagation of religious memes.[7]

Fourth, some memes may be employed, generated, or communicated precisely because it is difficult to tell whether they are true or false. Many of the most commonly communicated ideas are those whose truth and falsity cannot

be determined, which is why they are the subject of endless debate. This debate, in turn, ensures their continual transmission and survival. An analogous point applies to questions of practical reasoning and aesthetic judgment. A course of action is most likely to be debated precisely when its consequences and appropriateness are unclear; some works of art improve their chances of success by being controversial.

Fifth, beliefs that are clearly true often have unequivocal meanings or unequivocal applications; otherwise they would not be clearly true. But such clarity may not improve their reproductive success. Some memes are more likely to reproduce themselves if they are ambiguous—if they mean different things to different people, or even to the same person. This is especially true in the world of values. Principles like equality and liberty are ambiguous in their reference and hence can be—and are—invoked by different sides of a dispute. They become objects of struggle, and through this struggle they are repeatedly communicated and transmitted, thus ensuring their continued survival. In like fashion, the most heavily litigated and discussed parts of a legal code or constitution are often those that are least clear, or that become increasingly unclear through successive judicial interpretations.

Finally, truth or falsity may not be relevant to survival because we can remember and transmit beliefs even if they are false, bigoted, or unjust. Some beliefs survive precisely because they are understood to be false or wrong. They are helpful examples of falsehood or wrongfulness that are continually repeated because of their helpfulness.

### *Psychological Factors*

Many of the most important factors in the spread of memes depend less upon their substance than upon features of the human mind. We have already noted one such factor—the capacity of a symbol or belief to raise strong emotions. Memes better adapted to the architecture of the mind take root more readily than others; hence we can study their comparative success for clues to the nature of this architecture. Experiments have shown, for example, that human beings develop certain basic level categories like "bird," which are easier to remember and employ than more abstract concepts like "flying thing" and more concrete concepts like "yellow-bellied thrush." These basic level categories are more "catching"; studying rates of comparative "infection" gives us important clues about the organization of the mind.[8]

MEMORY AND COMPREHENSION. Human memory storage is an inevitable bottleneck for cultural transmission. Hence one of the most important factors affecting the survival of memes is ease of memorization. Ease of mem-

orization depends on complexity, but complexity is not an inherent feature of information. It is partly a function of mental architecture. Human minds are not general-purpose memorization machines. They have particular strengths and weaknesses that are the result of prior evolutionary pressures and compromises of design. Different kinds of memes and complexes of memes face different degrees of success in this architecture.

Compare the memorizing abilities of a computer with those of a human being. What is easy for a human being to remember may be difficult for a computer, and vice versa. Computers can easily memorize long stings of numbers that would tax any human memory. Narratives and myths are effective methods for human memorization, but not necessarily effective methods of computer memorization. Human beings can easily store hundreds of tales and myths that can be told in multiple variations. It is much easier for human beings to remember and recite a story than to remember and recite a text of a story word for word. On the other hand, it is very difficult to store a myth on a computer, although we can easily provide it with different textual versions of a myth.[9] Tales and myths are well-designed vehicles for human memory storage; this explains why they remain useful aids to memory to this day, and why they have survived without being forgotten. It is even possible that there were evolutionary advantages for human beings to storing information in narratives. The memorizability of narratives suggests both the internal structure of human memory and the important ways that it differs from those of currently existing computers.

Ease of memorization is especially important in oral cultures that have not developed writing or widespread literacy. In oral cultures, information that cannot be put in easily remembered forms will likely be forgotten. Hence the importance of bards and storytellers, who serve as walking encyclopedias. In oral cultures, songs and stories do multiple duty as popular entertainment, literature, history, religious doctrine, and canons of social instruction. As a result, branches of art and learning are not strongly differentiated.[10] Successful memes must attach themselves to easily remembered forms like stories, songs, and bodily movements, just as medical students to this day learn complex anatomical lists through the use of acronyms. Memes that are hard to remember either will be forgotten or must be transformed into more easily remembered forms before they can be widely spread throughout a culture.[11]

The invention of writing revolutionizes the cultural environment. Human memory is less of a bottleneck for memetic survival, because it can be supplemented by external memory storage. New forms of literature can develop and may even supplant those found in the oral tradition. Put more generally, every new communication technology leads to new and different susceptibilities for memetic infection; it creates a new ecology for memetic growth and repro-

duction. Changes in the ecology mean that rates of differential survival and reproduction change; new memes develop that could not have survived or reproduced as plentifully in the earlier environment.

This insight allows us to connect the theory of cultural software with the theory of media analysis. Media analysts like Marshall McLuhan and his followers argued that changes in dominant forms of communication (and hence memory storage) lead to changes in human thought and human culture. Put in terms of the theory of cultural software, changes in media are changes in ecology; they create new selection pressures for memes that lead to new and different kinds of cultural software in human minds. In particular, the movement from an oral to a written culture, and then to a televisual culture, has had significant effects on human memory and hence on human thought and culture.[12] Media analysts argue that styles of thought and expression differ markedly in oral and written cultures. Oral cultures feature thought that is figural, repetitive, concrete, and diffuse; in written cultures, thought tends to become more conceptual, linear, abstract, and analytic.[13] The latter kind of thought emerges precisely because print media permit it. In like fashion, forms of thought and expression start to change again as television begins to dominate communication.[14]

The subsequent move to a computer-oriented information society will doubtless further change our ability to store and process information, again revolutionizing our culture and our forms of thought. We are already seeing the signs of this in the information explosion that accompanies computerization. This explosion not only increases the life chances of many different kinds of memes; it also creates the need and the opportunity for ever new forms of filtering to control the amount of information being created and broadcast. As a result, in the information age, filters increasingly determine what information we receive and how we receive it. In the age of information, the filter is king.

The details of representation are sometimes as much a candidate for natural selection as the context represented.[15] Memes become coadapted to other memes that help in their delivery and memorization, just as information had to be conveyed in narrative or poetic form in oral cultures to ensure memorization and comprehension. In the relentless competition for human memory space, certain methods of communication win out over others: messages coded in rhymes or pithy sayings are memorized better than other messages; commercials with flashy graphics and news reports that resemble entertainment programs garner more attention than less entertaining forms. Media critics have documented how television has tended to merge news, political coverage, and entertainment, and a similar process appears to be happening in media coverage of the legal system.[16]

Related to ease of memorization is ease of comprehension. Human beings

are less susceptible to memes that they do not understand. Different minds have different degrees of susceptibility to memetic invasion, depending in part on their education and experience. A text that is easy for someone already trained in a discipline may be difficult for a lay person; a sentence easy for a native speaker to comprehend may be more difficult for another person. People who are immune to written language may nevertheless be susceptible to memes expressed in television shows, movies, or music. Different rates of comprehensibility create selection pressures on memes to be expressed in easily communicated and digested forms. Otherwise, memes must content themselves with smaller ecological niches—for example, in subcultures like academic writing.

Like memorizability, comprehensibility is often greatly affected by the medium of communication. Print media make much greater demands on comprehension and require more sustained attention than television. Television has a further advantage: it makes information entertaining by using music, quick image changes, and flashy graphics. The different features of these media have two separate types of effects. First, they bestow a survival advantage to memes conveyed on television, although there are compensating disadvantages as well—for example, televisual information may be viewed as disposable and hence more easily forgotten. Second, because television can be entertaining and absorbing in ways that print media cannot, there is continual selection pressure in television for memes to be more and more entertaining and absorbing. More entertaining programming tends to weed out less entertaining programming. Certain types of broadcasts—for example, a stationary camera focusing on an extended lecture by a standing speaker—tend to be weeded out because they are not "good television." More generally, memes involved in public discourse tend to become coadapted with memes that are optimal for communication on television, producing important alterations to both.

On television, certain styles of communication tend to dominate others: For example, in the current environment, at least, ten-second "sound bites" seem better adapted to the demands of television than four-hour discussions of policy issues.[17] Ideas embodied in pictures and accompanied by music tend to dominate ideas conveyed through rolling black text on a white screen. More generally, memes conveyed through a medium's favored forms of communication tend to thrive; memes that cannot be as effectively conveyed in this fashion tend increasingly to disappear from television broadcasts. This competition affects content as well as form. Political discourse has long since begun to borrow heavily from advertising; politicians have learned to stage media events that grab precious television time. Because television favors entertainment, there are selection pressures on public discourse, advertising, and even coverage of the legal system to conform to these standards and increasingly to

resemble other forms of television entertainment.[18] All of these tendencies confirm the role of natural selection in the development of culture.

EASE OF COMMUNICATION. Memes that are easy to communicate tend to spread more than those that are more difficult to communicate. Ease of communication is not necessarily the same as ease of memorization or even ease of comprehension. A list of numbers may be easy to communicate but difficult to remember. A deeply personal experience may be easy to remember but difficult to communicate.[19]

Every teacher knows that some ideas are more difficult to convey than others. Listeners often take away misunderstandings of complicated ideas because the misunderstandings are easier to comprehend and communicate to others than the original, more complicated idea. As a result, the distorted or mutated version may spread more widely than the original. Indeed, repeated communication can affect not only the substance of communication but its form as well. Some words are harder to pronounce than others, leading to mutations of pronunciation.[20]

Unlike genetic transmission, which engenders relatively faithful copying, cultural transmission normally involves alteration and mutation. Hence in explaining the spread of shared cultural software, we must account both for the ability of cultural software to spread and its ability to preserve some measure of identity.[21] Because opportunities for alteration are so commonplace, the most widely shared features of our cultural software are those that can best resist alteration after repeated transmission and mutation.[22]

Stories provide a good example. Each time a story is told, it is likely that the version is slightly different from the last. Some details may be added, others subtracted, and still others compressed or merged. Only the most easily communicated, understood, and remembered features tend to be preserved.[23] Most people who remember the biblical story of Joseph, for example, believe that Joseph was sold into slavery by his brothers. In fact, the story told in the Bible is more complicated and thus less easy to remember. The Hebrew text suggests that Joseph's brothers threw him into a pit. He was rescued by some Midianite merchants, and they sold him into slavery. But the "folk" version of the story has become more widely transmitted than the original.[24]

In similar fashion, statements and slogans tend to be transformed through repetition until they are relatively easy to remember and transmit to others. This may help to explain the familiar phenomenon of famous "quotations" that were never actually spoken but are variants of what was actually said.[25] Not surprisingly, political slogans spread more easily than the complicated political theories that they stand for, and they have the further survival advantage that they stand for many different things to many different people.

This evolutionary account explains why a wide variety of cultures have similar narratives and myths. Claude Lévi-Strauss argued that myths in different cultures were transformations of basic narrative structures that in turn reflected basic structures of the human unconscious.[26] But we can explain matters more simply. The "universal structures" that we see in human myths and legends may reflect those elements of stories that best survive the continual mutation and alteration that comes with repeated tellings. Moreover, because the spread of myths depends on the ecology of human minds, their content and structure may shift over time.

REFLEXIVE BELIEFS. One of the most important factors in human susceptibility to memes is the reflexive nature of our thought. People not only can have ideas, they also can have ideas about ideas. They can have attitudes or opinions about particular beliefs and ways of thinking. For example, people can understand ideas without being convinced of them; they can believe that certain things are not true; they can recognize that certain opinions are odious. They can engage in mental simulations, plan, exercise foresight, imagine, model, play, or fantasize.[27] People often remember memes precisely because they are false, wicked, or don't work. Parents take great pains to teach children what not to think and what not to do, and, if they are lucky, their children internalize these lessons.

People not only can produce and store interpretations of events, they can produce and store interpretations of those interpretations.[28] For example, historians not only develop interpretations of the American Revolution, they also remember and discuss the various interpretations of other historians about the Revolution. Moreover, they can pass these interpretations on to their students and other historians even if they don't accept them.

The recursiveness of human thought makes people susceptible to many more types of memes than they actually accept, believe, or act upon. Memes may not die out even if people reject or disbelieve them, because people can still remember and discuss them—with the admonition that "this is wrong" or "this doesn't work."[29] False ideas and bad practices can remain in human memory even though they are known to be bad or false. What is stored in memory can be communicated to others. As a result, false ideas and harmful cultural skills can be passed on to new generations despite their being known to be false or harmful. These memes can live to another day, when they can significantly affect the behavior of another host. In such ways, superstitions and prejudices can survive even though people decisively reject them. A more benign example takes the form of historical interpretations rejected by one generation of historians that are retained in historiography and eventually regain favor in a subsequent generation.

Finally, people can store ideas and beliefs even if they do not completely understand them and are not certain whether they are true.[30] People may believe that space curves near a heavy mass, for example, because they read it in a book, although they really don't understand how this could be so. They can retain such beliefs pending further information that might clarify the beliefs or demonstrate the beliefs to be true. And people can hold these beliefs indefinitely, even if no additional clarification or proof is forthcoming.[31]

Such half-understood beliefs are not restricted to obscure scientific theories. People can hold beliefs about UFOs or religious doctrines, for example, whether or not they fully understand or know the truth about such things. In fact, people may be particularly susceptible to what is mysterious precisely because mysteries resist solution or comprehension.[32] Exposure to ideas that are difficult to prove or comprehend may even encourage their being discussed or talked about further. Their very inconsistency with other beliefs and their very inability to be fully comprehended make mysteries intriguing and attractive and lead to their further discussion and distribution into other minds. In this way, an otherwise beneficial feature of human cognition—the ability to store and reconsider incompletely understood information—creates the opportunity for the differential reproductive success of a certain kind of meme—the mysterious—in the environment of human minds.

### *Ecological Factors*

In most cultures, the reproductive success of memes is largely determined by other memes and by the institutions that use and propagate other memes. Previously internalized memes shape mental susceptibilities to new memes; the cultural skills involved in institutions create the environments in which memes compete. Thus the pool of existing memes creates the basic ecology for other memes. Cultures are like the tropics, where the landscape is overgrown by plant and animal species, and where chances of survival and reproduction are largely determined by the ecology of other organisms rather than by the original physical habitat.[33] Tropical climes are well known for their intricate ecosystems and for the strange and freakish creatures that they produce.

In short, we should think of cultures as ecologies rather than as well-integrated and organic unities. They are inherently open systems rather than closed ones. Cultures involve an ecological equilibrium between different forms of cultural software, an equilibrium that may be disturbed, reconfigured, or even destroyed by memetic invasion or environmental disturbance.

SEXUAL SELECTION AND BANDWAGON EFFECTS. The crush of animal and plant life in diverse ecologies creates opportunities for exaggerated and bizarre

traits. This is due in part to an evolutionary phenomenon called sexual selection. In the natural world, females tend to choose mates based on characteristics that are attractive to other females. They do this to guarantee that their male offspring will be equally attractive to future generations of females, for offspring that attract no mates will produce no offspring of their own.

Females look for characteristics in mates that tend to correlate with the reproductive success of their offspring. Once female preference for a feature is generally established, however, the feature by itself makes the offspring more desirable to future females. Thus females want the feature in their mates simply because all other females also want the feature. The result is a "runaway" effect: the preference for the feature is intensified out of proportion to its otherwise beneficial effects.[34] Thus female peacocks prefer peacocks with long bright tail feathers. These features may confer no present additional evolutionary advantage—they may even be debilitating to the male—but because of sexual selection they increase the chance that these males and the females who select them will reproduce their genes in future generations.

In the world of culture, analogies to sexual selection can occur in several different ways. First, to some extent, individuals can choose what beliefs and cultural skills they will internalize. They may choose to adopt beliefs and behaviors of powerful and influential people because they believe that this selection will make them seem influential and powerful. This process can snowball so that status-seeking individuals attempt to outdo each other in cultural displays. The result is extremism in belief and behavior, because the extremist, like the long-tailed peacock, seems to be at the leading edge of a trend.[35] The desire to be thought highly successful, powerful, or pious can even lead to competitive construction of elaborate cultural monuments, like pyramids and cathedrals.[36]

Second, a cultural equivalent of sexual selection produces "bandwagon effects." People may engage in faddish beliefs or behaviors because they believe that others regard them as desirable, and the belief that others find them desirable increases their desirability even more. John Maynard Keynes's famous description of the stock market as a beauty contest is based on a similar logic—people often buy stocks because they believe that others value them, and this drives up their value out of proportion to a company's expected future earnings. Signals and filters can play important roles in producing bandwagon effects. Best-seller lists are institutional filters that use people's past buying decisions, but they simultaneously act as an advertising gimmick by signaling other people's preferences. Once a book sells enough copies to get on the best-seller lists, its sales may increase rapidly.[37]

Third, sexual selection can occur in the way memes form alliances with

other memes. Just as females seek to mate with males whose offspring will be desirable to future females, memes may face evolutionary pressures to join forces with memes that seem particularly successful in gaining entry to human minds. These traits can also snowball. Suppose that flashy graphics, loud volume, and quick cross-cutting of images tend to attract the attention of television viewers. Then memes may come to be delivered through increasingly flashier graphics, louder volumes, and quicker cross-cutting. This may explain the evolution of some forms of television advertising.

INSTITUTIONAL AUTHORITY. An important feature of human culture is that human beings can accept beliefs and adopt customs and practices because of institutional authority. We believe many things not because we have direct evidence for them or have gone about proving them to our own satisfaction but because they have been communicated to us by people and institutions we trust. Similarly, there are many practices and customs that we have adopted not because we have independently determined that they are optimal but because other people engage in them. Sometimes doing what others do has independent advantages—for example, cooperation and coordination can sometimes solve collective-action problems to the benefit of all parties. However, not all examples of following what others do can be explained or justified in this way. Driving the same car that everyone else drives, following the current fashion trends, or hewing to the party line does not necessarily solve collective-action problems.

Following the dictates of institutional authority makes sense for a different reason. Many things cannot be demonstrated for certain, and it is often difficult to know what course of action is best. Hence it may be rational for people to believe things simply because that is what other people believe, and to do things simply because others do them. Believing and doing these things is rational, not by virtue of their content but by virtue of their source.[38] If this is indeed rational behavior, we would expect that people in different parts of the world would have different beliefs and customs because they trusted and learned from different sources of belief and action—the people who educated them.

Cultural traditions have a kind of institutional authority, and a similar logic applies to them. Traditions provide people with things to believe and ways to behave. Traditions are not necessarily antithetical to rational action: people rationally strategize within the norms of their tradition and its beliefs; they can even decide to forsake their traditions for other beliefs and practices. That is one way that traditions evolve. But it may be reasonable for people to hew to traditional beliefs and practices when it is difficult and costly to discover what to otherwise believe or do. This is especially true of problems of practical

reason. The long-run usefulness of practices may be difficult to determine in advance. Hence following tradition becomes a useful means for solving problems of ordinary living.[39]

INSTITUTIONAL CONTEXT. Memes are more likely to spread if they are relevant to existing institutions, either because they are associated with the institution or because they give rise to appropriate action in the institution. Handel's *Messiah*, Tchaikovsky's *Nutcracker*, Frank Capra's *It's a Wonderful Life*, and Dickens's *A Christmas Carol* are among the best known and most often repeated of their works because these works are associated with the institution of Christmas. Among the most frequent phrases spoken in many cultures are greetings, comments on the weather, and requests after health.

If an institution requires regular and repeated replication or demonstration of a meme or cultural skill, the chances for survival of that cultural skill are greatly enhanced because the skill is more likely to be remembered and reproduced. Cultural software benefits in particular if there are institutions specifically devoted to its spread and propagation. Examples are schools, churches, libraries, universities, and the family. Some cultures institutionalize the telling of myths and legends, and this helps to ensure their continued survival.

Complicated scientific information depends heavily on institutional structures for its survival and spread. Scientific truths may be quite compelling once demonstrated to an audience prepared to receive them, but they are often difficult to comprehend without considerable training. Hence even the most indubitable of truths may require elaborate institutions of education (including elaborate structures of intellectual authority) if they are to be preserved and propagated. If these institutions fall apart, the true beliefs that they propagate may become extinct as well. Our romantic notion that the truth will out neglects the importance of institutional ecology. Here is yet another example that shows that the truth of a belief does not guarantee its widespread reproductive success; it must find a niche in a suitable environment if it is to survive.

Political beliefs also depend heavily on institutional context, but for somewhat different reasons. Dan Sperber gives the example of the belief that all people are created equal.[40] This belief is both salient and controversial in societies organized around pervasive social, economic, and political inequalities. That is because the belief has many different implications for such a society. People who like these implications have grounds to accept the belief and incentives to spread it, even in the face of considerable opposition.

This is the memetic version of a familiar theory of ideology—interest-driven explanation. People believe things that jibe with their social, economic, or political interests. The memetic claim is that the institutional environment makes certain people's minds fertile ground for certain types of memes. As a result,

these memes tend to propagate once they are introduced. But if opposition to the implications of a belief is too great, the meme may not spread; at best it may be confined to certain subcultures where it can survive and reproduce.

The memetic account adds a new twist to this familiar explanation of ideology. Because we can model the prevalence of a belief as the result of a competitive equilibrium, the insights of catastrophe theory apply. A slight change in the institutional ecology may have enormous effects completely out of proportion to the degree of ecological change. The belief may spread quickly and unexpectedly. At one point, for example, a particular meme—say one associated with radical egalitarianism—may be able to maintain only a marginal existence in a particular subculture. Yet a slight change in the institutional ecology may lead to an explosive spread of belief. In the new environment, the meme takes off and reaches epidemic proportions.

Nevertheless, if memes are to reproduce widely over time they must be able to adapt themselves to political, social, and economic changes. Thus a meme like equality is most likely to thrive if it can be articulated and adopted by people of different political views over time. Thus successful memes often are subject to wide variation in the form of contrary interpretations and subtle shifts in meaning.

Ideas often change their political valence as they are repeated in new contexts and situations. A good example is the idea that democratic governments should be "colorblind." This idea was associated with a very progressive view of race relations in 1896. It was the basis of Justice Harlan's famous dissent in *Plessy v. Ferguson*, when he opposed the segregation of railroad facilities.[41] In the 1960s Martin Luther King fought segregation by arguing for an America where citizens would "not be judged by the color of their skin but by content of their character."[42] Yet by 1996 colorblindness was the rallying cry of conservatives opposed to affirmative action. A second example involves the libertarian concept of freedom of speech. In the first half of the twentieth century freedom of speech was defended by the political left as a means of protecting political dissenters, minority groups, and labor unions. By the close of the twentieth century it was also being used to defend the rights of cigarette manufacturers, the Ku Klux Klan, sexually harassing employers, multinational media conglomerates, and political action committees opposed to campaign finance reform.[43]

I call these changes in political valence *ideological drift*.[44] They are a ubiquitous phenomenon in social and political life. From a memetic standpoint ideological drift is an example not of political opportunism but of memetic opportunism. As political and social contexts change, slight mutations can make memes newly hospitable to persons who previously would have shunned them. Some members of the American left, for example, have become increasingly

attracted to regulation of campaign spending, pornography, racist speech, and commercial advertising, while conservatives have become increasingly libertarian on the same questions. Shifts in political and social context—as well as in the interests and other beliefs of liberals and conservatives—change the ecology in which political ideas about freedom of speech can thrive. As a result memes may find new minds increasingly hospitable and older hosts increasingly less so. It is important to recognize that memes do not particularly care who invokes them as long as they are regularly invoked. Memes that were once happily nestled in liberal heads will readily and opportunistically mutate to become acceptable to more conservative minds should this increase their chances of propagation and survival.

## Shared Understandings and Lines of Memetic Descent

The theory of cultural software holds that individuals share cultural understandings because they possess similar memes. One reason people have similar memes is that they communicated them to each other, or that they live in the same culture and therefore have been exposed to the same memes communicated by other members. But this does not explain how individuals in widely divergent cultures might possess similar tools of understanding, because not all cultures are in continuous contact with each other.

Sometimes individuals have similar cultural software not because they or their cultures have had any recent communicative contact with each other but because their cultural software is descended from a common source. Biological evolution offers a useful analogy. Generally speaking, mammals have four legs and a single head. This common morphology is not the result of crossbreeding between different species but rather is due to the common ancestry of all mammals. The basic pattern for bodily development is passed on in each species even as it evolves and is differentiated among species. That is because biological bricolage is generally conservative, retaining past design choices as the platform for future innovation.

In a similar fashion, the cultural software of present-day human beings builds on the work of previous generations. It is conservative in the same way that biological bricolage is conservative. Earlier forms are retained in later developments, and hence we see many similarities among diverse individuals and cultures to the extent that their cultural software has a common ancestry. Language provides a simple example: Similarities in words across different languages (*father* in English, *Vater* in German, *père* in French, *padre* in Spanish) are evidence of common memetic descent.

One reason for the conservatism of biological development is architectural constraint produced by previous evolution. Previous design choices (like those

in the panda's paw) constrain future morphological development. In the previous chapter I argued that a similar architectural constraint may be at work in meme complexes. Coordinated complexes of memes (like those in a religion) may be able to accommodate only certain kinds of changes if they are to reproduce successfully together. If cultural software spreads and develops through such meme complexes, we might also expect that certain features will be deeply embedded in our cultural software and more resistant to change, just as we would not expect an easy transformation from mammals with four legs and one head to mammals with eight legs and multiple heads.

Furthermore, because evolutionary bricolage must innovate on the basis of existing materials, it tends to retain these materials and adapt and alter them for new purposes. Thus certain tropes, metaphors, symbols, heuristics, or other tools of thinking may run very deep in our culture precisely because they appear so early on in the course of historical development, and therefore have been repeatedly used to fashion later tools through which we presently understand the social world. This depth is not the depth of a core versus a periphery but one produced by repetition and recursion. We can see an instance of this in our earlier etymological example of the word *articulus*, or joint. This word and the concept it represents are used repeatedly to form new words and concepts, which are in turn used to create still other words and concepts, and so on. This process proliferates the original metaphor of joining and dividing into a multitude of later conceptual tools; each of these tools, in turn, is proliferated into new tools, so that the metaphor of joining and dividing appears repeatedly in widely divergent aspects of our cultural software.[45]

On the other hand, it is also possible that certain memes appear in widely divergent cultures not because of a line of common memetic descent but because these cultures faced similar problems and produced similar solutions. For example, Robert Ellickson reports than many different cultures have produced forms of private ownership in land.[46] It is possible that this idea began with a single culture and spread to others because it was useful. But it is also possible that it developed independently in many cultures because people in each culture recognized its utility.

A similar point applies to sociobiological explanations of human behavior. Such explanations argue that common human behaviors stem from genetic predispositions. In effect, they argue that we have similar behaviors because we are descendants of the same group of human beings and hence share common genes through a line of genetic descent. But precisely because human beings are able to adapt themselves to the problems they face and pass these solutions on to others in the form of culture, we cannot necessarily infer that any particular set of behaviors stems from a line of common genetic descent. As we have seen, similarity of behavior across cultures may be due to common me-

metic descent, that is, cultural transmission. Or it may be due to the fact that two different cultures "invented the wheel" independently because they faced similar problems and devised similar solutions. In such cases there is neither common genetic nor common memetic descent.

Although many commonalities in human behavior surely do stem from our common genetic heritage, genetic descent is not the best explanation for large segments of common human behaviors. As Dennett points out, "In every culture known to anthropologists, the hunters throw their spears pointy-end first, but this obviously doesn't establish that there is a pointy-end first gene that approaches fixation in our species."[47] People throw their spears in this way not because they are biologically programmed to do so, but because it makes sense to do so, and so everybody ends up doing it in pretty much the same way. A similar analysis applies to less frivolous examples, like the development of common systems of land tenure or accident law that appear in different times and places. The human condition often leads to similar problems across different environments; hence human reason produces similar behaviors to solve these problems; but it does not follow that the behaviors themselves are genetically predetermined.

## Cultural Separation and Speciation

I noted earlier that cultural transmission is not simply a means by which memes are copied from one mind to another; it is also an important source of mutuation and change. Because perfect copying is the exception rather than the rule in memetic transmission, people's cultural software may vary considerably unless there are institutions and practices that homogenize it. Put another way, successful complexes of memes must have ways of accurately reproducing themselves in succeeding generations of minds if they are to survive. In fact, there are many devices for instilling common values and tools of understanding among members of a culture. The most simple is the existence of a common language, but we might also include the family, public schools, intellectual disciplines, and religious institutions.[48] These institutions have many different purposes. From an evolutionary perspective, however, they have one additional purpose: to preserve cultural content and cultural identity. They exist in order to reproduce memes (and hence themselves) in new minds.

Constant communication and participation in common social activities are important ways to reproduce and reinforce cultural software in the members of a culture. Conversely, isolation of individuals from a larger group results in cultural isolation and divergent cultural development. There is a useful analogy in evolutionary theory. Ernst Mayr argued that different species form because breeding populations become reproductively isolated, either because of geo-

graphic separation or because each inhabits a distinct ecological niche. This causes the genetic pool in the distinct populations gradually to diverge over time.[49]

In like fashion, communicative isolation separates populations of memes, and over time these populations may develop in distinctly different ways. Communicative separation robs institutions of one of their most important means for memetic replication and cultural homogenization. Linguists have long understood that languages begin to differ from each other because of geographic isolation. Even cooking styles become distinctive when cultures are isolated.[50]

Biological speciation results from separation of breeding populations, preventing genes from moving from one group to the other. Cultural speciation results from communicative separation, which prevents memes from traveling from the minds of one group to the minds of the other. This communicative separation may be geographical or spatial. But it may also be produced by culturally created boundaries that discourage communication between people and are themselves the product of previous cultural development. Thus if people who live next to each other never talk to each other—because cultural mores keep them apart—they may develop completely different ways of understanding the world. Under the right conditions, cultural differentiation can snowball—racial ideologies may keep blacks and whites from intermingling and communicating with each other, for example, leading to the development of increasingly distinctive subcultures and mutual incomphrension.

Disciplinary boundaries in the modern university exemplify another form of cultural separation. Disciplines are not only distinctive ways of thinking about things; they also serve as ecological niches that separate populations and produce divergent development. But instead of an ecology formed by the natural environment and other animals, this ecology is formed by other memes and cultural institutions. Other examples are clubs and societies that share common interests and develop their own distinctive preoccupations and languages.

Scholars who move across disciplinary boundaries often discover mutual incomprehension among members of different disciplines; each possesses a different vocabulary and different interests, research paradigms, and conceptions of what is interesting or important. As a result, an economist may find it much easier to understand a fellow economist three thousand miles away than the anthropologist in the building two blocks away.

Just as communicative isolation may tend to produce divergence in development, common experience and common communication may tend to homogenize the tools of cultural understanding in a population. Increasing communicative interaction can encourage reciprocal influence and shared ways of thinking. One must use the term *reciprocal* advisedly, though. The most numerous or dominant groups of individuals may have a disproportionate effect

on the cultural software of smaller and subordinate groups—unless, of course, the latter groups have greater communicative power.

This relation between commonality and cultural homogeneity suggests the signal importance of the rise of mass communication. Mass communication makes possible—indeed, increasingly enforces—enormous amounts of interaction between otherwise widely separated individuals and cultures. Much more than individual travel, mass communication is the great arbitrageur of cultural differences. It mixes cultural influences in ways that often annoy cultural purists. Moreover, because it multiplies opportunities for transmitting memes, mass communication also tends to accelerate the growth and mutation of forms of cultural understanding. Nevertheless, mass communication does not necessarily enforce uniformity; it simply creates more opportunities for mixing and reciprocal influence. Sometimes this mixing does produces homogeneity and uniformity, but sometimes it produces diversity and specialization.

Thus communication performs two contrary functions. On the one hand, it preserves stability and similarity between the various copies of cultural software located in each individual. On the other hand, it allows innovations in the tools of understanding to be transmitted to others, so that they may become part of the meme pool, the common cultural heritage. Communication is a source of stability as well as change in a meme pool and in the cultural software of individuals within a culture.

## The Economy of Cultural Software

This book has offered two different accounts of the spread and development of cultural software. The first is conceptual bricolage: a non-Darwinian process of historical development through which human beings fashion new tools of understanding out of older ones, often with unexpected consequences. The second is memetic evolution: a Darwinian process of variation, reproduction, and differential survival of memes that form the building blocks of human cultural software. The first perspective describes the development and spread of culture from the standpoint of human thought, design, and action. The second describes this process from the standpoint of units of cultural transmission that compete for survival in the environment of human thought, design, and action.

We can view the spread and development of cultural software in a third way. We can see it as an economy of human communication—a process of exchange and development in which the members of a culture continually rewrite and reshape each other's cultural software. The idea of an economy joins the first two perspectives together, for it is both the mode of transmission of the products of cultural bricolage and the method of reproduction for the

memes that inhabit human minds. Equally important, the economy of cultural software is the means through which ideological power is wielded over members of a culture.

In accord with the computer metaphor, one might compare culture to a giant network of individuals. But culture is not a top-down network, in which a single server transmits identical copies of a software upgrade to the various nodes. It is more like the network of networks called the Internet, which has no center and in which an astonishing array of diverse information flows to and from different points simultaneously. Cultural software is not created in a single place, nor is it distributed from a central location, nor do all individuals share identical copies. The cultural software of individuals in a culture is written and rewritten through acts of communication and understanding among individuals in a culture. An individual's cultural software can also be rewritten through individual experience outside of interpersonal interaction. But the memes so created do not become cultural—in the sense of widely shared—unless they are transmitted to others. Hence even individual innovation and trial-by-error learning become part of the economy of cultural software through communication.

The nodes of a cultural network are continually communicating with and attempting to understand each other, and thus continually having reciprocal effects on the structure and content of each other's cultural software. This continuing process of communication is the economy of cultural software. Like other economies, it involves exchange, and it is driven by and operates through similarity and difference. Communication to others produces or reinforces homogeneity, even as differences in the understanding of individuals, however minute, are a potential source of change.

Although each individual has different cultural software, we can speak of "our" cultural software or the cultural software of a particular culture in two different ways. First, just as we can speak of a gene pool—the set of available genes that compete in the environment—we can also speak of a "meme pool." The meme pool of a given culture includes the copies of all memes that exist at any one time in the environment of human minds and information storage technology within the culture. Second, we can speak of this meme pool in dynamic terms—as an ongoing economy of transmission and exchange. This economy is the process through which the meme pool grows, develops, and is sustained. It creates the environment in which memes live and die, thrive and become extinct. The *economy* of cultural software is also the *ecology* for the memes that constitute individuals' cultural software.

When we speak of cultural software, we can either be speaking of the distinct collection of memes that forms part of a particular individual or of the larger economy of cultural software existing within a culture. But when we

speak of the cultural software of an entire culture, we must not think that we are describing a single great "program" that exists over and above each individual, or even a set of identical copies of a single program installed in isolated individuals. The cultural software of a group is not a separate set of skills in and of itself; it is rather a system of similarities and differences among the skills available to the members of a given culture. Both the similarities (which are sources of shared understandings) and the differences (which are sources of dissensus) are equally important parts of the economy. This economy is a huge system of networks, and networks of networks, of individuals continually communicating with each other by word and deed, by voice and action, continually engaged in a process of collective writing and rewriting of their cultural software.

Each person contributes to this economy through her words and actions, because she sends memes out into the world, where they can be absorbed and assimilated by others. Each individual is a potential source and a potential target of memetic infection. Through a partly cooperative and partly agonistic process, our tools of understanding are crafted and recrafted over time. This process produces a wide array of cultural skills, which are the collective property of the culture and are passed along to succeeding generations.

This set of available tools of understanding is the meme pool. It is sustained and replenished through acts of communication, just as the gene pool is sustained through reproduction. Through cultural transmission, each generation bequeaths to the next a huge collection of cultural skills, associations, heuristics, metaphors, conceptions, and constructs—a patrimony that will be squandered without perpetual communication between members of the culture.

Yet repeated transmission is also the source of change. Although symbolic and informational exchange is occurring all the time, there is no reason to think that it produces complete uniformity; indeed, it would be surprising if it did so. Communication continually introduces variation. Each person in the culture is equipped with slightly different tools of understanding and therefore carries away different experiences from communication. Each articulation of a meme in new contexts produces differences, however slight. Personal experiences and innovations of individuals give birth to new memes that join the meme pool once they are communicated. In this way, differences multiply over time, leading not only to the perpetuation of cultural software but also to its perpetual differentiation.

Consider, for example, the effects of rapid technological change on persons of different ages within a culture. Younger generations easily pick up technological skills and abilities that are difficult for older members to master, just as they develop linguistic habits and even accents that differ from their elders'. In the same way, we should expect that although the cultural software of each

individual overlaps with others in important ways, it also varies significantly as well. If enough people have cultural software that is sufficiently similar, this produces a cultural intersubjectivity that is also a cultural objectivity, because all of them see and understand the world in similar ways. This intersubjective agreement is accompanied, however, as it is in real life, by significant differences of understanding and belief.

Accounts of shared understandings usually face a problem in accounting for the dynamic nature of cultural traditions: How can a tradition grow and evolve while it remains a tradition shared by all of its members? How can shared meanings and practices remain shared if they are constantly changing? The twin concepts of the meme pool and the economy of cultural software allow us to give an account of this phenomenon. Shared understandings are the result of the partially similar (and partially different) cultural software of individuals within a particular culture. But this software does not remain the same indefinitely. Memes have differential rates of reproduction and survival in the environment of human minds and their technologies of information storage. This causes the cultural software in the minds of individuals to evolve. But as long as the members of the culture are part of the same meme pool and participate in the same economy of communication, their understandings evolve together in roughly the same way. Biological species continue to share a common gene pool and evolve together even though that gene pool is constantly evolving as members continue to interbreed. In the same way the economy of communication among members of a cultural tradition ensures that shared understandings continue to be shared by individuals even though the content of these understandings changes over time as the meme pool constantly changes.

In this way, the theory of cultural software offers a distinct improvement on historicist accounts of cultural understanding like Gadamer's. It translates the idea of a historically evolving tradition into something that truly exists in each individual and constitutes each individual. It shows that the tradition evolves as an economy of communication that regulates a shared meme pool. The theory thus avoids the theoretical puzzles that stem from supraindividual entities—like a tradition, a collective consciousness, or a Zeitgeist—offered to account for the commonality of beliefs and actions. The claim that there is a "spirit of the age" that produces similarities in artistic and intellectual production, for example, merely begs the question of what such an entity is, where it is located, and how it can have causal effects on individual thought and action.

In contrast, the theory of cultural software explains commonalities in intellectual and artistic production as the result of the similarities in the cultural software found in different individuals within a culture. These similarities are maintained by an economy of exchange, reproduction, and evolution. Thus,

what people call collective consciousness or the spirit of the age is not a *cause* of similarities in individuals' cultural production; it is the apparent *effect* produced by an economy of exchange among people with sufficiently similar cultural software. Moreover, unlike these hypothetical entities, this system of exchange not only produces and reproduces relevant similarities among individuals; it also produces and reproduces differences that lead to divergence and variation. Thus we can say, without the introduction of any mysterious entities, that painters in the Renaissance or composers in the Classical period had similar styles not only because they used the same technologies of painting or music, but because they employed similar tools of understanding. In a given culture at a given time, individuals in different walks of life and different intellectual pursuits produce artifacts and theories that bear uncanny metaphorical similarities to each other because the tools that lie to hand in that age are similar for each of them, because each thinker draws from the same meme pool. We need not say that these similarities exist because of the Zeitgeist; rather we should say that the metaphor of the Zeitgeist describes the operation of an economy that produces these similarities.

## The Distribution of Cultural Software

An economy of cultural software is a system of similarity and difference in the memes that constitute the members of a culture; the degrees of that similarity and difference may vary in different cultures. Hence an economy of cultural software is distinguished not only by the content but also by the distribution of different types of cultural software among its members. The relative distribution of similarity and difference affects the degree of intersubjective agreement in a culture, as well as the degree of disagreement, mistake, and dissensus.

The distribution of memes in a culture is an important feature of the ecology in which memes spread and evolve. If the distribution of memes changes in a culture, the character of the culture may change dramatically. Durkheim's notion of collective consciousness, for example, described the thought of relatively primitive societies. But this consciousness dissipated as these societies developed increasing specialization of labor and moved away from mechanical solidarity toward the organic solidarity that we associate with modernity.[51] The dissolution of collective consciousness corresponds to a change in the distribution of memes as well as their content.

People often identify modernity with increasing secularization, rationalization, and differentiation of social functions. But we can also think about modernity in distributional terms. What distinguishes modern (and postmodern) cultures is more than the common possession of a particular set of tools of understanding—they also possess a more exaggerated and distinctive econ-

omy of differences in cultural software that, in turn, produces the kinds of relativism and historicism, disenchantment and lack of solidarity that we associate with modernity.

There is a familiar view of modern thought as the result of diverse cultural influences meeting in a single culture. This mixing of influences may stem from changes in communications technology, increased opportunities for travel or trade with other cultures, or increasing rates of literacy and education. In memetic terms, all of these tend to flood the existing meme pool with memes from other populations. This memetic invasion tends to change the distribution of the pool. The predictable result is wider disparities in cultural software as well as mixing and crossing of cultural lineages.

Changes in distribution also effect changes in content. First, old memes tend to mix with new ones, spurring cultural innovation. Second, particular memes and memetic filters proliferate in response to the flood of new memes. Some of these are the familiar tropes of modernist anxiety—a sense of loss of an organic connection to past traditions, a desire to regain cultural authenticity, the longing for an imagined golden age of uncomplicated consensus and harmony, and the fervent need to regain the past by clinging to its symbols and material manifestations.[52] Another very different set of memes also flourishes in this new ecology—memes that promote cultural relativism and skepticism. The ecology of modernity is a fertile breeding ground for these ideas because the very presence of so many different and conflicting cultural influences seems to provide evidence for them.

The past two chapters have portrayed cultural understanding as a result of an ongoing economy of communication through which individuals transmit memes to one another and rewrite one another's cultural software. Implicit in this picture are deep connections between cultural communication and ideological power. Communication is a potential source of power over other individuals because it can rewrite their cultural software. Conversely, our ability to understand others is a potential source of vulnerability, because it means that we are susceptible to ever new forms of memetic invasion.

This connection between power and cultural understanding brings us back to the theory of ideology. In the next three chapters, I shall explain how the theory of cultural software approaches the traditional questions that have been asked about ideology and grapples with the recurrent problems that any theory of ideology must face.

78. See, e.g., Ken Binmore, *Game Theory and the Social Contract: Playing Fair*, vol. 1 (Cambridge: MIT Press, 1994); Robert Axelrod, *The Evolution of Cooperation* (New York: Basic, 1984); Edna Ullmann-Margalit, *The Emergence of Norms* (Oxford: Clarendon, 1977).

79. Stephen Jay Gould and Richard C. Lewontin, "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme," *Proceedings of the Royal Society, London* (1979) B.205: 581–98.

80. Eldredge, *Reinventing Darwin*, p. 46.

81. For examples of this point in the evolution of accident law, see J. M. Balkin: "Too Good to Be True: The Positive Economic Theory of Law," *Columbia Law Review* 87 (1987): 1447–89.

82. Gould and Lewontin, "The Spandrels of San Marco," 582–83.

## 4. The Spread of Cultural Software

1. See John A. Ball, "Memes as Replicators," *Ethology and Sociobiology* 5 (1984): 145–61.

2. Daniel C. Dennett, *Darwin's Dangerous Idea: Evolution and the Meanings of Life* (New York: Simon and Schuster, 1995), 349; see also Richard Dawkins, "Viruses of the Mind," in *Dennett and His Critics*, Bo Dahlbom, ed. (Oxford: Blackwell, 1993), 13–27.

3. Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, new ed., 1989), 212.

4. Dennett, *Darwin's Dangerous Idea*, 349.

5. Ibid.

6. Dan Sperber, "The Epidemiology of Beliefs," in *The Social Psychological Study of Widespread Beliefs*, Colin Fraser and George Gaskell, eds. (Oxford: Clarendon, 1990), 25–44.

7. Dennett, *Darwin's Dangerous Idea*, 349.

8. See Dan Sperber, "Anthropology and Psychology: Towards an Epidemiology of Representations," *Man* n.s. 20 (1985): 73–89, at 82.

9. Ibid., 80–83.

10. Eric A. Havelock, *Preface to Plato* (Cambridge: Harvard University Press, 1963); Albert B. Lord, *The Singer of Tales* (Cambridge: Harvard University Press, 1960).

11. Sperber, "Anthropology and Psychology," 86. Sperber calls this the "Law of the Epidemiology of Representations" for oral cultures.

12. Neil Postman, *Amusing Ourselves to Death: Public Discourse in the Age of Show Business* (New York: Penguin, 1985); Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1964); Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: University of Toronto Press, 1962).

13. Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (London: Methuen, 1982).

14. Postman, *Amusing Ourselves to Death;* McLuhan, *The Gutenberg Galaxy;* Ong, *Orality and Literacy*, 135–38.

15. To vary McLuhan's famous aphorism, the medium is the meme as well as the message.

16. Postman, *Amusing Ourselves to Death;* Ronald Collins and David Skover, *The Death of Discourse* (New York: HarperCollins, 1996), J. M. Balkin, "What Is a Postmodern Constitutionalism?" *Michigan Law Review* 92 (1992): 1966–90.

17. Over time the average length of uninterrupted statements of presidential candidates in the United States has been shrinking, and so has the length of campaign advertisements. Cass Sunstein, *Democracy and the Problem of Free Speech* (New York: Free Press, 1993), 61; Kathleen Hall Jamieson, *Dirty Politics* (New York: Oxford University Press, 1992), 205–8.

18. For a particularly pessimistic version of this thesis, see Postman, *Amusing Ourselves to Death*.

19. Sperber, "Anthropology and Psychology," 80–81.

20. In historical linguistics, for example, Grimm's Law predicts the direction in which pronunciation of consonants will mutate over time. See Theodora Binyon, *Historical Linguistics* (Cambridge: Cambridge University Press, 1977), 83–85.

21. Sperber, "Anthropology and Psychology," 75.

22. Sperber, "Epidemiology of Beliefs," 29–30. This is consistent with experiments which show that narratives tend to be pared down and simplified as they are transmitted from person to person.

23. Ibid.

24. "Then Midianite traders passed by; and they drew Joseph up and lifted him out of the pit, and sold him to the Ishmaelites for twenty shekels of silver; and they took Joseph to Egypt." Gen. 37:28, Revised Standard Version. Interestingly, Joseph himself later accuses his brothers of having sold him into slavery. See Gen. 45:4 ("I am your brother, Joseph, whom you sold into Egypt"). The potential ambiguity in the biblical description of the sale stems from the use of the Hebrew word *vayimk'ru* ("and they sold") appearing after the reference to the Midianites; however, most English versions of the Bible—including the King James, the New American Standard, the Jewish Publication Society, and the New English Bible—translate the passage similarly to the Revised Standard. It is possible that the biblical text is a conflation of two versions of the story—yet another example of the phenomenon of mutations in storytelling.

Joseph's sale into slavery has posed an interpretive problem for biblical commentators. Rashi's commentary on the Torah argues that Jacob's sons sold Joseph to the Ishmaelites, who sold him to the Midianites, who sold him to the Egyptians, who brought Joseph into Egypt. Thus the phrasing of the Hebrew in Gen. 37:28 is meant to suggest not that Joseph was not sold by his brothers, but that Joseph was sold many times before he arrived in Egypt. *The Pentateuch and Rashi's Commentary*, Rabbi Abraham Ben Isaiah and Rabbi Benjamin Sharfman, trans., vol 1 (Brooklyn: S.S. and R., 1949), 379. Interestingly, the New International Version simply avoids the textual conflict altogether by reading the expression "and they sold" to refer to the brothers. Gen. 37:28 New International Version.

25. For a collection of such transformed quotations, see Paul F. Boller Jr. and John

George, *They Never Said It: A Book of Fake Quotes, Misquotes, and Misleading Attributions* (New York: Barnes and Noble, 1989).

26. Claude Lévi-Strauss, *The Raw and the Cooked: Introduction to a Science of Mythology*, vol. 1, John Weightman and Doreen Weightman, trans. (New York: Octagon, 1970).

27. Ball, "Memes as Replicators," 155.

28. Sperber, "Epidemiology of Beliefs," 33–34.

29. Ball, "Memes as Replicators," 155.

30. Sperber, "Anthropology and Psychology," 84.

31. Human knowledge often uses coherence as an organizational principle; beliefs are often rejected if they do not square fully with beliefs already held. However, because human beings can hold beliefs that they do not completely understand, they may avoid rejecting these beliefs until more information arrives that might make their beliefs coherent or produce a better understanding of them. They may hold some beliefs because, only half-understanding them, or lacking knowledge as to whether they are true, they simply take the beliefs on authority. See Sperber, "Epidemiology of Beliefs," 33–34. Thus a person may take on authority both the half-understood belief that space curves near a heavy mass and the half-understood belief that a communion wafer is transubstantiated into the body of Jesus, even though the sources of authority and the institutionally recognized justifications for the two half-understood beliefs differ. As a result, people may be able to hold a number of beliefs that are seemingly in tension with each other, because the grounds of belief for each are of a different status.

32. Sperber, "Epidemiology of Beliefs," 36–37; Sperber, "Anthropology and Psychology," 84–85.

33. Juan Delius, "The Nature of Culture," in *The Timbergen Legacy*, M. S. Dawkins, T. R. Halliday, and R. Dawkins, eds. (London: Chapman and Hall, 1991), 71–99, at 95.

34. Helena Cronin, "Sexual Selection: Historical Perspectives," in Evelyn Fox Keller and Elisabeth A. Lloyd, eds., *Keywords in Evolutionary Biology* (Cambridge: Harvard University Press, 1992), 286–93. Indeed, the preferred trait may actually be a handicap; the standard example is the male peacock's tail, which is a greater burden the longer and more gaudy it becomes. Amotz Zahavi has argued that these self-imposed handicaps may actually serve as a positive signal for mate selection: If a male peacock can successfully drag around a ridiculously long tail, he must be very fit indeed. Thus females will gravitate to the most handicapped males as long as they are able to survive and mate. Amotz Zahavi, "The Theory of Signal Selection and Some of Its Implications," in V. P. Delfino, ed., *International Symposium on Biological Evolution, Bari, 9–14 April 1985* (Bari, Italy: Adriatici Editrici), 305–27; Amotz Zahavi, "Mate Selection: A Selection for a Handicap," *Journal of Theoretical Biology* 53 (1975): 205–14.

35. Ball, "Memes as Replicators," 151. See also Robert Boyd and Peter J. Richerson, *Culture and the Evolutionary Process* (Chicago: University of Chicago Press, 1985), 259–79.

36. Delius, "The Nature of Culture, 95–96.

37. Dennett, *Darwin's Dangerous Idea*, 352.

38. Sperber, "Epidemiology of Beliefs," 37.

39. Robert Boyd and Peter J. Richerson, "The Evolution of Norms: An Anthropological View," *Journal of Institutional and Theoretical Economics* 150, no. 1 (1994): 72–

87; Peter J. Richerson and Robert Boyd, "Darwinian Models of Culture: Toward Replacing the Nature/Nurture Dichotomy," *World Futures* 34 (1991): 43–57, at 50–52.

40. Sperber, "Epidemiology of Beliefs," 41.

41. 1163 U.S. 537 (1896).

42. Martin Luther King, Jr., *A Testament of Hope: The Essential Writings of Martin Luther King, Jr.*, James Melvin Washington, ed. (San Francisco: Harper and Row, 1986), 219.

43. See J. M. Balkin, "Some Realism About Pluralism: Legal Realist Approaches to the First Amendment," *Duke Law Journal* 1990: 375–430.

44. Ibid.; J. M. Balkin, "Ideological Drift and the Struggle over Meaning," *Connecticut Law Review* 25 (1993): 875–91; J. M. Balkin, "Ideological Drift," in Roberta Kevelson, ed., *Action and Agency: Fourth Round Table on Law and Semiotics* (New York: Peter Lang, 1991).

45. In this way we can offer an evolutionary account of Bourdieu's "economy of logic" discussed in Chapter 2.

46. Robert C. Ellickson, "Property in Land," *Yale Law Journal* 102 (1993): 1315–1400.

47. Dennett, *Darwin's Dangerous Idea*, 486.

48. Thus it was not accidental that Louis Althusser identified them as examples of "ideological state apparatuses." Louis Althusser, "Ideology and Ideological State Apparatuses (Notes Towards an Investigation)," in *Lenin and Philosophy and Other Essays* (New York: Monthly Review Press, 1971), 127–86.

49. See Ernst Mayr, *Toward a New Philosophy of Biology: Observations of an Evolutionist* (Cambridge: Harvard University Press, 1988), 318–19; Ernst Mayr, *The Growth of Biological Thought* (Cambridge: Harvard University Press, 1982), 270–75.

50. Roger C. Schank, *The Connoisseur's Guide to the Mind: How We Think, How We Learn, and What It Means to Be Intelligent* (New York: Summit, 1991), 41. Schank argues that the most distinctive cooking styles are often those of communities where isolation has led to rigidification of expectations about how food should be prepared.

51. Emile Durkheim, *The Division of Labor in Society* (New York: Free Press, 1964), 167–73.

52. See Sanford Levinson and J. M. Balkin, "Law, Music, and Other Performing Arts," *University of Pennsylvania Law Review* 139 (1991): 1597–1658, for an account of the authentic performance movement along these lines.

## 5. Conceptions of Ideology

1. Jon Elster, *Making Sense of Marx* (Cambridge: Cambridge University Press, 1985), 462–64.

2. John Thompson, *Ideology and Modern Culture* (Stanford: Stanford University Press, 1991), 59 ("By 'symbolic forms' I understand a broad range of actions and utterances, images and texts, which are produced by subjects and recognized by them and others as meaningful constructs"); Clifford Geertz, *The Interpretation of Cultures* (New